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Identifying the Characteristics of Individuals with High Body Burdens of Endocrine Disrupting Chemicals: an Analysis of the National Health and Nutrition Examination Survey (NHANES) 1999-2002

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IDENTIFYING THE CHARACTERISTICS OF INDIVIDUALS WITH HIGH BODY BURDENS OF ENDOCRINE DISRUPTING CHEMICALS: AN ANALYSIS OF THE NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY (NHANES) 1999-2002

E. Morgan MacNeill

Thesis submitted to the Faculty of Graduate and Postdoctoral Studies in Partial Fulfillment of the requirement for the MSc degree in Epidemiology

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ABSTRACT:

Characterizing adverse health affects associated with endocrine disruptors has proved difficult as few epidemiological studies have utilized validated exposure data or adequate knowledge of exposed individuals within the general population (Landrigan et al, 2003; WHO, 2002). Given the pervasive nature of endocrine disruptors and their ability to bio-accumulate in food chains, these compounds may constitute a serious public health problem with widespread consequences. In order to characterize which populations are at risk of the potentially detrimental effects of endocrine disruptors, a series of analytical tools, including classification and regression trees, descriptive analysis and stratified regression models, were applied to the bio-monitoring data collected by the US National Health and Nutrition Examination Survey (NHANES) for the years of 1999 to 2002. Overall, 7.8-33.7% of the variability in exposure to non-persistent endocrine disrupting chemicals could be accounted for by selected variables such age, race/ethnicity, country of birth, occupation, marital status, and rooms treated for pests. However, these results should be interpreted with caution as a linear approach to creatinine adjustment increased the r^2 value in these models. In fact, very little of the variability could be accounted for using the aforementioned variables, indicating that exposures to non- persistent chemicals are difficult to predict using proxy measures. For persistent chemicals, models were successful in predicting between 22.53-51.21% of the variability in exposure levels, with age proving to be the strongest predictor. Other variables found to significantly predict exposures were race, country of birth, BMI, and marital status. Despite the fact that the predictors determined in this study are often tied to a wide range of risk factors for disease, other chemical exposures, and socioeconomic factors, these results will allow future epidemiological studies and public health interventions to effectively target exposed populations within the general public.

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EXECUTIVE SUMMARY:

STATEMENT OF THE PROBLEM: Endocrine Disruptors have been defined as a group of chemicals that have the ability to "interfere[] with the synthesis, secretion, transport, binding, action or elimination of natural hormones in the body that [are] responsible for the maintenance of homeostasis, reproduction, development and/or behavior" (US-EPA, 1997). However, it is not yet fully understood if low-dose exposures pose a significant risk to human populations. One reason why characterizing the adverse health affects associated with endocrine disruptors has proved difficult is that few epidemiological studies have contained validated exposure data or adequate knowledge of exposed individuals within the general population (Landrigan et al, 2003; WHO, 2002). The objective of this study was therefore to characterize which populations are at risk of the potentially detrimental effects of endocrine disruptors by 1) identifying the patterns of exposure to selected endocrine disrupting chemicals across various factors, including demographic characteristics, dietary patterns, housing characteristics, and occupational information 2) identifying the characteristics of individuals possessing a high body burden of endocrine disrupting chemicals and 3) developing statistical models that will quantify the variability in exposure of selected endocrine disrupting chemicals.

METHODS: A series of analytic tools was applied to two cycles of data (1999-2000 and 2001-2002) collected by the National Health and Nutritional Examination Survey (NHANES). The first stage of analysis involved a detailed examination of descriptive statistics of all variables hypothesized to influence levels of endocrine disruptors within the body. As NHANES is a multistage, probability sampling design, several additional factors

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were accounted for in order to ensure that accurate statistics were produced. These included sample weights, masked variance units (MVU's) and primary sampling units (PSU's). For the second stage of analysis, Classification and Regression Trees (CART) were employed in order to identify the characteristics of individuals possessing a high body burden of endocrine disruptors and reduce the total number of variables to be carried forward to regression analysis. Finally, stratified regression models were produced using the variables identified using the Classification and Regression Trees and *a priori* knowledge of endocrine disruptors of interest.

RESULTS: Overall, it was found that for non-persistent endocrine disrupting chemicals, between 7.8-33.7% of the variability in exposure could be accounted for by selected variables such age, race/ethnicity, country of birth, occupation, marital status, and rooms treated for pests. However, these results should be interpreted with caution as a linear approach to creatinine adjustment increased the r^2 value in these models, where in reality, the predicts of interest accounted for very little of the variability. It was therefore determined that exposures to non- persistent chemicals are difficult to capture using proxy measures, and more detailed exposure information is necessary to develop effective predictive models for these substances. For persistent chemicals, models were successful in predicting between 22.53-51.21% of the variability in exposure levels, with age proving to be the strongest predictor. Other variables found to significantly predict exposures were race, country of birth, BMI, and marital status.

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CONCLUSIONS: Following a detailed examination of the data through NHANES, only a handful of variables were determined to significantly impact body burden of endocrine disruptors. Overall, models examining persistent chemicals were more successful in predicting exposure levels, with non-persistent chemicals proving difficult to capture using broad characteristics. Despite the fact that the predictors determined in this study are often tied to a wide range of risk factors for disease, other chemical exposures, and socioeconomic factors, these results will allow future epidemiological studies and public health interventions to effectively target exposed populations within the general public.

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CHAPTER 1: GENERAL INTRODUCTION AND LITERATURE REVIEW:

1.1 Definition of and Evidence for Endocrine Disruption

For any epidemiological study, an understanding of levels and sources of exposure to a particular hazard is needed in order to determine if an adverse affect is associated with such exposure. Endocrine disruptors, are a group of chemicals so named for their ability to "interfere[] with the synthesis, secretion, transport, binding, action or elimination of natural hormones in the body that [are] responsible for the maintenance of homeostasis, reproduction, development and/or behavior" (US-EPA, 1997). However, it is not yet fully understood if low-dose exposures pose a significant risk to human populations. Despite the fact that few epidemiological studies have used validated exposure data or adequate knowledge of exposed individuals within the general population (Landrigan et al, 2003; WHO, 2002), there are three major bodies of evidence that lend support to the theory of endocrine disruption 1) toxicological studies 2) high exposure events in humans and 3) emerging trends within human populations (Phillips et al., 2008).

1.1.1 Evidence from Toxicological Studies

Toxicological studies have demonstrated adverse health outcomes in laboratory animals following high dose exposures to endocrine disruptors. These studies have reported a wide range of reproductive and endocrine dysfunction including reduced fertility and fecundity among laboratory animals (Chapin et al., 1997); testis dysfunction (WHO, 2006); reduction of serum progesterone in the luteal phase of the cycle (Foster et al, 1995); altered sex ratio as a result of external chemicals or fetal positioning (Vandenbergh and Hugett, 1994), and reduced anogenital distance, retained nipples, hypospadias, delayed

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puberty, epididymis absent/underdeveloped, atrophied seminiferous tubules and reduced spermatogenesis (Mylchreest et al, 1998, 1999, 2000; Gray et al, 1999). Despite the compelling nature of these studies, uncertainty as a result of extrapolating from high dose to low dose and from animal studies to human populations remains. Some authors have postulated that if developmental disruption by a chemical occurs in one species, then there are likely effects in other species given the similarity in genetic and hormonal systems in multicellular animals (Rice et al., 2003).

Laboratory studies have provided the mechanisms by which endocrine disruptors alter the functioning of endocrine pathways. Endocrine disruptors agonize or antagonize estrogen, androgen, and thyroid receptors, as well as the receptors of the hypothalamus (Bolander, 19994; Phillips et al., 2008). There is also growing evidence that these compounds may bind to the retinoic acid receptor (Abu-Abed et al., 2001; Bastien et al., 2004; Davey et al., 2008), cytokine receptors (Osteen, 1997; Rier, 2008), and orphan receptors (WHO, 2006). Endocrine disruptors can function by altering mRNA transcription, and in turn, gene expression (Landrigan et al., 2003). Endocrine disruptors can also act by upsetting normal hormonal synthesis, metabolism and transport through the hypothalamic-pituitary-gonadal (HPG), hypothalamic-pituitary-thyroid (HPT) and hypothalamic-pituitary-adenal (HPA) axes of the endocrine system (WHO, 2006). Endocrine disruptors have been shown to be structurally diverse (McKinney and Waller, 1998; Francois et al., 2003; Choi et al., 2004) and that estrogenic function may be related to a broad range of chemical structures, including the presence of polyhalogenated compounds, substituted phenolic structures; the presence of phenol rings; steroid carbon ring systems; diethylstilbestrol (DES) carbon skeleton; molecular weight compounds

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between 94 and 1000kD; and ring structures of any size (McKinney and Waller, 1998; Harvey and Johnson, 2002; Hong et al., 2002).

1.1.2 Evidence from High Exposure Events in Humans

High exposure events in humans have yielded important insights into the potential adverse effects of endocrine disruptors, as well as the susceptibility of certain subgroups to these compounds. One well known example is DES, widely prescribed from the late 1940s through the 1970s in order to prevent miscarriage and other complications of pregnancy (Newbould, 2004). In one cohort, patients were exposed to high doses of DES (median cumulative dose, ~ 12 g). It was later determined that DES not only was ineffective at preventing marriage, but also caused a rare form of reproductive tract cancer in female offspring (vaginal clear cell adenocarcinoma) as well as a series of reproductive anomalies in both male and female offspring (Herbst et al., 1971). In what became known as the "DES-exposed daughters" population, reproductive organ malformation, dysfunction, poor pregnancy outcomes, and immune system disorders were reported (Herbst and Bern, 1981). In their male counterparts, "DES-exposed sons", structural, functional, and cellular abnormalities were observed, such as hypospadias, microphallus, retained testes and increased genital-urinary inflammation (Herbst and Bern, 1981; Newbold, 2008). Effects of DES were so catastrophic as the developing organism is extremely susceptible to the effects of chemical insult, and in particular, chemicals with hormone-like activity (Bern, 1992).

Other high exposure events have been studied in human populations - with some indication of adverse health effects. One particular geographic region of interest has been Seveso, Italy, where an industrial accident resulted in the release of an aerosol cloud

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containing sodium hydroxide, ethylene glycol, sodium trichlorphenate, and between a few hundred grams and a few kilograms of 2,3,7,8-trichlorodibenzo-p-dioxin (TCDD) over an 18 km^2 area (Eskenazi et al, 2000). Levels of TCDD as high as 56,000 parts per trillion (ppt) were found in serum specimens collected in 1976 (Mocarelli, et al., 1991). Subsequent epidemiological studies have indicated changes in sex ratio (Mocarelli et al., 1996), increased cancer risk (Cansonni et al., 2008) and increased incidence of diabetes (Sweeney et al., 1993; Betrazzi, 1998) within this population. Despite these studies, the long term consequences of this event have not yet been determined and monitoring continues in this area in order to fully understand the adverse health affects associated with of high doses TCDD.

Numerous other high exposure events in human populations have been reported which support the endocrine disruption hypothesis. In the Great Lakes region, the offspring of women who consumed fish contaminated with polychlorinated biphenyl's (PCB's) demonstrated lower intelligence quotient (IQ) scores (Jacobson, 1990) and in Michigan, those who consumed beef and dairy contaminated with polybrominated biphenyls from the fire retardant, Firemaster were shown to have an accelerated onset of puberty (Blank et al., 2000). In central Taiwan, neurobehavioral alteration was reported after contamination of cooking oil with PCBs (Chen et al., 1985), and in Germany, a significant trend was observed in cancer mortality in herbicide-production workers (Becher et al., 1998).

Despite these insights, our knowledge of exposed subgroups within the population stems from rare events involving high exposures. Subgroups may be characterized by gender, age or developmental stage, dietary habits, geographic location or occupation. However, although these studies have contributed to our knowledge about the health effects

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of endocrine disrupting chemicals and potential sources of exposure, significant knowledge gaps still exist concerning the effects at low-doses.

1.1.3 Evidence from Emerging Trends within Human Populations

One reason why low-dose effects have provoked so much interest is that temporal trends in endocrine related health outcomes have corresponded with increasing environmental chemical exposures. These trends have elicited concern that the health effects of endocrine disruptors may not be restricted to rare, isolated events involving high exposures but that endocrine disruption may be widespread at the population level. These studies have outlined trends such as decreasing age at menarche (Kaplowitz et al., 2001), decreasing semen quality (Auger et al., 1995), decreasing male-to-female sex ratio at birth (Davis et al, 1998; Allan et al, 1997; Scialli et al., 1997, Pal de Bruin et al., 1997; Moller, 1996, Feitosa and Kreiger, 1992, 1993), as well as increasing rates of hypospadias (Paulozzi, 1999) and testicular cancer (McKieran et al, 1999). Additional studies have been conducted which have attempted to elucidate a relationship between endocrine disruptors and adverse health affects at low doses. However, although associations have been found between endocrine disrupting chemicals and **endometriosis** (Mayani et al., 1997; Gerhard and Runnenbaum, 1992; Koninckx, 1999, Foster et al, 2008**); neural function** (Yusho, 1968; Yu-Chen, 1979; Jacobson et al, 1990; Gladen et al, 1988; Koopman-Esseboom et al., 1995; Lanting et al., 1998); **immune function** (Blair et al, 1992; Golden et al, 1998; Ford et al.; 1983; Siiteri et al., 1977; Schust et al., 1996; Birnbaum, 1995; Vos et al., 1997) **and several types of cancers, including cancers of the breast** (Salehi et al., 2008), **endometrium, testis** (Garner et al., 2008), **and prostate** (Hoyer et al, 1998; Potishman et al., 1996; Bergstrom et al, 1996; Wigle et al., 2008**),** these studies have been criticized for

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employing retrospective assignment of exposures (Landrigan et al., 2003) and exposure data were completely lacking (WHO, 2002). Although several meta-analyses have been conducted in an attempt to resolve the ambiguity surrounding this issue, a concrete conclusion has yet to be reached, leaving much uncertainty surrounding the health effects of exposures typical of the general population. Given the fact that even small shifts in distributions of outcomes such as reduced fertility or neural function could have considerable impacts at the population level (WHO, 2002), rigorous epidemiological studies are necessary in order to elucidate the risks associated with low-level exposures

1.2 The Dose-Response Curve

There is some controversy over the dose-response relationship for endocrine disruptors. One reason for this is that hormones within the body are already present at physiological concentrations and are strictly regulated by feedback loops. It is therefore likely that endocrine disruptors do not follow a traditional monotonic dose-response curve (Phillips et al., 2008). Traditionally, dose-response relationships have been assumed to be linear, that is, that the larger the dose, the larger the effect. In the case of endocrine disruptors, several studies suggest adverse effects at low doses. Physiological effects reported at low doses of butylbenzyl phthalate, bisphenol A (BPA) and nonylphenol have provoked considerable controversy (Ashby, 2000). A workshop on this issue (NTP, 2001) concluded that although low dose effects may be occurring, those effects often are not replicated consistently and the toxicological significance of the reported effects is not known (WHO, 2006). However, a more recent review of 115 published studies indicated that effects were reported in 34 studies at less than the lowest observed adverse effect level (LOAEL) effect for BPA of 50mg/kg/d (vom Saal & Hughes, 2005). There is some

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evidence that the shape of the curve follows Arndt-Schulz law (Hueppe's rule) (Calabrese, 2005), which was developed to explain hormesis. Here, stimulatory effect are produced by low amounts of potentially toxic agents (Calabrese and Baldwin, 2003). This stimulation is potentially a result of multiple hormone receptor subtypes. As different functions are associated with various receptor subtypes (i.e. accessibility, affinity, desensitization or signaling cascade), cells with more than one receptor subtype would be more likely to react to increased concentrations of hormones and therefore express complex dose-response curves (Joels, 2006). Alternatively, the increased concentrations could result in an overshoot reaction, which then results in feedback systems compensating for the increased levels (Joels, 2006).

Despite this controversy, it is expected that various relationships exist for various effects and endocrine disruption mechanisms, given the wide variety of hormonal activities of endocrine disruptors (estrogenic, antiandrogenic, growth factor modulation, cytokine and thyroid modulation, modulation of hormone metabolism, etc). It is also expected that the dose-response curve varies given the timing of the exposure. For example, the effects of endocrine disruptors would not be expected to be as drastic after homeostatic feedback loops were well established. Future research is necessary in this area in order to fully understand the dose-response curves associated with individual endocrine disrupting chemicals.

1.3 Susceptible Subpopulations and Critical Windows of Exposure

Low-dose effects could be particularly harmful to certain subpopulations as a result of their unique susceptibility to these chemicals. One particular reason for this is the existence of critical windows, in which exposures resulting in abnormal hormone signaling

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may adversely alter cell proliferation in developing organs, cell migration and development of specialized function (Foster et al., 2008; Phillips et al., 2008). One subgroup that has been identified as being particularly sensitive is the developing fetus. During this stage of development, rapid cell proliferation and cell differentiation, along with complex patterns of cell signaling and cell migration, make this period not only more vulnerable to insult, but disruption during these critical phases are more likely to result in irreversible and long-lasting consequences (Newbould, 2004). Chemical insult during this period of development may result in changes in sex ratio at birth (Allan et al, 1997; Scialli et al., 1997; Pal de Bruin et al., 1997; Moller, 1996; Feitosa and Kreiger, 1992, 1993) as well as irreversible changes in brain function, structural malformations, and disease occurrence later in life (NIEHS, 2006).

This period of rapid development continues throughout childhood, with children experiencing more critical windows than their adult counterparts (Woodruff et al., 2007). One major concern, relating to childhood exposures to endocrine disruptors is the fact that these critical windows of exposures exist at a stage of development in which endogenous production of steroid hormones, is supposed to be very low (Courant et al, 2006). Unfortunately, children's exposures may be higher than their adult counterparts as a result of their increased consumption of food and water, as well as their higher rates of respiration per kg of body weight (US-EPA, 2006). Children may also engage in behaviors which influence their exposure levels. This may involve placing plastic toys in their mouth, playing on fields treated with pesticides, or crawling on floors contaminated with lead dust. To compound the problem further, the metabolic pathways of children are immature compared with those of adults. As a result, children cannot metabolize, detoxify, or excrete

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toxicants as efficiently (Lippmann et al., 2003). This may result in permanent disruption of critical developmental processes.

Although critical windows are much rarer in adulthood than during fetal and childhood development, exposures during these periods in maturity can have serious repercussions. Periods of cell proliferation can be adversely affected by abnormal hormonal signaling and can have implications for cancer development (Bolton and Thatcher, 2008). However, due to the intermittent nature of critical windows in adulthood, the effects of endocrine disrupting exposures may not be as devastating as those occurring during early developmental stages. Despite this, adult men and women still have unique susceptibilities to endocrine disruptors. Processes such as menstruation and sperm production continue to be regulated by the endocrine system and malfunctions can result in infertility as well as a variety of other problems (Phillips and Tanphaichitr, 2008). As well, endocrine related cancers such as cancers of the breast, uterus, prostate, and testis have also been shown to be either dependent on or modulated by the hormonal milieu (WHO, 2006) It has therefore been speculated that increases in these types of cancers in recent decades is related to similar increases in use and release of industrial chemicals into the environment (WHO, 2006). It is these unique susceptibilities of various lifestage subgroups that necessitate a better understanding of exposed individuals within the general population. Without such understanding, accurate risk estimates would be challenging if not impossible.

1.4 Biomonitoring of Exposure to Environmental Chemicals

Assessing exposures to endocrine disruptors is central to effective risk assessment and in turn, risk management (Lippman et al., 2003). However, as exposure assessment must integrate the magnitude, the duration and frequency of exposure, it is often complicated and

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difficult to capture. Biomonitoring has been defined as the "assessment of internal dose by measuring the parent chemical or its metabolite or reaction product in human blood, urine, milk, saliva, adipose or other tissue" (Needham, 2005). Biomonitoring is useful as a mechanism for integrating exposure and absorption over multiple pathways. This method of estimation allows researchers to distinguish between a chemical that is present within the environment and one that has penetrated the absorption barrier. That is, any of the exchange barriers of the body that allow differential diffusion of various substances across a boundary (US-EPA, 2007). Without infiltration of this barrier, a chemical can not reach its target organ and elicit an adverse health effect. Consequently, bio-monitoring is considered the 'gold-standard' for exposure assessment throughout much of the scientific community (Lippman et al., 2003)

Closely related to biomonitoring is the term body burden – that is, the concentration if a chemical in human tissue or the total concentration measured within the body (Paustenbach & Galbraith, 2006). Although many tissues can be used in order to assess the concentration of a chemical within the body, blood and urine are generally collected due to practical considerations (Barr, 2006)

Several factors can influence the concentrations found in a particular biological matrix; a major factor dictating levels is the half-life of the chemical compound (Barr, 2006). That is, the time required for the blood or plasma chemical concentration to decrease by one-half (Casarett and Doull, 2003). Those chemicals which are hydrophilic have relatively short half-lives as they can be eliminated more rapidly by the body; whereas others may accumulate due to their tendency to be stored in bone or fat (Calafat & Needham, 2007). Capturing reliable exposure estimates to persistent chemicals is facilitated by the fact that these chemicals establish equilibrium with the lipid portion of the matrix of

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interest relatively quickly, and persist in the body for relatively long periods of time (Needham et al., 2007). For non-persistent chemicals, the assessment is more difficult. Because these chemicals can be eliminated quickly from the body, some temporal variability would be expected (Barr and Angerer, 2006), and therefore, exposure measurements may change depending on hour, day, month, or season. However, if this exposure is chronic, a given measurement would be more representative given that the exposure is repeated (Barr and Angerer, 2006).

1.5 The US National Health and Nutrition Examination Survey (NHANES)

The US National Health and Nutrition Examination Survey (NHANES) biomonitoring program is one approach to understanding population trends and levels of exposures within the general population. The NHANES program began as a method of assessing the health and nutritional status of Americans in the early 1960's. It is a cross-sectional, nationally representative survey of the U.S. non-institutionalized population over the age of 2 months (NHANES, 2006). Annually, approximately 5000 individuals are surveyed using a stratified, multi-state, clustered probability design. In order to gain an improved knowledge of specific groups with the population, certain groups are intentionally over-sampled. These groups include adolescents between the ages of 15-19, individuals over the age of 60, African Americans, Mexican Americans, pregnant women and low-income Caucasians. The survey involves both health interviews conducted in the home, and physical examinations conducted in mobile units, which travel to 15 sites annually. The program is designed to collect data on disease; health risk factors; genetics and health; diet and nutritional status; oral health; environmental exposures; obesity and

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physical fitness; as well as demographic information such as age, sex, and race (NHANES, 2006).

Exposure to environmental contaminants is assessed in the NHANES program through the collection of biomarkers of exposure measurements in blood and urine of a subsample of the NHANES survey participants. Blood measurements are collected through venipuncture in children aged 1 year and older, and urine samples are collected from individuals aged six years or older. Chemicals or their metabolites are analyzed using either isotope dilution mass spectrometry, inductively coupled plasma mass spectrometry, or graphite furnace atomic absorption spectrometry depending on the compound of interest. Measurements for urine samples were presented in two ways – 1) per volume of urine and 2) per gram of creatinine in order to adjust for urine volume (NHANES, 2006). Biomonitoring exposures measurements were conducted for metals; tobacco smoke; polycyclic aromatic hydrocarbons; polychlorinated dibenzo-p-dioxins, polychlorinated dibenzofurans, and coplanar and mono-ortho-substituted polycholinated biphenyls; non-dioxin-like polychlorinated biphenyls; phthalates; phytoestrogens; organochlorine pesticides; organophosphate pesticides: dialkyl phosphate metabolites; organophosphate pesticides; specific metabolites; herbicides; pyrethroid pesticides; other pesticides and carbamate insecticides. (NHANES, 2006)

Studies that have used the NHANES biomonitoring data have had many notable findings, with lead perhaps being the most prominent. An analysis of NHANES data found that mean lead concentrations had decreased from 16 μg/dL to 9 μg/dL over the four-year period in which lead was removed from gasoline in a parallel manner (Needham et al., 2007). Partly based on these results, lead continued to be removed from gasoline until its eventual elimination in 1991 (Needham et al., 2007).

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Some of the major benefits of conducting large, national bio-monitoring programs such as NHANES have been identified by the CDC (2003). They are:

"1) To determine which chemicals are absorbed by members of society and at what concentrations.

2) For chemicals with a known toxicity level, such as lead, to determine the prevalence of people with values above those levels.

3) To establish reference ranges that can be used to determine whether a person or group has an unusually high exposure.

4) To assess the effectiveness of public health efforts to reduce exposures of members of our society to specific chemicals.

5) To determine whether exposure levels are higher among certain ethnic groups, children, women of childbearing age, senior citizens or other potentially vulnerable groups.

6) To track trends in levels of population exposure over time.

7) To set priorities for research on human health effects."

1.6 Knowledge Gaps within the Scientific Literature

Currently many knowledge gaps exist within the scientific literature for endocrine disruptors. One of the major problems is that epidemiological findings are often constrained by the difficulties in identifying exposed populations and evaluating exposure (Takahashi et al, 2004). To date, most human studies have focused on catastrophic events or occupationally exposed populations where exposures would be expected to be much higher

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than those faced by the general population. The ultimate goal of this work was to identify the characteristics of people in the general population who have a high body burden of endocrine disrupting chemicals using the National Health and Nutrition Examination Survey. This will result in identification of exposed populations and subgroups so that future epidemiological studies and public health interventions can effectively target the appropriate population.

CHAPTER 2: OBJECTIVES:

- To identify patterns of human exposure to selected endocrine disrupting chemicals with consideration of demographic characteristics, dietary habits, housing characteristics, and health status.

- To identify the characteristics of individuals possessing a high body burden of endocrine disrupting chemicals.

- To develop statistical models that will quantify the variability in exposures of selected endocrine disrupting chemicals or increased risk of high body burden given various characteristics.

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CHAPTER 3: METHODS

3.1 Data Collection:

NHANES data from survey years 1999-2000 and 2001-2002 was used to determine the characteristics of people in the general population whose blood or urine indicated high levels of various endocrine disruptors. NHANES data is collected from two primary sources 1) Direct Interview, in which survey participants and those within their household are directly asked about their health and 2) Direct Examination, in which clinical tests, anthropometric, biochemical, radiological and physical examinations are conducted. Once a household has been identified, a trained interviewer conducts an initial in home interview with the potential survey participant to determine their eligibility. The collective responses to the NHANES Household Adult (or Youth) Questionnaire and the Family Questionnaire determine whether or not a participant is eligible for survey participation. Those participants deemed eligible are then asked to schedule an appointment at a mobile examination center in order to complete a suite of medical and nutritional tests along with physical measurements (NHANES, 2006).

Data collected by NHANES can be accessed publicly online, and are contained within several unique data files. These data files generally fall under the four large subheadings of demographics, examination, laboratory and questionnaire. These datasets can be linked through the unique identifier assigned to each participant and through the use of common variable names from year to year. For this study, over 40 datasets were used for this analysis.

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3.2 Limits of Detection

The limit of detection (LOD) can be defined as the point at which "a measured value becomes.....larger than the uncertainty associated with it" (Taylor, 1987). It can be calculated in a number of ways such as the background response plus three times the standard deviation of the lowest measurable concentration, three times the signal-to-noise ratio of baseline noise, three times the standard deviation of the lowest measurable concentration (USEPA, 1998). As endocrine disruptors were measured by NHANES in either serum or urine, limit of detection were determined on the basis on the individual endocrine disruptor bio-chemical characteristics. The limits of detection were determined differently for urine and serum metabolites. For urine metabolites the limit of detection was calculated as three times the standard deviation of the lowest measurable concentration, and remained constant within study cycles. However, each cycle, the limit of detection was reassessed and therefore varied between 1999-2000 and 2001-2002. Where a concentration was found to be below the limit of detection, it was replaced by the limit of detection divided by the square root of two (NHANES, 2006).

For serum metabolites, the concentration of each analyte is calculated from an individual standard linear calibration. Each analytical run is conducted blinded and consists of three unknown samples, a method blank and a quality control sample. Detection limits, on a whole-weight and lipid-adjusted basis, are reported for each sample, corrected for sample weight and analyte recovery (NHANES, 2006). As a result, each participant across all years of data has their own unique limit of detection. Samples that were found to be below the limit of detection were replaced by the detection limit divided by the square root of two.

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3.3 Creatinine Adjustment for Urinary Dilution

Many of the chemicals collected by NHANES are measured in urine. One problem with measurements taken in urine is the variable dilution in spot samples. As a result, some method of standardizing measurements across study participants is necessary. Creatinine, a breakdown product of creatinine phosphate in muscle, is commonly used as it is usually produced at a fairly constant rate by the body and therefore reflects renal function in a steady state. Limitations of this approach, include differences in creatinine clearance of muscle mass can result in substantial inter-individual variation in urinary creatinine levels, which can confound comparisons of creatinine-corrected urinary biomarker values between dissimilar groups. In the literature, there are three approaches that have been proposed to adjust for urinary dilution 1) the ratio approach, in which the total concentration is divided by the total creatinine; 2) the "do nothing approach" in which its proponents state that using adjustment using creatinine causes as many problems as it solves, and therefore it is equally if not more valid to ignore the problem of urinary dilution; and 3) the linear approach, in which creatinine is considered a confounder of the relationship between the urinary metabolite and the predictor variable of interest. In the first approach is limited in its application to this particular analysis. It is well known that significant predictors of urinary creatinine concentrations include age, sex, race/ethnicity, body mass index, and fat-free mass. By expressing urinary metabolites per gram creatinine, the concentration is unintentionally adjusted for these covariates. Although this may not be seriously problematic in certain analysis, it causes some problems here as the thesis is interested in how these concentrations vary by factors such as age, sex, ethnicity, etc. As well, given that urinary creatinine concentrations are often greater than 1, the variability within the data is artificially reduced, which reduces you ability to develop effective models to predict such

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variability. Although the second approach was considered given that all adjustment urinary dilution is flawed, it was felt that the third approach offered some benefit over no adjustment. This approach, proposed by Barr et al. (2005), uses an unadjusted urinary metabolite concentration as the dependent variable, with the urinary creatinine concentration used in the model as an independent variable. This allows for the significance of predictor variables such as race, sex, age, etc to be due to the effect of that variable, rather than due to an association with urinary creatinine concentration. This method has been adopted by the CDC, appeared in many peer reviewed journal articles, and applied in the CDC's Third Report using data collected by NHANES. As such, this method was adopted in this thesis.

3.4 Methodological considerations when analyzing the NHANES dataset

Data collected from NHANES are not collected through a simple random sample study design but rather through a multistage, probability sampling design. This design relies on selecting primary sampling units (usually counties) from which sample segments (usually city blocks) are selected. Households from each segment are then listed and a random sample of homes is generated. Individuals are chosen, with an average of 1.6 persons selected from each household to participate in the survey. However, in certain geographic regions, over-sampling is done to ensure adequate representation of particular subgroups including adolescents (ages 15-19), individuals over the age of 60, African Americans, Mexican Americans, and pregnant women (NHANES, 2006).

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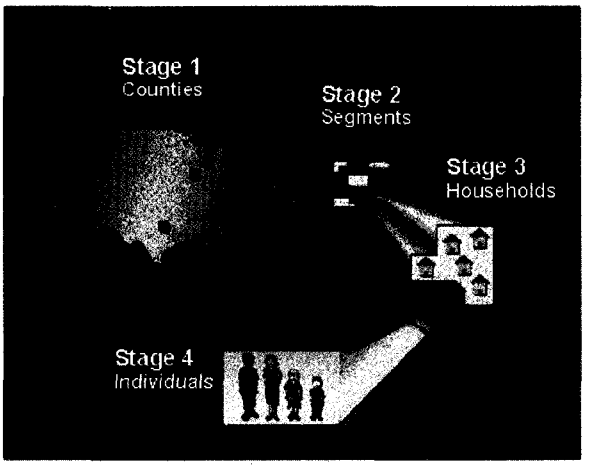
Figure 1: Schematic representation the multistage, probability sampling design used by NHANES



In order to obtain unbiased statistical results, sample weights were used in all analyses. Sample weights were uniquely assigned to each participant in the study and were used to reflect the unequal probability of selection, non-response adjustment, as well as adjustment to independent population controls (NHANES, 2006). In the case of any data analysis, sampling weights were used to adjust the individual data before it could be included in the model.

In addition to sample weights, masked variance units (MVU's) are a statistical feature of NHANES used in this analysis which are a direct result of the sampling design. MVU's approximate "true" design variance estimates and are produced through aggregating secondary sampling units into groups. These units are necessary in order to protect confidentiality of the participants and produce reliable variance estimates in the analysis simultaneously (NHANES, 2006).

Statistical Analysis Software (SAS) provides a group of *survey procedures* which can be used to manage some of the difficulties posed by the NHANES sampling design. These procedures allow accurate estimates to be produced and can also apply linearization

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techniques such as the Taylor series linearization to generate variance estimates and confidence limits. Using SAS survey procedures, strata, primary sampling units (PSU), and sample weights can all be specified.

3.5 Thesis Study Design

NHANES is one of the largest surveys conducted to date, and as a result is a major instrument for providing accurate information on the health and nutritional status of the U.S. population. NHANES collects biomonitoring data on over 148 chemicals, and thousands of potential predictor variables. Although a major strength of the survey, this necessitated some strategy for reducing the total number of chemicals and total number of predictors was necessary. In terms of chemicals chosen for analysis, there were a total of 8 unique chemical families chosen on the basis of sufficient evidence within the literature for endocrine disruption. These chemical families included phytoestrogens; polycyclic aromatic hydrocarbons; polychlorinated dibenzo-p-dioxins, polychlorinated dibenzofurans, and coplanar and mono-ortho-substituted polychlorinated biphenyls; non-dioxin-like polychlorinated biphenyls; phthalates; organochlorine pesticides and herbicides. A full list of the chemicals examined, as well as the subsample in which they were measured, is presented in Tables 1 and Figure 2. For a full list of sources of exposure, please see Appendix 1.

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Table 1: List of Endocrine Disruptors Examined by Chemical Classification

Chemical Classification	Matrix	Endocrine Disruptors Examined
Phytoestrogens	urine	diadzein o-desmethylangolensin equol enterodiol enterolactone genistein
Metals	urine	Urinary Cadmium Urinary Lead
Polycyclic aromatic hydrocarbons	urine	2-hydroxyfluorene 3-hydroxyfluorene 1-hydroxyphenathrene 2-hydroxyphenanthrene 3-hydroxyphenanthrene 1-hydroxyphenanthrene 1-hydroxypyrene 9-hydroxyfluorene 4-hydroxyphenanthrene 9-hydroxyphenanthrene
Polychlorinated dibenzo-p-dioxins,polychlorinated dibenzofurans,and coplanarand mono-ortho-substituted polychlorinated biphenyls	blood serum	1, 2, 3, 4, 6, 7, 8, 9- Octachlorodibenzo-p-dioxin (OCDD) 1, 2, 3, 4, 5, 6, 8- Heptachlorodibenzofuran (HpCDF) 1, 2, 3, 4, 6, 7, 8-Heptachlorodibenzo-p-dioxins (HpCDD)
Non-dioxin-like polychlorinated biphenyls	blood serum	2,2', 4,4',5,5'-Hexachlorobiphenyl (PCB153) 2,2',3,4,4',5'-Hexachlorobiphenyl (PCB138) 2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB180)
Phthalates	urine	Mono-p-butyl phthalate Mono-benzyl phthalate Mono-ethyl phthalate Mono-2-ethylhexyl phthalate Mono-methyl phthalate Mono-isobutyl phthalate Mono-(2-ethyl-5-hydroxyhexyl) phthalate Mono-(2-ethyl-5-oxohexyl) phthalate Mono-3-carboxypropyl phthalate
Organochlorine pesticides	blood serum	Dichlorodiphenyltrichloroethane (p,p'-DDE) Chlordane (trans-nonachlor) β-hexachlorocyclohexane
Herbicides	urine	2,4-dichlorophenoxyacidic acid

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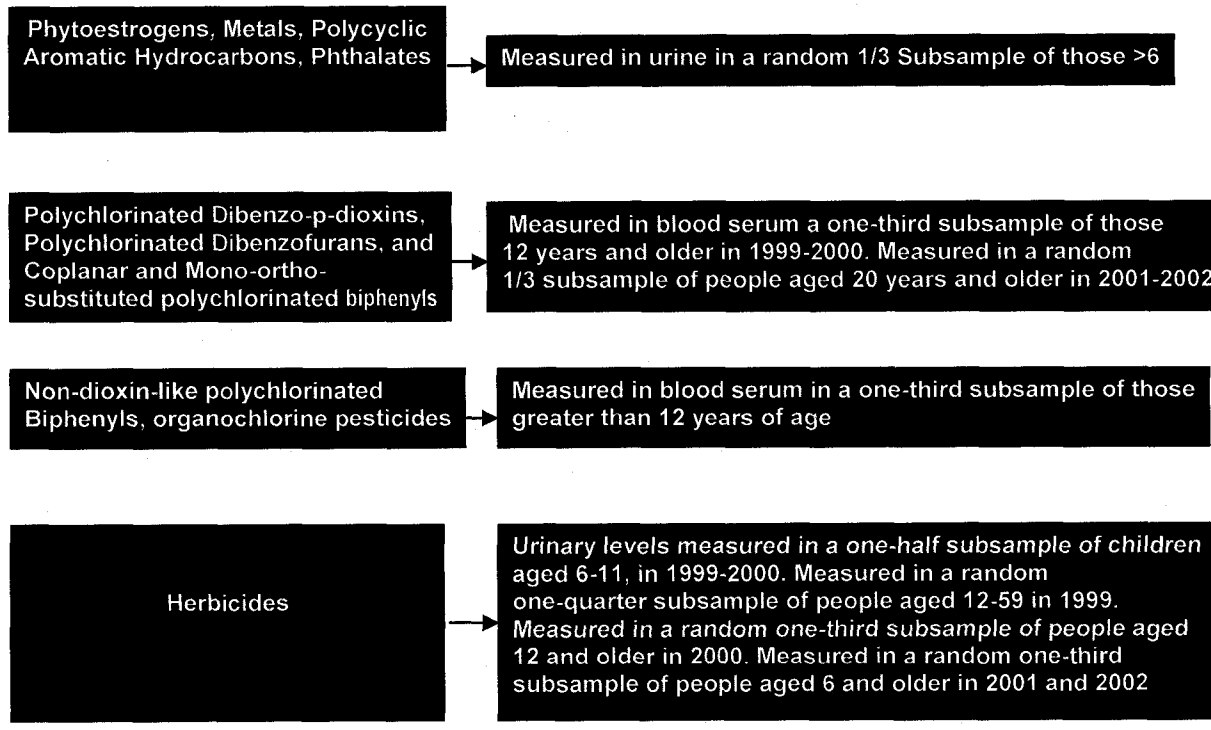
Figure 2: Description of NHANES Sampling Methodology for Selected Endocrine Disruptors



In terms of reducing the total number of predictors to be examined, a detailed examination of the literature was conducted in order to identify sources of exposure to endocrine disruptors. This information was then cross-referenced with the availability of data from the NHANES database. In addition to sources of exposure, all characteristics of individuals contained within demographic files were examined. Finally, factors which may physiologically affect the metabolism or excretion of a chemical were also examined (ex.prescription drug use, kidney or liver disease, amount of liquid consumed, etc). Those variables with very little variability, a high proportion of missing values, or which have inadequate sample size were excluded from the analysis. Univariate analysis was conducted and those variables with a very low R-square value (i.e <0.1) and a p-value greater than 0.05 will not be carried forward for subsequent analysis.

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The statistical analysis for this study was broken down into three major sections – I) exposure levels II) patterns of exposure and III) characteristics of individuals with high and low levels of exposure.

3.5.1 Exposure Levels:

Descriptive Statistics were generated by combining data from the 1999-2000 cycle with data from the 2000-2001 cycle. This resulted in a total of 20,004 participants between 1999 and 2001. Those pollutants that had greater than 60% of samples above the limit of detection, and had sufficient variability within the data, were included in further analysis. Moreover, as analysis of the distribution of the pollutants revealed highly right skewed data, all pollutants were log transformed to estimate a normal distribution.

As a quality assurance measure, means and confidence intervals were calculated for each cycle of data, as well as additional statistics describing the distribution of the data to compare with those statistics reported by the CDC in the Third Report (CDC, 2005). This preliminary investigation of the data (not shown) mirrored that conducted by the CDC and confirmed that means, confidence intervals and frequency counts were accurate. In some cases, small discrepancies were observed in the calculated percentiles, however, statistical coding was verified with the CDC (Sam Caudill, CDC Analyst, personal communications), and discrepancies were attributed to minor modifications made to publicly available datasets since 2005.

Drawing on the wealth of questionnaire data collected by NHANES, means, frequency counts, and corresponding percentiles were produced for participant characteristics such as demographics, housing characteristics, occupational information,

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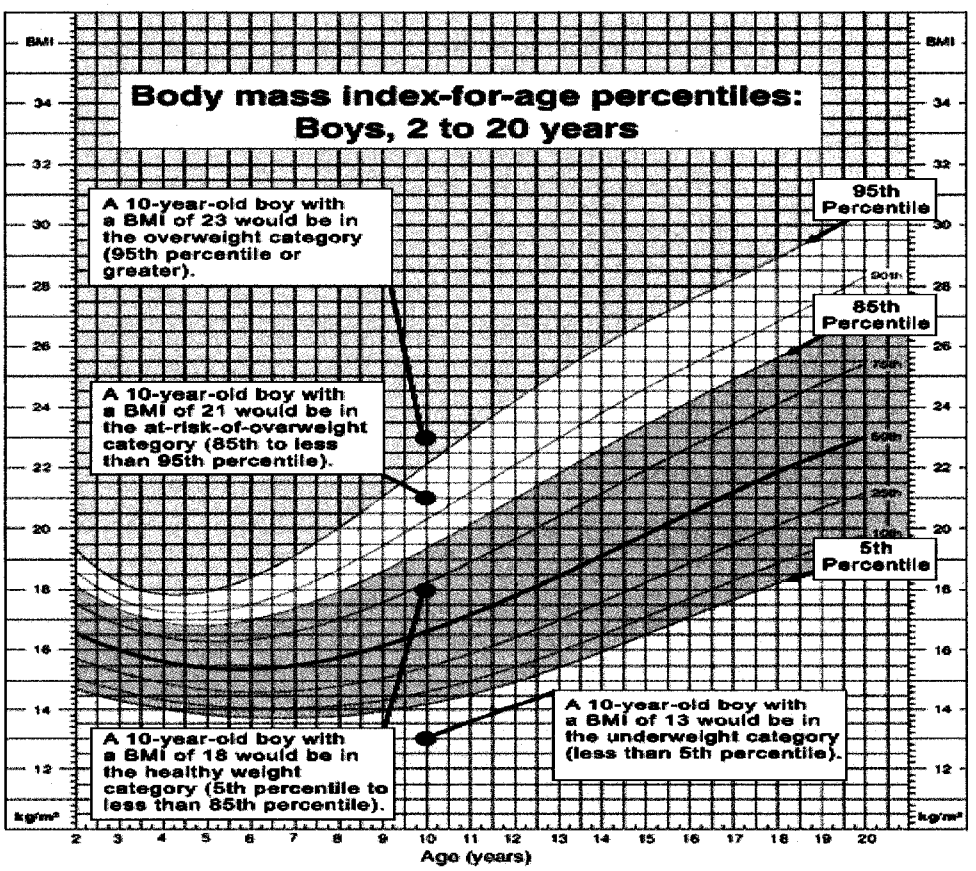
health status, medications, and food frequency information among others. Where variables were coded as "refused" and "don't know", responses was replaced with "missing" as this information was relatively uninformative for this analysis. All means were produced taking into account the PSU, stratum, and survey weights associated with each participant and sample weights were applied when calculating percentiles. For detailed information on types of data examined, please see Appendix 42. Body Mass Index (BMI) was treated differently for children and adolescents as BMI is dependent upon age and gender, such that each child and adolescent was assigned to a BMI category based on an age and sex adjusted measure (see Figure 3).

Figure 3: Body Mass Index-for-age percentiles: Boys, 2-20 years (chart for girls not shown)



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3.5.2 Patterns of Exposure

In order to determine the strength of the association between various chemicals within individuals, two Pearson correlation matrices were completed for the endocrine disruptors of interest. The first examined correlations between all contaminants, and the second looked at correlations within each chemical subgroup. For example, the first matrix was prepared in order to determine whether or not individuals with a high body burden of phthalates also have a high body burden of polychlorinated biphenyls and phytoestrogens. The second on the other hand, examined the relationships within one class of chemicals more closely, such as between diadzein and equol (phytoestrogens). All correlation matrices were produced using log-transformed data.

3.5.3 Characteristics of Individuals with High and Low Exposures

In order to determine the characteristics of people with high and low exposures to various endocrine disruptors, classification and regression trees (CART) and regression models were used. For this analysis, high exposure was defined the **upper third of the distribution**, and low exposure was defined as the lower third of the distribution. Although this is a somewhat arbitrary distinction, the literature on exposure to many endocrine disrupting chemicals is currently limited, and as a result, few guidelines presently exist for minimum effect levels- particularly at the population level. As a result, the upper and lower tertiles of the distribution were used in order to dichotomize the dependent variable and ensure adequate separation in the comparison levels.

Due to the large number of endocrine disrupting chemicals to be examined, and the inability to examine all compounds due to time restraints, one endocrine disruptor was chosen as an example for each chemical family, with a total of eight (8) chemicals selected

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for detailed analysis. These 8 endocrine disruptors were chosen based on a review of the literature, their correlation with other endocrine disruptors within its class, and the percentage above the limit of detection.

One of the major challenges in determining the characteristics that defined an individual as high or low body burden was that the NHANES database included nominal, ordinal and continuous data. As a result, traditional analytical techniques such as factor analysis could not be readily applied as these techniques rely on relatively homogenous, normally distributed data. CART on the other hand is particularly well suited to examining these types of data and has the advantage of producing easily interpretable results.

This method was used as an exploratory data analytic technique used to uncover structure in a large dataset. In this case, the dependent variable was binary, and therefore resulted in a simple classification tree in which categorical or continuous predictor variables were used in order to predict who had high versus low body burden. The data was segmented by applying a series of simple rules with each rule assigning an observation to a segment based on the value of one input. One rule is applied after another, thereby resulting in a hierarchy of segments within segments. This hierarchy is referred to as a tree, and individual segments are called nodes. The original segment containing the entire dataset is called the root node, and the node with all its successors forms a branch of the node that created it. The final nodes are called leaves.

Given the fact that CART can result in false associations, they were only used to reduce the number of variables available through the NHANES dataset and potentially elucidate relationships which would be biological plausible but not readily identified. Sample weights were not applied in this stage of analysis, and therefore the results can not be applied to the entire US non-institutionalized population. These results are, however,

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internally valid. The CART analyses conducted here was not applied as an end in itself, but rather as a variable reduction technique. Other variables which would have been expected to influence levels were also tested in the final weighted regression models. These models were weighed, and yield important insights into the characteristics of individuals in the general US-population who would have high body burdens of endocrine disrupting chemicals

A major issue that arises when applying classification and regression trees to complex datasets is the decision of when to stop splitting, as the tree algorithm with ultimately extract all the information from the data, including information that is not and can not be predicted in the population using the current set of predictors. As a result, overfitting of the model can become problematic using classification and regression tree analysis and a method for "pruning" the tree is therefore necessary. In this case, cross validation was used in order to ensure that the model had not over fit the data. The data in this case was partitioned into 70% training, and 30% validation. If the model had been over-fit, the node used the validation dataset to retreat to a simpler fit (if necessary) rather than the fit based solely on the training dataset.

It is also important in CART to choose a splitting criterion that ensures the greatest improvement in predictive accuracy. This is usually measured with some indicator of node impurity. That is, an indicator of the relative homogeneity of cases in the terminal nodes. The Gini index measure of node impurity is the most commonly chosen measure for classification and regression-type problems, and was the method applied here. The Gini Index is computed as the sum of products of pairs of class proportions for classes present at the node. The Gini index is equal to zero if all cases in a node belong to the same class. In

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this analysis, missing values were not used in order to choose the best split. The generic equation representing this Gini index is presented below:

$$\text{Gini Index} = \sum_{\text{leaves}} \left(P(\text{leaf}) * \left(1 - \sum_{i}^{\text{Classes}} \left(\frac{\text{number of class } i \text{ cases}}{\text{all cases in a leaf}}\right)^2\right)\right)$$

In order to enumerate all possible splits, the maximum number of branches from a node was defined as 2; the number of surrogate rules to be saved in each node was set at 5; and the number of observations sufficient for a split search set at 1000 with a maximum number of tries for an exhaustive split search of 5000. Final trees were determined based on the Gini Index of both the training and validation data, as well as the simplicity of the tree. For example, if adding an extra leaf to the tree had very little impact on reducing the Gini Index yet increased the complexity of the tree substantially, then it was excluded from the final results. All CART analysis were generated using SAS Enterprise Minter version 4. 3 (SAS Institute, 1999).

The diagram representing the hierarchy of the tree contains a number of statistics. In each node there are two columns. The left hand column represents the results of the training data, and the right hand column represents the results of the validation dataset. Furthermore both the percentages of individuals who were high (1) and low body burden (0), as well as counts for each group in that node are presented. A series of English rules are also presented, which outline the CART hierarchy. Finally, a misclassification rate is also reported, which identifies the proportion of the data misclassified. In this instance, the higher the rate, the poorer model fit.

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The results yielded by the classification and regression trees were used to inform multiple linear regression and logistic regression models, as CART identified key variables which could be used to classify individuals who were high body burden, outlined hierarchical relations, and identified major groupings within the data. As the dependent variable in the classification trees was dichotomous, logistic regression was used in order to yield a better understanding of the odds of being high body burden based on the characteristics of the individuals. As in the case of the classification and regression trees, the upper and lower tertile of the distribution was used in order to dichotomize dependent variable. Multiple linear regression was also done in order to determine how much of the variability in body burden could be explained by the variables outlined in the classification and regression trees. However, as the dependent variable was continuous, it was not always possible to closely mirror the results of the logistic and cart analysis.

Further linear and logistic regression analysis was done on the major splits produced by the tree. For example, if three major splits in age were produced by the tree, each section was modeled separately. This was done to avoid three or more way interaction terms that could be difficult to interpret. The independent variables input into these stratified analysis were those variables identified by the classification tree importance measure, as well as those variables that are suspected to be major pathways of exposure that may not have been identified by the tree due to competing splits. An indicator variable was also created for each occupation independently in order to test if one or few occupations were driving the results and were therefore responsible for explaining most of the variability. A flowchart indicating the overall study methodology is presented in Figure 4:

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3.5.4 Treatment of Missing Values

There were a substantial number of missing values due to the design features of NHANES. For example, metals, phthalates, polycyclic aromatic hydrocarbons and phytoestrogens were measured in urine from a one third subsample of people age 6 years and older; reproductive health questions were asked of females aged 12 years and older, and alcohol consumption questions were asked of individuals greater than 20 years of age. In the case of logistic and linear regression, missing values were treated with case-wise deletion. CART on the other had, treats missing values slightly differently.

All decision tree classifiers handle missing values using built in approaches. In the case of CART, observations in which the target value is missing are ignored when training or validating the tree. When missing values are treated as an acceptable value, the search for a split on an input uses observations that are missing on the input. All observations are assigned to the same branch, which may or may not contain other observations. The branch chosen is the one that makes the split worth the most. For splits on a categorical variable, this results in treating a missing value as a separate category. For numerical values, this results in treating missing values as having the same unknown non-missing value. When a split is applied to an observation, in which the required input value is missing, surrogate splitting rules are considered before assigning the observation to the branch for missing values. For example, the main splitting rule might use county as input, and the surrogate might use region. If county is unknown and region is known, the surrogate is used. If none can be applied, the main rule assigns the observation to the branch that is designated for missing values. When missing values are not treated as an acceptable value, then observations with a variable having missing are discarded when searching for a split on the input on that variable (SAS, 1999).

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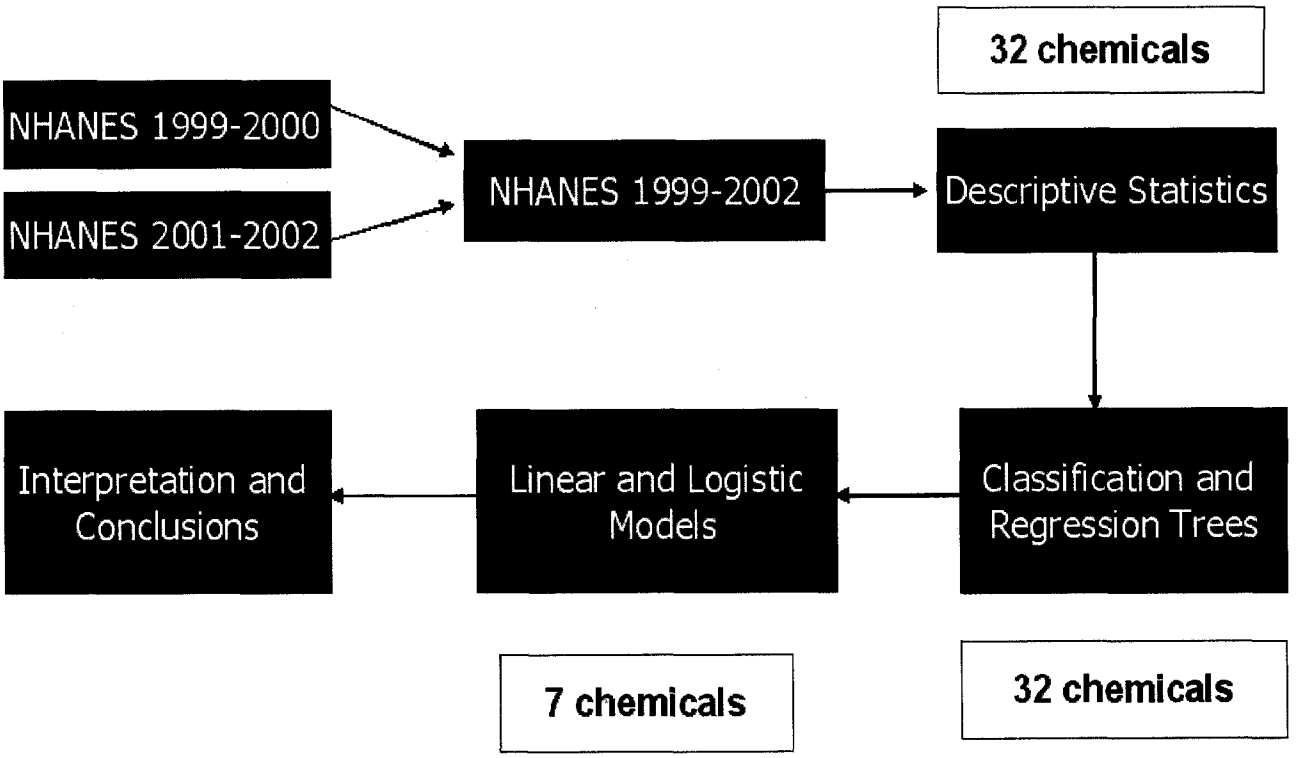
Figure 4: Analytical Strategy



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CHAPTER 4: STUDY POPULATION

4.1 Study Population

Table 2: NHANES Study Population for the Entire Population, as well as for the various chemical subgroups

	All		Genestein		2,4-D		Cadmium		PCB153		OCDD		p,p-DDE		mono-p-butyl		2-hydroxy fluorene	
Age	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Age 0-5	3456	16.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Age 6-11	2355	11.2	727	13.6	1023	23.3	647	13.2	-	-	-	-	-	-	721	13.5	693	13.7
Age 12-19	4902	23.3	1498	28.0	1474	33.6	1390	28.4	1425	33.7	667	21.6	1444	33.9	1494	28.1	1427	28.2
Age 20-40	3813	18.2	1213	22.7	1115	25.4	1055	21.6	1098	25.9	933	30.2	1094	25.7	1205	22.6	1156	22.8
Age 41-55	2361	11.2	762	14.2	661	15.0	699	14.3	650	15.4	555	17.9	651	15.3	759	14.3	708	14.0
Age 55+	4117	19.6	1151	21.5	117	2.7	1100	22.5	1059	25.0	937	30.3	1073	25.2	1144	21.5	1076	12.3
Gender																		
Male	10214	48.6	2597	48.5	2097	47.8	2425	49.6	1991	47.0	1436	46.4	2006	47.1	2586	48.6	2452	48.5
Female	10790	51.4	2754	51.5	2293	52.2	2466	50.4	2241	53.0	1656	53.5	2256	52.9	2737	51.4	2608	51.5
Race/Ethnicity																		
Non-Hispanic White	8080	38.5	2139	40.0	1481	33.7	1866	38.1	1786	42.2	1353	43.8	1785	41.9	2128	40.0	2049	40.5
Non-Hispanic Black	5019	23.9	1314	24.5	1181	27.1	1202	24.6	927	21.9	621	20.1	931	21.8	1306	24.5	1226	24.2
Mexican American	6169	29.4	1498	28.0	1354	30.8	1466	29.6	1201	28.4	882	28.5	1223	28.7	1491	28.0	1412	27.9
Other Race*	630	3.0	136	2.5	141	3.2	130	2.7	122	2.9	84	2.7	124	2.9	135	2.5	132	2.6
Other Hispanic	1106	5.3	264	5.0	226	5.1	247	5.0	196	4.6	152	4.9	199	4.7	263	4.9	241	4.7
Education																		
Less than High School	10212	58.4	3081	57.7	2886	65.8	2828	57.9	2204	52.1	1448	46.9	2236	52.5	3066	57.7	2913	57.6
High School Diploma	2762	15.8	828	15.5	540	12.3	813	16.6	721	17.1	572	18.5	717	16.8	825	15.5	778	15.4
More than High School	4524	25.9	1433	26.8	960	21.9	1243	25.5	1302	30.8	1070	34.6	1304	30.6	1424	26.8	1362	27.0

*Includes MultiRacial

The study population of NHANES is representative of the non-institutionalized US population (see table 2). However, as a result of the sampling design, there are some minor differences across chemical categories. For example, there is a greater percentage of children between the ages of 6-11 for 2, 4-D (23.3%) when compared with the other groups (approximately 13%). In general however, the study population is comparable across chemical groupings. It is also worth noting that many of the race/ethnicity categories are somewhat broad. In particular the race/ethnicity category, 'other race' encompasses a diversity of races/ethnicity, however, due to sample size was a necessary categorization made by NHANES.

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CHAPTER 5: PHYTOESTROGENS

5.1 Introduction to Phytoestrogens

5.1.1 Sources of Phytoestrogens:

Phytoestrogens are nonsteroidal plant-derived chemicals that can mimic the function of estrogen in the body (Valentin-Blasini et al., 2005). There are two major groups of phytoestrogens found in people's diets- isoflavones and lignans. The primary isoflavones found in plants are genistein, daidzein, formononetin, glycitein, and biochanin-A; the primary lignans found in plants are secoisolariciresinol, matairesinol, and the recently identified pinoresinol, lariciresinol, and syringaresinol (Adlercreutz, 2002). The highest concentrations of isofavones are found in red clover leaf, kudzu root, soy bean and soy bean products, followed by legumes. Soy flour and soy protein isolates are often added to processed meats, meat substitutes, breads, and protein food bars, and as a result, can be a major source of exposure of isoflavones. Please see table 3 for a list of sources and concentrations found in various phytoestrogens.

Table 3: Sources and Concentrations of Isoflavones and Lignans in Various Products

Product class	Product	Isofavone content	Lignan content
Grain	Whole grain wheat	Trace	0.08
	Wheat bran	0.1	1.1
	Oat bran	0.1	1.1
Seed	Pumpkin seeds	0.02	214
	Linseeds	0	371
	Flaxseed meal	ND	675
	Flaxseed flour	ND	525
	Peanuts	ND	1.7
Legume	Chick peas	0.88	0.08
	Green peas	73	ND
	Lentils	ND	18
	Kidney Bean	ND	0.6
Seaweed	Dried seaweed	ND	1.1
Soy	Tofu	532	ND
	Tempah	865	ND
	Miso	300	ND
	Soy milk	44	ND
	Roasted soybeans	2661	ND
	Soy protein isolate	987	ND
	Soy-based infant formula	40	ND

Sources: (Thompson et al., 1991; Franke et al., 1995; Reinli and Block, 1996; Lampe, 2003).

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5.1.2 Exposure Route and Exposed Populations:

Human populations are exposed to phytoestrogens through ingestion of foods which contain phytoestrogens. Phytoestrogens may be present in the human diet in substantial amounts (Irvine et al., 1998; Murphy et al., 1999). In a multiethnic population in California, it was estimated that between 12-28 servings of foods rich in phytoestrogens were consumed per month (Horn-Ross et al., 1997). Setchell and Cassidy, on the other hand, reported that the main soy byproducts found in the Western diets are oil and lechin, and therefore consumption of phytoestrogens is low (<1mg/day). More recently however, soy products have become increasingly advertised for their health benefits, and soy additives have become common in foods such as doughnuts, pancakes, waffles, and bread. As well, there has been an increasing trend towards the use of commercial soy products. Therefore, there is some evidence to suggest that phytoestrogen consumption in the United States is higher than previously thought (Valentin-Blasini et al., 2005). Certain populations, however, such as Asians, have been known to have high dietary intake, and have been shown to excrete higher levels of isoflavones (Roach et al., 1998; Dai et al, 2002)

5.1.3 Fate, Transport, and Metabolism:

Phytoestrogens are formed by plants, as an important part of their defense system (Leegood, 1998) mainly against fungi. They enter the body through consumption, but are present in foods primarily as β-glucoside conjugates, which are not absorbed by the body (Setchell et al., 2002b). These conjugates are then converted to aglucones by colonic microflora (Day et al., 1998; Rowland et al., 1999). Further metabolism including dehydroxylation, reduction, demethylation, ring cleavage, and ring formation can occur within the intestines. All metabolites eventually undergo Phase II metabolism in the liver to

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form glucoronide congugates, or metabolism in the intestinal wall to form sulfate-congugates. The dietary lignans matairesinol and secoisolariciresinol are transformed to enterolactone and enterodiol. Enterodiol may also interconvert with enterolactone. The isoflavones formononectin and biochainin A are metabolized to daidzein and genistein. Daidzein is further metabolized to O-desmethylangolensin in the body. Phytoestrogens persist in the body for approximately 24-hourse before their conjugates are ultimately excreted in urine and feces (Setchell et al., 2001).

The absorption and metabolism of phytoestrogens demonstrate large inter-individual variability, which may reflect differences in pharmacokinetics as well as in metabolism by gut flora. Sex, antibiotic use, and basal diet composition have been identified as factors influencing phytoestrogen metabolism. Equol formation can also be altered by the content of carbohydrates in the diet. Studies have shown that a diet high in carbohydrates and lower in fat increases the production of equol (Lampe et al., 1998; Setchell and Cassidy, 1999; Rowland et al., 2000).

5.2 Phytoestrogen Results:

5.2.1 Exposure Levels:

For the six phytoestrogens, the percent of detectable samples ranged from 70.8% for equol to 98.5% for enterolactone. As these percentages were greater than 60%, these endocrine disruptors were deemed adequate for further analysis and therefore results are presented below.

Descriptive statistics representing the geometric mean, 95% confidence intervals, and the distribution of the data by various subgroups are presented in Appendices 5-10. Biomarkers of exposure to isoflavone phytoestrogens, including genistein, daidzein, equol,

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and o-desmethylangolensin, were higher in children and adolescents when compared with those 20 and older. A decreasing trend in mean concentration was observed by age, with those 56+ yrs having the lowest concentrations for all markers of isoflavone exposure. For daidzein, these differences were shown to be significantly higher for children when compared with all groups above 20 years of age ($p<0.05$) and for adolescents when compared with all age groups above 40 years of age. For metabolites of daidzein, equol and o-desmethylangolensin, both children and adolescents had significantly higher means when compared with those 56+ years of age ($p<0.05$). In addition to this, children and adolescents also had significantly higher means of o-desmethylangolensin when compared with those between the ages of 20-40 years ($p<0.05$). For genistein, both children and adolescents had statistically significantly higher means than those 40-55 and 56 + years of age ($p<0.05$). Biomarkers of lignan exposure, enterodiol and enterolactone, showed no significant differences when stratified by age.

Race/ethnicity of study participants also contributed to mean levels of phytoestrogen biomarker concentrations. Mexican Americans consistently had the lowest mean concentration of all isoflavone phytoestrogens, with the exception of genistein, for which 'other Hispanic' had the lowest concentration. Mean concentrations for o-desmethylangolensin were statistically significantly lower for Mexican Americans when compared with Non-Hispanic Blacks. Similarly, Mexican Americans also had significantly lower levels of equol than non-Hispanic whites, other race-including multiracial, and other Hispanics ($p<0.05$). Moreover, individuals born in Mexico had significantly lower mean concentrations of equol, daidzein, and o-desmethylangolensin than those born in the United States and lower mean concentrations of o-desmethylangolensin and equol than those born elsewhere. Mexican Americans also had significant lower levels the lignan phytoestrogen,

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enterodiol, when compared with non-Hispanic Whites and other race-including multi-racial. However, the same trend was not observed for the other lignan compound, enterolactone (see Appendix 9).

Although no known occupational exposures to phytoestrogens are known, some occupational groupings consistently appeared in the phytoestrogens, implying common behaviours or lifestyles among these groups of people. One such group was 'secretaries, stenographers and typists' which had the highest mean concentration of the isoflavones daidzein, desmethylangolensin, and the lignan enterolactone. For genistein and enterodiol 'engineers, architects, and scientists' had the highest mean concentration and for equol, it was 'other professional specialty'. Due to the large number of occupations examined, not all are mentioned here, however, detailed statistics can be found in Appendices 5-10.

The primary sources of exposure to phytoestrogens are dietary. In the western diet, foods containing relatively high phytoestrogen content are nuts and oilseeds, soy products, cereals and breads, legumes, meat products, and other processed foods that may contain soy, vegetables, fruits, alcoholic and non-alcoholic beverages (Thompson et al., 2006). Despite this, no significant differences were found for fruit, vegetable or bean consumption, and no direct questions were asked concerning dietary intake of soy. However, for enterodiol and enterolactone, high dietary fiber intake was associated with a statistically significant higher geometric mean. This followed a linear trend with those consuming 0g having a mean concentration of 12.58 μg/L of enterodiol, a mean of 27.28 μg/L for those consuming 1-10g, a mean of 30.64μg/L for those consuming 11-24g and a mean of 42.51 for those consuming more than 25g. Enterolactone followed a similar trend. As dietary fiber is a large component of fruits, vegetables, grains and legumes, it is believed that no

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significant differences were observed for these categories as a result of a much reduced sample size.

Somewhat surprisingly, individuals who consumed more than 28 g of alcohol the day previous to sampling had significantly lower mean concentrations of daidzein and o-desmethylangolensin. For daidzein, this was more than a 20μg/L decrease with those who consumed no alcohol having a mean concentration of 63.53μg/L and those who consumed more than 28 g having a mean concentration of 41.49μg/L. For o-desmethylangolensin, the mean concentration was 4.43 μg/L for those who consumed no alcohol and 2.55 μg/L for those who consumed more than 28 g.

For a complete listing of all the descriptive statistics for the chemical group of phytoestrogens, please see Appendices 5-10.

5.2.2 Patterns of Exposure

Table 4 indicates the weighted correlations between phytoestrogens. High correlations were observed between diadzein and desmethylangolensin ($r=0.67$, $p<0.0001$) and diadzein and genistein ($r=0.79$, $p<0.0001$) with moderate correlations observed between genistein and desmethylangolensin ($r=0.47$, $p<0.0001$) and enterolactone and enterodiol ($r=0.49$, $p<0.0001$). Stronger correlations were observed within the category of isoflavones (daidzein, genistein, equol, desmethylangolensin) and within the category of lignans (enterolactone, and enterodiol) than between these two groups.

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Table 4: Correlations among Phytoestrogens

Phytoestrogen	diadzein	o-desmethyl-angolensin	equol	enterodiol	enterolactone	genistein
diadzein	1.00	0.65	0.23	0.18	0.18	0.77
o-desmethylangolensin	-	1.00	0.24	0.20	0.31	0.45
equol	-	-	1.00	0.19	0.23	0.24
enterodiol	-	-	-	1.00	0.49	0.18
enterolactone	-	-	-	-	1.00	0.06
genistein	-	-	-	-	-	1.00

* all correlations significant at $p<0.0001$
* minimum sample size n=4946

These correlations were applied in order to select one endocrine disrupting chemical to be carried forward. The mean correlation (as defined as the sum of the correlation coefficients for that phytoestrogen divided by the total number of correlations) was calculated, and combined with the frequency of detection, total sample size and the scientific literature in order to select one toxicant. A summary of this is presented in Table 5.

Table 5: Summary Table for Phytoestrogens

Phytoestrogen	Mean correlation	% detectable	n
Enterodiol	0.25	94.00%	5341
Diadzein	0.40	95.60%	5347
Genistein	0.34	96.60%	5351
Desmethylangolensin	0.37	74.20%	5065
Equol	0.23	70.80%	4976
Enterolactone	0.25	98.50%	5342

* all correlations significant at $p<0.0001$
* minimum sample size n=4946

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Diadzein, genistein, and o-Desmethylandolensin had the highest mean correlation with all phytoestrogens, however, diadzein and genistein had higher percentage of detectable samples. As genistein has been shown to have stronger estrogenic properties than diadzein (Zhang, 2007) and some concern has been raised over the genotoxicity of this substance (Klein, 2007), genistein was chosen to be carried forward for more detailed analysis.

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5.2.3 Characteristics of Individuals with High and Low Exposures

5.2.3.1: Classification and Regression Tree:

Figure 5: Classification and Regression Tree for Genistein

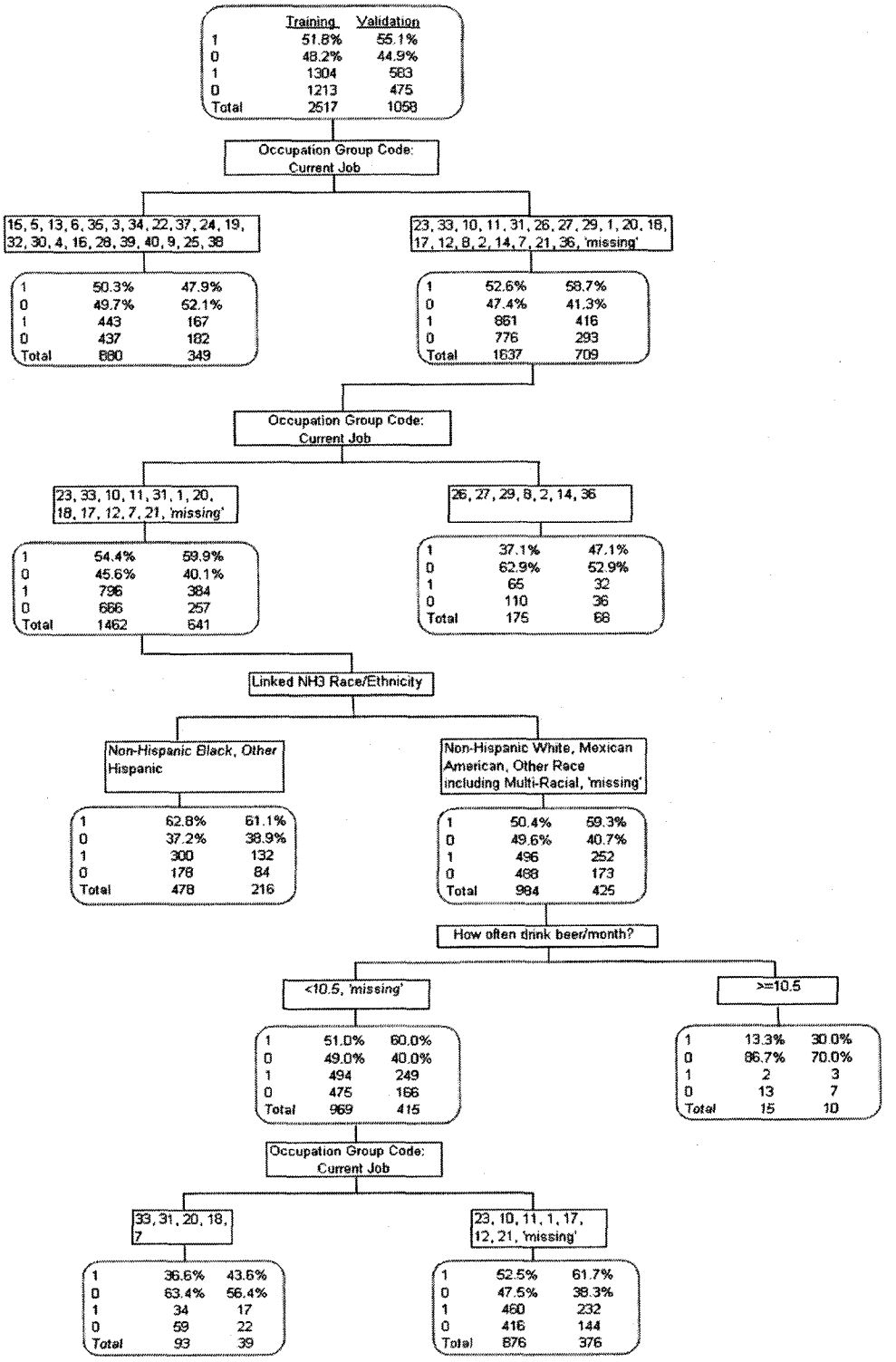

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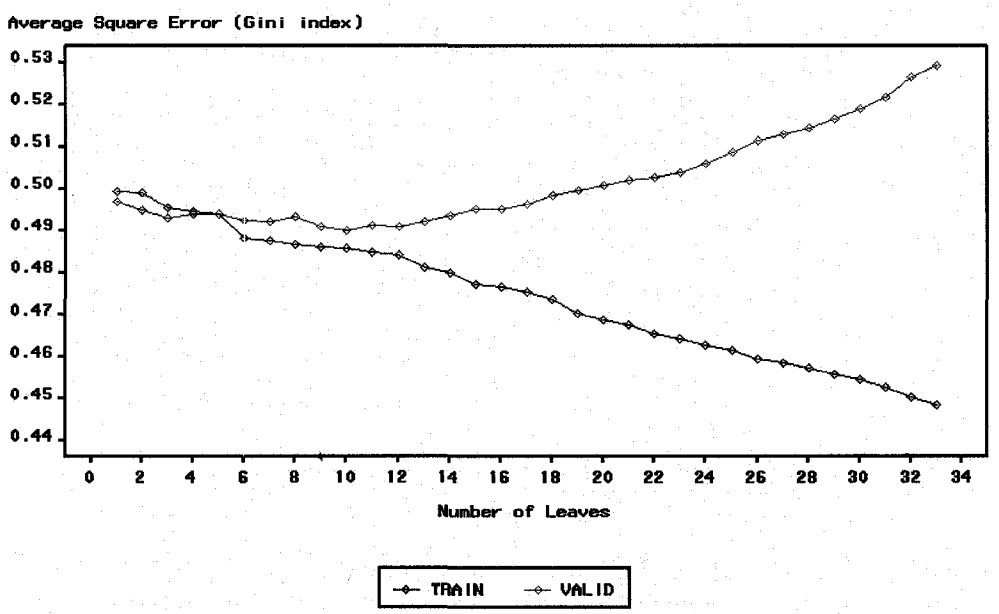
Figure 5 is the Classification and Regression Tree for genistein. Only one chemical compound was chosen as an example of that chemical family of compounds. In this instance, there was a strong correlation between compounds within this chemical family, and results from descriptive statistics indicated that there were similar trends in predictors of exposure.

In Figure 5, "1" represents those who are high body burden (upper 1/3 of the distribution) and "0" represents those who are low body burden (lower 1/3 of the distribution). As previously indicated in the methods section, 70% of the data were fit to a training dataset and 30% fit to a validation dataset. Results of both are presented in Figure 5, with the English Rules associated with this Tree appearing in Appendix 5.

Figure 6: Average Square Error (Gini Index) for the training and validation data for the Classification and Regression Tree of Genistein



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The tree that yielded the best model had a total of six leaves and four nodes in addition to the root node. Three variables were identified from this tree as useful criteria by which to classify individuals as either high or low body burden. These were 1) current occupation 2) Race/Ethnicity and 3) How often drank beer in past month. The first binary split occurred with occupation, however, this was not necessarily an informative split as there were only slight differences in the two groups produced in terms percentage of individuals classified as high or low body burden. In general, this model showed little differentiation between individuals who were high or low body burden as many of the splits produced approximately equal numbers of high exposure and low exposure individuals. Moreover, the misclassification rate for this was 0.45 for the training data and 0.44 for the validation data.

Despite this, there were some splits that gave some indication of useful criteria for classifying individuals as either high or low body burden. The split that indicated the greatest percent of high body burden individuals was those in Cleaning and Building Service Occupations; Machine Operators, Assorted Materials; Sales Representatives, finances, business & commodities; Sales Workers, Retail and Personal Service ; Extractive and Precision Production Occupations; Executive, Administrators, & Managers; Cooks ; Protective Service Occupations; Private Household Occupations; Secretaries, Stenographers, and Typists; Other Professional Specialty Occupations; or Miscellaneous Food Preparation and Service Occupations, and who were either non-Hispanic Blacks or other Hispanics. In the training data, 62.8% of individuals with these characteristics were high body burden. Similar results were also found in the validation data with 61.1% of these individuals being classified as high body burden.

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Somewhat surprisingly, individuals in these same occupations who were non-Hispanic White, Mexican American, or other Race-including multiracial and who drank ten or more beer per month had the lowest percent of individuals who were classified as having high body burden (training=13.3%; validation=30.0%). However, this is most likely an artifact of the small sample size.

Other variables identified by the importance measure of the CART analysis were age, vigorous activity over past 30 days, taken prescription medication over past month, country of birth, average level of physical activity each day, education, gender, number of prescription medication taken, and annual family income. These were carried forward, along with other known/suspected predictors of exposure to analysis to weighted linear regression.

5.2.3.2 Regression Analyses:

The classification and regression tree was divided by the first major splits, and regression analysis was done on each of these branches. In this case, occupation provided the major split, and three separate occupational groupings were modeled. Please see table 6 for a list of occupations within each occupational grouping. Recall that phytoestrogens are measured as urinary metabolites and were subject to creatinine adjustment in this analyses.

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Table 6: List of Occupations within Each Phytoestrogen Occupational Grouping

Occupational Group 1	Occupational Group 2	Occupational Group 3
Material Recording, scheduling, distributing clerks(15)	Cleaning and Building Service (23)	Farm and Nursery Workers (26)
Teachers(5)	Machine Operators, Assorted Materials(33)	Related Agricultural, Forestry and Fishing (27)
Information Clerks(13)	Sales Representatives(10)	Other Mechanics and Repairers(29)
Writers, Artists, Entertainers & Athletes(6)	Sales workers, retail, and personal service (11)	Technicians and Related Support Occupations(8)
Motor Vehicle Operators(35)	Extractive, and Precision Production (31)	Management Related Occupations (2)
Engineers, Architects and Scientists(3)	Executive, Administrators & Managers(1)	Records Processing (14)
Fabricators, Assemblers, Inspectors, and Samplers (34)	Cooks (20)	Other Transportation and Material Moving (36)
Health Service Occupations (22)	Protective Service (18)	
Construction Laborers (37)	Private Household (17)	
Personal Service (24),	Secretaries, Stenographers, and Typists (12)	
Waiters and Waitresses(19)	Other Professional Specialty (7)	
Textile, Apparel, and Furnishings Machine Operators(32)	Miscellaneous Food Preparation and Service (21)	
Construction Traders(30)		
Health Diagnosing, Assessing & Treating(4)		
Miscellaneous Administrative Support (16)		
Vehicle and Mobile Equipment Mechanics, Repairs (28)		
Freight, Stock, and Material Movers (39)		
Other Helpers, Equipment Cleaners (40)		
Supervisors, and Proprietors (9)		
Farm Operators, Managers and Supervisors (25)		
Labourers, Except Construction(38)		

As supported by the CART, neither occupation grouping 1 or occupation grouping 3 had any statistically significant predictors in either then logistic or the regression trees. Although country of birth proved to a significant predictors of genistein exposure in occupational group 2, the r^2 for the model was relatively low ($r^{2=}0.10$ with creatinine concentrations accounting for 8.65% of the variability. Overall, ln transformed genistein concentrations were 0.50 μg/L less for those born in Mexico, and 0.37 μg/L higher for those born elsewhere when compared with those who were born in the United States. Although race/ethnicity could have been used in place of country of birth in this model, the r^2 improved by using country of birth and was thus chosen. Please see Table 7.

Similar models and conclusions were met using logistic regression. Only those in occupational group 2 had any significant predictors with country of birth gaining

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significance in this model. Similar to the linear regression models, had a decreased odds of being high body burden when compared with those who were born in the United States (OR: 0.44; CI: .23-0.87). Please see Table 8.

Table 7: Linear Regression Analysis for Genistein Stratified by Occupational Grouping

Characteristics affecting body burden of genisten for those in all occupations				
Parameter	*Estimate*	*p-value*	*Model R^2*	*p-value*
Intercept	2.57	<0.0001	7.83	<0.0001
Creatinine	0.01	<0.0001		
Characteristics affecting body burden of genisten for those in occupational group 1*				
Parameter	*Estimate*	*p-value*	*Model R^2*	*p-value*
Intercept	2.53	<0.0001	0.06625	<0.0001
Creatinine	0.01	<0.0001		
Characteristics affecting body burden of genisten for those in occupational group 2*				
Parameter	*Estimate*	*p-value*	*Model R^2*	*p-value*
Intercept	2.60	<0.0001	0.1018	<0.0001
Country of Birth		0.0018		
Mexico	-0.50	0.0027		
Elsewhere	0.37	0.2094		
50 US States	0.00	.		
Creatinine	0.01	<0.0001		
Characteristics affecting body burden of genisten for those in occupational group 3*				
Parameter	*Estimate*	*p-value*	*Model R^2*	*p-value*
Intercept	2.25	<0.0001	0.08688	<0.0001
Creatinine	0.01	<0.0001		

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Table 7: Logistic Regression Analysis for Genistein Stratified by Occupational Grouping

Characteristics affecting body burden of genisten for those in all occupations		
Parameter	*Odds Ratio*	*95% CI*
Creatinine	1.01	1.01-1.01
Characteristics affecting body burden of genisten for those in occupational group 1*		
Parameter	*Odds Ratio*	*95% CI*
Creatinine	1.01	1.0-1.01
Characteristics affecting body burden of genisten for those in occupational group 2*		
Parameter	*Odds Ratio*	*95% CI*
Country of Birth		
Mexico vs. 50 US States	0.44	0.23-0.87
Elsewhere vs. 50 US States	1.47	0.46-4.72
Creatinine	1.01	1.01-1.01
Characteristics affecting body burden of genisten for those in occupational group 3*		
Parameter	*Odds Ratio*	*95% CI*
Creatinine	1.01	1.01-1.01

5.3 Discussion of Genistein Results

CART analyses combined with regression analyses failed to reveal any relevant predictors of exposure with the exception of country of birth. The major split created by CART was with occupation. However, there are no known occupational exposures to phytoestrogens, as exposure occurs through ingestion of foods containing phytoestrogens.

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Although there is some plausibility in an occupational grouping in that individuals who seek employment in the same field may share similar personality traits, dietary preferences or behaviors, the grouping of such disparate occupations is more indicative of a false association produced via statistical artifact rather than a true association.

One major limitation of these models is that they are lacking information on dietary consumption of soy or soy based products. As this would be expected to be the major source of exposure, it is not surprising that the models did not capture the variability in genestein levels well. It is expected that had the questionnaires better captured this exposure that the models would have performed much better.

It is not surprising however, that country of birth was significant, with those born elsewhere having higher concentrations that either those born in the 50US States or Mexico, given high concentrations of soy based foods in Asia. What is problematic, however, is that this variable encompasses a broad range of countries and dietary habits, therefore full understanding of the reasons for these differences is difficult.

The finding from the CART that alcohol consumption may alter genistein levels is interesting and something that may merit additional study, given that urinary phytoestrogens levels are modified by factors which would affect intestinal bacteria. Future research, in which questionnaires specifically target sources of exposure to phytoestrogen, is necessary in order to better understand the characteristics of individuals that have a high body burden of phytoestrogens.

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CHAPTER 6: HERBICIDES

6.1 Introduction to Herbicides (2,4-Dichlorophenoxyacetic acid)

6.1.1 Sources of 2,4-Dichlorophenoxyacetic acid:

2,4-dichlorophenoxyacetic acid (2,4-D) is a selective herbicide which controls broadleaf weeds in residential, agricultural and aquatic environments. These chemicals have complex mechanisms of action against weeds, resembling those of grown hormones. Once absorbed, 2,4-D accumulates at the growing points of the roots and shoots where it inhibits growth. In 2001, approximately 28-33 million pounds of 2,4-D were used in the United States (U.S. EPA, 2004).

6.1.2 Exposure Route and Exposed Populations:

2,4-D is rapidly absorbed via oral and inhalation routes. The general population may be exposed to 2,4-D by using it on lawns, crops, or in forests as well as by consuming food or drinking water that contains 2, 4-D. Dermal absorption is not a major route of exposure for the general population, but may be of some significance in herbicide workers. This population may have higher than average exposures due to exposure to increased concentrations for prolonged periods of time (CDC, 2005).

6.1.3 Fate, Transport and Metabolism:

2,4-D has a low soil sorbtion and a high potential for leachability (Montgomery, 1993). As such, it moves quickly through soil, and can often be found in groundwater supplies throughout the globe. Once 2,4-D enters the body it is distributed widely throughout the various organs and tissue. It is eliminated unchanged in the urine, and has an elimination half-life ranging from 10-33 hours (Kohli et al., 1974b; Sauerhoff et al., 1977).

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6.2 Results for 2,4-Dichlorophenoxyacetic acid

6.2.1 Exposure Levels:

Only 39.3% of 2, 4- Dichlorophenoxyacetic acid (2, 4-D) samples had a result above the limit of detection, and as a result, further analysis was not conducted.

CHAPTER 7: METALS

7.1 Introduction to Metals

7.1.1 Sources of Cadmium and Lead:

Cadmium is a natural element in the earth's crust, and is usually found in combination with other elements. Most cadmium is extracted during the processing of zinc-containing ores and to a lesser extent, during lead and copper extraction from sulfide ore (ATSDR, 2008). Cadmium is predominantly used for the manufacture of batteries, but it is also used for pigments, coatings and plating, as well as a stabilizer for plastic. A very small percentage (0.5%), is used for nonferrous alloys and other uses (CDC, 2005).

Lead, similarly, is a naturally occurring element found in soils and rocks. It is commonly used in the manufacture of storage batteries, as well as solders for electrical components and automobile radiators. It is also used in metal alloys, plastics, leaded glass, ceramic glazes, ammunition, antique-molded or cast ornaments, and in shielding used against radiation sources. In the past, lead was added to residential paints and gasoline and has been used in plumbing for centuries.

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7.1.2 Exposure Route and Exposed Populations:

Cadmium enters the body via inhalation and ingestion. In smokers, inhalation of cigarette smoke is the primary route of exposure. Occupational exposures may also occur from working in a battery manufacturing plant, metal soldering or welding on cadmium-alloyed metals. However, for non-smokers who are not occupationally exposed, the primary source of exposure to cadmium food. This is a result of the absorption and bioaccumulation of cadmium by biological tissues such as fish, plants and animals. It has been estimated that the geometric mean daily intake of cadmium is 18.9 μg/day, or 0.4 μg/kg/day (Choudhury et al., 2001). Several studies have found the gastrointestinal absorption of dietary cadmium to be approximately 5% (Diamond et al, 2003), however, other studies have suggested that this value may be five-to-ten-fold greater in young women (Kikuchi et al, 2003; Horiguchi et al., 2004a).

Lead again enters the body via ingestion and inhalation. Adult exposures tend to be limited to certain occupational exposures (i.e. occupations involving the manufacture of storage batteries, industrial smelters) and recreational sources (i.e. artisan activities involving leaded ceramic glazes). However, in the past lead in gasoline and in solders used in canned food containers were major sources for this population. For children, the major sources of exposure are deteriorated lead-based paint, and the resulting dust and soil contamination (CDC, 2005).

7.1.3 Fate, Transport and Metabolism:

Cadmium primarily enters the air from anthropogenic activities, such as mining, industry, and the combustion of coal and household wastes (ATSDR, 2008), and can then travel long distances before settling on soil or water. Cadmium can also enter water and soil

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directly from waste disposal and spills or leaks at hazardous waste sites. Cadmium binds strongly to soil particles, but only some cadmium dissolves in water. In the environment, cadmium remains relatively stable, and does not breakdown, although it can change forms.

Lead is similar to cadmium in that it can also travel long distances in air before settling on soil or water. Lead also binds strongly to soil particles. In terms of groundwater however, the movement of lead from soil to groundwater depends strongly on the type of lead compound and the characteristics of the soil (ATSDR, 2007). In the environment, lead does not break down; however, lead compounds are changed by sunlight, air and water. From the environment, fish, plants, animals and humans, can absorb cadmium and lead where they can accumulate due to their very long half-life in biological tissues.

Cadmium is not known to undergo any metabolic conversion such as oxidation, reduction, or alkylation in the body. In the human body, the main portion of the cadmium body burden is found in the liver and kidney and in other tissues such as muscle, skin, and bone.Plasma cadmium circulates primarily bound to metallothionein, but also to albumin and other compounds as well (Foulkes and Blanck 1990; Roberts and Clark 1988). The estimated half-life of cadmium in the kidney is one to four decades (ATSDR, 1999; Diamond et al., 2003).

In the body, lead is bound to erythrocytes and distributed to soft tissues such as the brain, kidneys, bone marrow, gonads, and the subperiosteal surface and matrix of bone. Lead clearance from the body is characterized by a multi-compartmental model, with a half-life in blood and soft-tissues of 1 to 2 months, and in the skeleton, a half-life of years to decades (CDC, 2005). Approximately 70% of lead excretion occurs via urine, with lesser amounts in feces, sweat, hair and nails (Leggett, 1993; O'Flaherty, 1993). Approximately

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half of the absorbed lead is incorporated into bone. Approximately 90% of the body burden of lead is found in bone in most adults (CDC, 2005).

7.2 Results for Metals

7.2.1 Exposure Levels:

Both urinary lead and urinary cadmium had high percentages of detectable samples. For lead, 98.2% of the samples were above the limit of detection and for cadmium, 96.3% were above the limit of detection.

Opposite trends were observed for these two heavy metals in relation to age. For lead, children between the ages of 5-11 had the highest body burden with a mean concentration of 0.88μg/L. This was significantly higher than those between the ages of 12-19 and those 20-40 ($p<0.05$). A slight increase in body burden was observed in those over 41 when compared with those in the aforementioned categories; however, this was not a statistically significant increase.

Cadmium however, followed a different trend with body burden increasing with age. Those 5-11 years of age had a body burden of 0.08 μg/L, which increased to 0.13μg/L for those 12-19 years of age, 0.21 μg/L for those 20-40 years of age, 0.34 μg/L for those 41-55 years of age, and to 0.38 μg/L for those over 55 years old. With the exception of the mean concentration for those 41-55 and that for those over 55 years of age, all means were statistically significantly different (<0.05).

For both cadmium and lead, non-Hispanic Blacks had the highest mean concentration. The mean lead concentration for non-Hispanic blacks was 1.01 μg/L which was significantly higher than all other races, with the exception of Mexican Americans,

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which was also high (0.93 μg/L). The mean cadmium concentration for non-Hispanic blacks was 0.30 μg/L (See Appendices 38-39).

Of some concern is the fact that women who reported being pregnant had significantly higher body burdens of lead when compared with those who were not pregnant (0.80 μg/L vs. 0. 0.58 μg/L; $p<0.05$). As well, women who were breastfeeding had borderline significantly lower means than those who were not breastfeeding (0.34 μg/L vs 0.57 μg/L) indicating that some of this body burden may be transferred to the newborn baby in the form of breast milk. No statistically significant differences were observed for cadmium in terms of pregnancy status, although, a similar result (albeit only borderline significant) was found for breastfeeding (breastfeeding=0.14 μg/L; not breastfeeding=0.21 μg/L).

Individuals who worked in extractive and precision production occupations, who were construction labourers and other labourers, all had relatively high concentrations of cadmium in their urine when compared with other occupations. For lead, the same was true for construction labourers and other labourers; however, information was not available for extractive and precision occupations. It must be mentioned that results for other labourers should be interpreted with caution as the number of subjects in this grouping was relatively small (n=11).

Also of interest, were the results for caffeine and tobacco smoke exposure. Those individuals who consumed greater than 400mg of caffeine had higher mean concentrations of cadmium in their urine. Those who consumed more than 400mg had a mean concentration of 0.35 μg/L of cadmium, whereas those who consumed 0-400 had a mean concentration of 0.22 μg/L, and those that consumed no caffeine had a mean concentration of 0.20 μg/L. Not surprisingly, those individuals exposed to tobacco smoke had a

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significantly higher mean than those who did not smoke (mean=0.29 μg/L vs. 0.21 μg/L; $p<0.05$). This is not surprising given that tobacco smoke is one of the major sources of exposure to cadmium.

7.2.2 Patterns of Exposure:

Table 9: Correlations among Metals

Metal	Urinary Cadmium	Urinary Lead
Urinary Cadmium	1.00	0.42
Urinary Lead	-	1.00

* all correlations significant at $p<0.0001$

A moderate, but highly significant correlation was observed between urinary lead and urinary cadmium ($r=0.42$, $p<0.0001$).

Table 10: Summary Table for Metals

Metal	mean correlation	% detectable	n
Urinary Cadmium	0.42	96.30%	4946
Urinary Lead	0.42	98.20%	5155

Given that there is a knowledge gap concerning cadmium exposures and sources exists within the literature, and that lead is better understood, this chemical was chosen to be carried forward (see Table 10).

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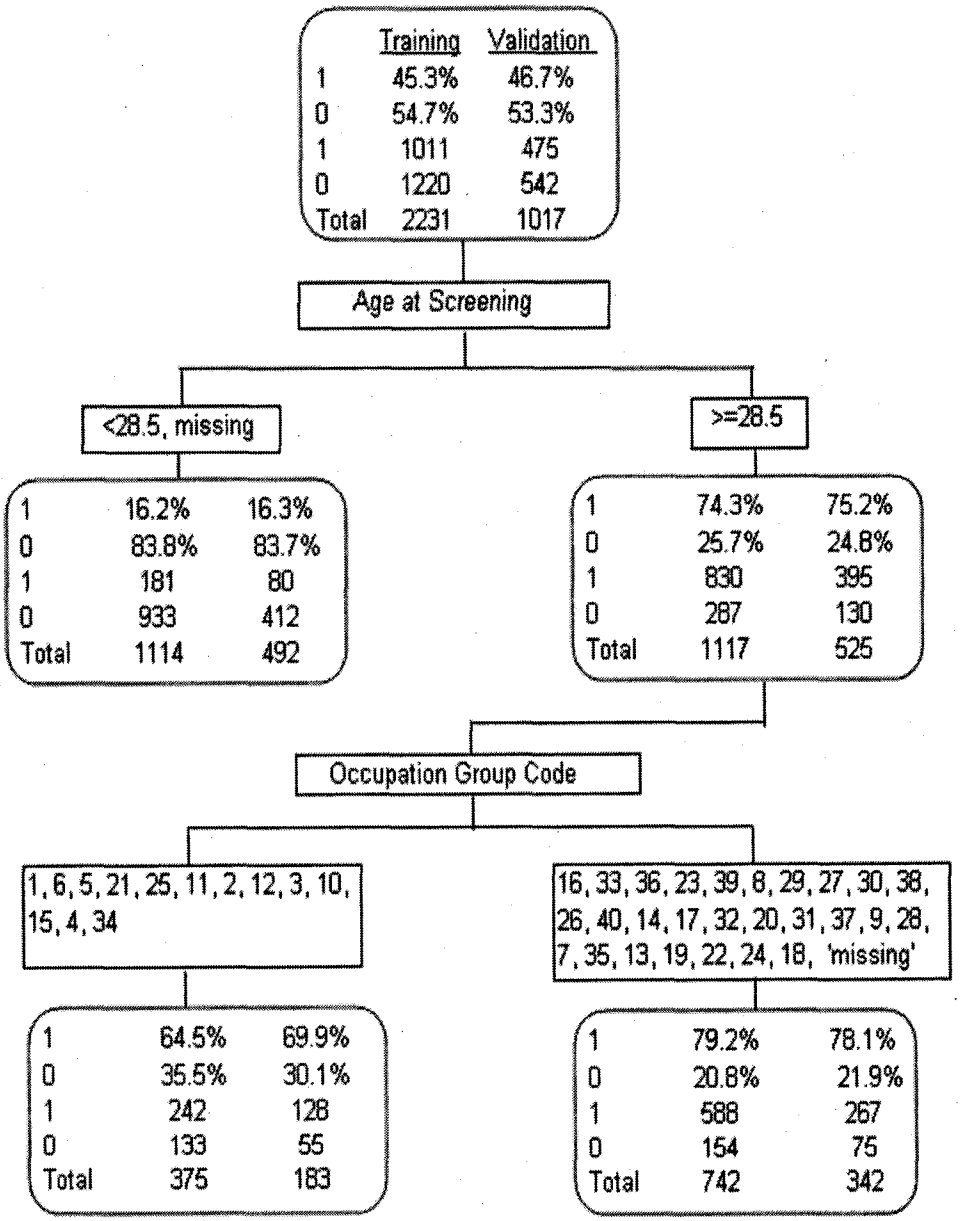
7.2.3 Characteristics of Individuals with High and Low Exposures

7.2.3.1 Classification and Regression Tree:

Figure 7: Classification and Regression Tree for Cadmium



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Here the first major binary split occurred with age, with 75.2% of the individuals 28.5 years of age or over falling into the high body burden category. Results were very similar in the validation dataset, with 75.2% of those 28.5 years of age or older falling into this category. Conversely, only 16.2% of individuals less than 28.5 years of age were high body burden, with the majority of individuals falling into the low exposure group (83.8%). In an unadjusted, weighted logistic regression model, this translated into an OR of 4.4 (CI: 3.7-5.2) or in other words, those that were 28.5 years of age or older had a 4.4 times greater risk of having a high body burden of cadmium then those who were less than 28.5 years of age.

The variable creating the second major split was occupation with those in primarily 'blue collar' occupations (Table 11 for a full listing of occupations) who were greater than 28.5 years of age, having the highest percentage of individuals being classified as high body burden. This was a total of 79.2% of individuals in the training data, and 78.1% of individuals in the validation data.

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Table 11: List of Occupations within Each Occupational Grouping for Cadmium

Occupational Group 1	Occupational Group 2
Executive, Administrators & Managers (1)	Miscellaneous Administrative Support (16)
Writers, Artists, Entertainers & Athletes (6)	Machine Operators, Assorted Materials (33)
Teachers (5)	Other Transportation and Material Moving (36)
Miscellaneous Food Preparation and Service (21)	Cleaning and Building Service (23)
Farm Operators, Managers and Supervisors (25)	Freight, Stock, and Material Movers (39)
Sales workers, retail and personal service (11)	Technicians and Related Support Occupations (8)
Management Related Occupations (2)	Other Mechanics and Repairers (29)
Secretaries, Stenographers, and Typists (12)	Related Agricultural, Forestry and Fishing (27)
Engineers, Architects and Scientists (3)	Construction Traders (30)
Sales Representatives (10)	Labourers, Except Construction (38)
Material Recording, Scheduling, distributing clerks (15)	Farm and Nursery Workers (26)
Health Diagnosing, Assessing & Treating (4)	Other Helpers, Equipment Cleaners (40)
Fabricators, Assemblers, Inspectors and Samplers (34)	Records Processing (14)
	Private Household (17)
	Texctile, Apparel and Furnishings Machine Operators (32)
	Cooks (20)
	Extractive and Precision Production (31)
	Construction Laborers (37)
	Supervisors and Proprietors (9)
	Vehivle and Mobile Equipment Mechanics, Repairs (28)
	Other Professional Specialty (7)
	Motor Vehicle Operators (35)
	Information Clerks (13)
	Waiters and Waitresses (19)
	Health Service Occupations (22)
	Personal Service (24)
	Protective Service (18)

Overall, there were fairly consistent results between the training and the validation data with almost all of the reduction in the average square error coming from the first split in age, which created a total of two leaves (see Figure 8). The model presented above has a total of 3 leaves and an internal node in addition to the root node. Although a more complex dendogram could have been presented, this would have only reduced the average square error (Gini Index) from 0.32 with three leaves to 0.26 for 28 leaves for the training dataset. For the validation dataset, less of the average square error would have been predicted at 28 leaves (Gini Index=0.3355) than with the three leaves (Gini Index=0.3237). Given that very little additional information would have been obtained by adding significant complexity to the model, a model with three leaves was chosen. This model resulted in a misclassification rate of 21%.

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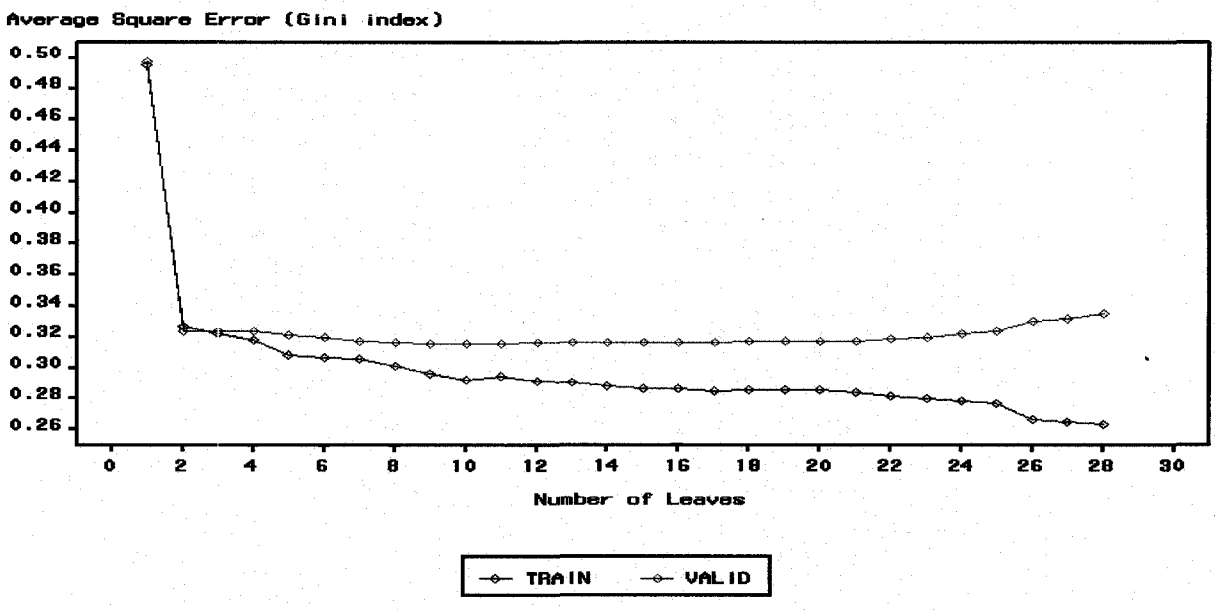
Figure 8: Average Square Error (Gini Index) for the training and validation data for the CART analyses for Cadmium



Variables identified by the importance measure of the classification tree to be carried forward to weighed regression modeling were age at screening, education, number of prescription medications taken, took prescription medications in last month, marital status, caffeine consumption, occupation group code, annual family income, CPS Family poverty income ratio, and average level of physical activity per day.

7.2.3.2 Regression Analysis:

Recall that cadmium was measured as urinary metabolites and was subject to creatinine adjustment in this analysis. The first major split created by the classification and regression tree was age, with the split occurring at 28.5 years of age. Therefore, stratified analysis was done with each age group being modeled separately. On it own, age accounted for 22.5% of the variability in urinary cadmium concentrations when treated as a

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continuous variable. Some of this variability was accounted for creatinine, however, it was a relatively small percentage (0.04%) and was non-significant. However, in order to adjust for any confounding by urinary dilution, it was included in the model.

For both age groups, race/ethnicity and age as a continuous variable proved to be the major predictors, accounting for 11.17% of the variability in those less than 28.5 years of age, and approximately 6.4% in those greater than 28.5 years of age. The effect of age was greater in the younger group with an r^2 value of 0.07422 when compared with that of the older group (r^2=0.03). Correspondingly, the β-coefficient was also greater in the younger group (β =0.05 vs. β =0.01). In terms of race/ethnicity, the β -coefficients for non-Hispanic Blacks and other-race, including multi-racial were the greatest, when adjusted for age, in both categories analyzed.

Logistic regression revealed similar results. In all models, age and race/ethnicity were significant predictors of body burden. When all ages were examined, their was an increased odds of being high body burden per one year increase in age (OR: 1.05; CI: 1.04-1.05). As well, Non-Hispanic Blacks (OR: 2.42; CI: 1.82-3.21), Other Race-Including Multi-Racial (OR: 2.31; CI: 1.35-3.97) and Other Hispanics (OR: 1.73; CI: 1.02-2.94) all had increased odds of being high body burden when compared with those who were non-Hispanic White. Similar results were found when the analysis was stratified by age. As in the case of the linear regression, the effect of age was greater in the younger age category (OR: 1.10 vs. 1.02). In terms of race, those who were Non-Hispanic Black, Other Race-Including Multiracial, and Other Hispanic all had statistically significantly higher odds of being high body burden in the those <28.5 years of age. In the older age category, only Non-Hispanic Blacks had statistically significantly higher odds of being high body burden. Please see Table 13.

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Table 12: Linear Regression Analyses for Cadmium Stratified by Age

Characteristics affecting body burden of cadmium for those of all ages				
Parameter	*Estimate*	*p-value*	*Model R^2*	*p-value*
Intercept	-2.27	<0.0001	0.2252	<0.0001
Age in Years	0.02	<0.0001		
Creatinine	-2 x 10 -4	0.1515		
Characteristics affecting body burden of cadmium for those less than 28.5 years of age				
Parameter	*Estimate*	*p-value*	*Model R^2*	*p-value*
Intercept	-2.97	<0.0001	0.1117	<0.0001
Age in Years	0.05	<0.0001		
Race/Ethnicity		<0.0001		
Non-Hispanic Black	0.44	<0.0001		
Mexican American	0.23	0.0002		
Other Race-Including Multi-Racial	0.45	<0.0001		
Other Hispanic	0.22	0.064		
Non-Hispanic White	0.00	-		
Creatinine	0.00	0.2467		
Characteristics affecting body burden of cadmium for those greater than 28.5 years of age				
Parameter	*Estimate*	*p-value*	*Model R^2*	*p-value*
Intercept	-1.74	<0.0001	0.0642	<0.0001
Age in Years	0.01	<0.0001		
Race/Ethnicity		<0.0001		
Non-Hispanic Black	0.51	<0.0001		
Mexican American	0.11	0.103		
Other Race-Including Multi-Racial	0.49	0.0016		
Other Hispanic	0.23	0.0136		
Non-Hispanic White	0.00	.		
Creatinine	0.00	0.5639		

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Table 13: Logistic Regression Analyses for Cadmium Stratified by Age

Characteristics affecting body burden of cadmium for those of all ages		
Parameter	*Odds Ratio*	*95% CI*
Age in Years	1.05	1.04-1.05
Race/Ethnicity		
Non-Hispanic Black vs. Non-Hispanic White	2.42	1.82-3.21
Mexican American vs. Non-Hispanic White	1.23	0.97-1.55
Other Race-Including MultiRacial vs. Non-Hispanic White	2.31	1.35-3.97
Other Hispanic vs. Non-Hispanic White	1.73	1.02-2.94
Creatinine	1.00	0.99-1.00
Characteristics affecting body burden of cadmium for those less than 28.5 years of age		
Parameter	*Odds Ratio*	*95% CI*
Age in Years	1.10	1.08-1.13
Race/Ethnicity		
Non-Hispanic Black vs. Non-Hispanic White	2.43	1.70-3.48
Mexican American vs. Non-Hispanic White	1.20	0.90-1.59
Other Race-Including Multi-Racial vs. Non-Hispanic White	2.81	1.26-6.26
Other Hispanic vs. Non-Hispanic White	2.03	1.21-3.42
Creatinine	1.00	0.99-1.00
Characteristics affecting body burden of cadmium for those greater than 28.5 years of age		
Parameter	*Odds Ratio*	*95% CI*
Age in Years	1.02	1.01-1.04
Race/Ethnicity		
Non-Hispanic Black vs. Non-Hispanic White	3.05	1.95-4.79
Mexican American vs. Non-Hispanic White	1.29	0.80-2.10
Other Race-Including Multi-Racial vs. Non-Hispanic White	1.83	0.96-3.49
Other Hispanic vs. Non-Hispanic White	1.51	0.72-3.16
Creatinine	1.00	1.00-1.00

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7.3 Discussion of Cadmium Results

Final regression models indicate that only age and race/ethnicity are significant predictors of cadmium. It is not surprising that age was a major contributor of overall cadmium body burden, given its long half-life in biological tissues. It is somewhat surprising that race/ethnicity was a predictor of internal concentrations, given that there are no obvious reasons for these differences. Blacks have been shown to start smoking at later ages than Whites (Hunter et al., 1986) and smoke fewer cigarettes per day (Darby, 1985). However, they may be more likely to live in multi-unit dwellings where there is a greater likelihood of exposure to second-hand smoke. As well, there is some evidence that there is greater soil contamination in low-income areas and minority communities as a result of intensive industrial practices (Diwara, 2006), which may contribute to these results. There may also be genetic differences with contribute to absorption or metabolism of cadmium, however, these differences have not been extensively studied to date, and are therefore speculative.

CHAPTER 8: PHTHALATES

8.1 Introduction to Phthalates

8.1.1 Sources of Phthalates

Phthalates are industrial chemicals which are often found in a variety of consumer products, including vinyl flooring; adhesives; detergents; lubricating oils; solvents; automotive plastics; plastic clothing; personal care products; as well as some medical pharmaceuticals (CDC, 2005). Mono-n-butyl phthalate, which will be discussed in greater

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detail in the thesis than the other phthalates, is a metabolite of dibutyl phthalates, and is used in consumer products such as nail polish, cosmetics, printing inks, pharmaceutical coatings and insecticides (ATSDR, 2001).

8.1.2 Exposure Route and Exposed Populations

The primary route of exposure to phthalates in general is ingestion; however, studies have also indicated that inhalation may be an important route of exposure (Adibi et al., 2003; Dirven et al., 2993; Liss et al., 1985; Nielsen et al, 1985; Otake et al, 2004). For dibutyl phthalate in particular, people may be exposed via air, water, or food given its widespread nature in the environment. Globally, concentrations of approximately 0.01 ppb can be found in air, however, levels in cities are often higher at 0.03-0.06ppb. Levels may be higher in air following nail polish application, or installation of carpet containing dibutyl phthalate. In drinking water, dibutyl phthalate can be present at concentrations between 0.1-0.2 ppb. The highest concentrations however, have been found in food, with levels ranging from about 40-570 ppb.

High exposures would be expected in people who live or work near or in a factory that makes or uses dibutyl phthalate (ATSDR, 2001), as they would be expected to breathe contaminated air, drink contaminated water, and potentially be in contact with contaminated soil. There is also some concern near landfills, where products containing dibutyl phthalates may be discarded, and be therefore dibutyl phthalate may be leeched into the air, water or soil (ATSDR, 2001).

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8.1.3 Fate, Transport and Metabolism

Dibutyl phthalate can enter the air when paint dries or new carpets are installed, as well as by sticking to dust particles. Unless stuck to dust particles, dibutyl phthalate usually breaks down within a few days in air. When attached to dust, however, it can travel for miles in air before settling to the ground. In water and soil, bacteria break down dibutyl phthalate, however, the length of time can be quite variable depending on factors such as temperature. If untransformed by bacteria, dibutyl phthalate can get into groundwater and contaminate well water (ATSDR, 2001).

Phthalates are metabolized and excreted quickly, and as a result have a relatively short half-life in the body (Anderson et al., 2001). In the intestine, phthalate diesters are hydrolyzed to their corresponding monoester and absorbed into the body (Albro et al., 1982; Albro and Lavenhar, 1989). These metabolites may then be further oxidized in the body before being excreted in urine.

Table 14: Phthalates and their Metabolites

Phthalate	Urinary Metabolite
Dimethyl phthalate	Mono-methyl phthalate
Diethyl phthalate	Mono-ethyl phthalate
Dibutyl phthalate	Mono-n-butyl phthalate Mono-isobutyl phthalate
Benzylbutyl phthalate	Mono-benzyl phthalate Some mono-n-butyl phthalate
Dicyclohexyl phthalate	Mono-cyclohexyl phthalate
Di-2-ethylhexyl phthalate	Mono-2-ethylhexyl phthalate Mono-(2-ethyl-5-oxohexyl) phthalate Mono-(2-ethyl-5-hydroxyhexyl) phthalate
Di-n-octyl phthalate	Mono-n-octyl phthalate Mono-(3-carboxypropyl) phthalate
Di-isonyl phthalate	Mono-isononyl phthalate

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8.2 Results for Phthalates

8.2.1 Exposure Levels:

For six of the nine urinary phthalate metabolites examined, over 90% of the urinary concentrations exceeded the detection limit. Only three had levels below 90% detectable, with mono-isobutyl phthalate having the lowest levels of detection at 77.4%, followed by mono-2ethylhexyphthalate at 81.4% and mono-methyl phthalate at 81.6%.

Age was identified as being the strongest predictor of phthalate exposure, with those in the 5-11 age category generally having the highest exposures. For most, there was a decreasing linear trend with age. Mono-p-butyl phthalate, for example, decreased from 35.35 μg/L (CI: 31.47-39.69 μg/L) in the 5-11 year olds to 16.40 (14.66-18.36) in those 55+. The exception to this would be mono-ethyl phthalate, in which the highest exposed age category was those 20-40 years (225.36 μg/L CI: 197.44-257.23) old followed by those 12-19 years old (205.62 CI: 175.00-241.60). Those 5-11 years old had the lowest level of exposure at 86.86 μg/L (CI: 76.22-98.58) followed by those 55+ at 155.46 μg/L (CI: 133.80-180.62) (See Appendices 20-28). In addition to varying patterns of exposure, it must also be mentioned that the levels of mono-ethyl phthalate were at a minimum ten fold higher than all other phthalates examined in this analysis.

Race also proved to be a strong indicator of body burden. Non-Hispanic blacks across all phthalate categories had the highest body burden followed by other Hispanics (Appendices 20-28). As an example, the mean concentration of mono-p-butyl-phthalate for non-Hispanic blacks was 32.75 46 μg/L (CI: 29.98-35.77), and that of other Hispanics was 29.1746 μg/L (CI: 23.74-35.85). In this instance, other race-including multi-racial had the lowest mean concentration (mean: 16.79 μg/L CI: 13.62-20.70) however, this was not consistent across all phthalates (see Appendices 20-28).

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Although no one occupational group recorded the highest body burdens across all phthalates, there were several occupations for which high levels of phthalates could be observed. Textile, Apparel and Furnishings Machine operators had high levels of mono-p-butyl phthalate, mono-ethyl phthalate, mono-2-ethylhexyl phthalate, mono-isobutyl phthalate, and mono-3-carboxypropyl phthalate. Extractive and precision production occupations also were found to have high levels of various phthalates. Primarily, mono-benzyl phthalate, mono-2-ethylhexyl phthalate, mono-(2-ethyl-5-hydroxyhexyl) phthalate, and mono-(2-ethyl-5-oxyhexyl) phthalate were shown to be in greater concentrations. Finally, occupations related to machinery such as motor vehicle operators, or machine operators, assorted materials were also found to have high body burden of certain phthalates – in this instance, mono-ethyl phthalate, mono-methyl phthalate, and mono-(2-ethyl-5-oxyhexyl) phthalate (See Appendices 20-28). Although, other occupations were found with high body burdens, the levels were not consistently high across various phthalates and therefore not presented here, however, these can be found in Appendices 20-28.

8.2.2 Patterns of Exposure:

Table 29 describes the weighted correlations between phthalates. Mono-p-butyl phthalate was strongly correlated with mono-benzyl phthalate (r=0.68), mono-isobutyl phthalate (r=0.66), mono-2-ethyl-5-oxohexyl phthalate (r=0.61) and mono-3-carboypropyl phthalate (r=0.66). In addition to being strongly correlated with mono-p-butyl phthalate, benzyl phthalate was also highly correlated with mono-3-carboxypropyl phthalate (r=0.65). Mono-2-ethyl phthalate was strongly correlated with mono (2-ethyl-5-hydroxyhexyl) phthalate (r=0.65) and mono-(2-ethyl-5-oxohexyl) phthalate. As previously mentioned,

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mono-isobutyl phthalate correlated well with only mono-p-butyl phthalate r(r=0.66). A very strong correlation was observed between mono-(2-ethyl-5-hydroxyhexyl) phthalate and mono-(2-ethyl-5-oxohexyl) phthalate (r=0.98). A strong correlation was also observed between this chemical compound and mono-3-carboxypropyl phthalate (r=0.61) in addition to those mentioned above. Mono-(2-ethyl-5-oxohexyl) phthalate was also strongly correlated with mono-3-carboxypropyl phthalate (r=0.63). All correlations were highly significant (p<0.0001). See table 15.

Table 15: Correlations among Phthalates

phthalate	mono-n-butyl phthalate	mono-benzyl phthalate	mono-ethyl phthalate	mono-2-ethylhexyl phthalate	mono-methyl phthalate	mono-isobutyl phtalate	mono-(2-ethyl-5-hydroxyhexyl) phthalate	mono-(2-ethyl-5-oxohexyl) phthalate	mono-3-carboxypropyl phthalate
mono-n-butyl phthalate	1.00	0.68	0.41	0.42	0.36	0.66	0.59	0.61	0.66
mono-benzyl phthalate	-	1.00	0.37	0.36	0.33	0.54	0.56	0.58	0.65
mono-ethyl phthalate	-	-	1.00	0.23	0.28	0.36	0.34	0.35	0.34
mono-2-ethylhexyl phthalate	-	-	-	1.00	0.15	0.36	0.65	0.66	0.38
mono- methyl phthalate	-	-	-	-	1.00	0.31	0.32	0.32	0.35
mono-isobutyl phtalate	-	-	-	-	-	1.00	0.48	0.49	0.51
mono-(2-ethyl-5-hydroxyhexyl) phthalate	-	-	-	-	-	-	1.00	0.98	0.61
mono-(2-ethyl-5-oxohexyl) phthalate	-	-	-	-	-	-	-	1.00	0.63
mono-3-carboxypropyl phthalate	-	-	-	-	-	-	-	-	1.00

* all correlations significant at p<0.0001
* minimum sample size n=2782

As presented in Table 16 mono-p-butyl phthalate, mono-benzyl phthalate, mono-(2-ethyl-5-hydroxyhexyl) phthalate, and mono-(2-ethyl-5-oxohexyl) phthalate all the greatest mean correlations with the other phthalates of interest, as well as a high percentage of detectable samples. However, mono-(2-ethyl-5-hydroxyhexyl) phthalate and mono-(2-ethyl-5-oxohexyl) phthalate were only measured over one study period, and therefore had a decreased sample size. In choosing between mono-p-butyl phthalate and mono-benzyl phthalate, it was the sources of exposure that informed the final decision. Benzyl-phthalate

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is an industrial solvent, and additive used in products such as adhesives, vinyl flooring products, sealants, car care products and to a lesser extent, some personal care products. Mono-p-butyl phthalate on the other hand, is an industrial solvent or additive used in many consumer products such as nail polish, cosmetics, some printing inks, pharmaceutical coatings and insecticides. It would therefore be expected that the general population would have higher exposure levels. This can be confirmed when looking at the mean concentrations by study period. Benzyl phthalate had a mean concentration of 15.3 (CI: 13.7-17.1) in 1999-2000 and 15.1 (CI: 13.9-16.3) in 2001-2002. For mono-p-butyl phthalate these levels were 24.6 (CI: 22.1-27.4) in 1999-2000 and 18.9 (17.4-20.6) in 2001-2002. As a result, mono-p-butyl phthalate was carried forward for further analysis.

Table 16: Summary Table for Phthalates

Phthalate	mean correlation	% detectable	n
mono-p-butyl phthalate	0.55	98.60%	5323
mono-benzyl phthalate	0.51	99.80%	5318
mono-ethyl phthalate	0.34	98.00%	5323
mono-2-ethylhexyl phthalate	0.40	81.40%	5323
mono- methyl phthalate	0.30	81.60%	2782
mono-isobutyl phtalate	0.46	77.40%	2782
mono-(2-ethyl-5-hydroxyhexyl) phthalate	0.57	98.10%	2782
mono-(2-ethyl-5-oxohexyl) phthalate	0.58	96.80%	2782
mono-3-carboxypropyl phthalate	0.52	93.70%	2782

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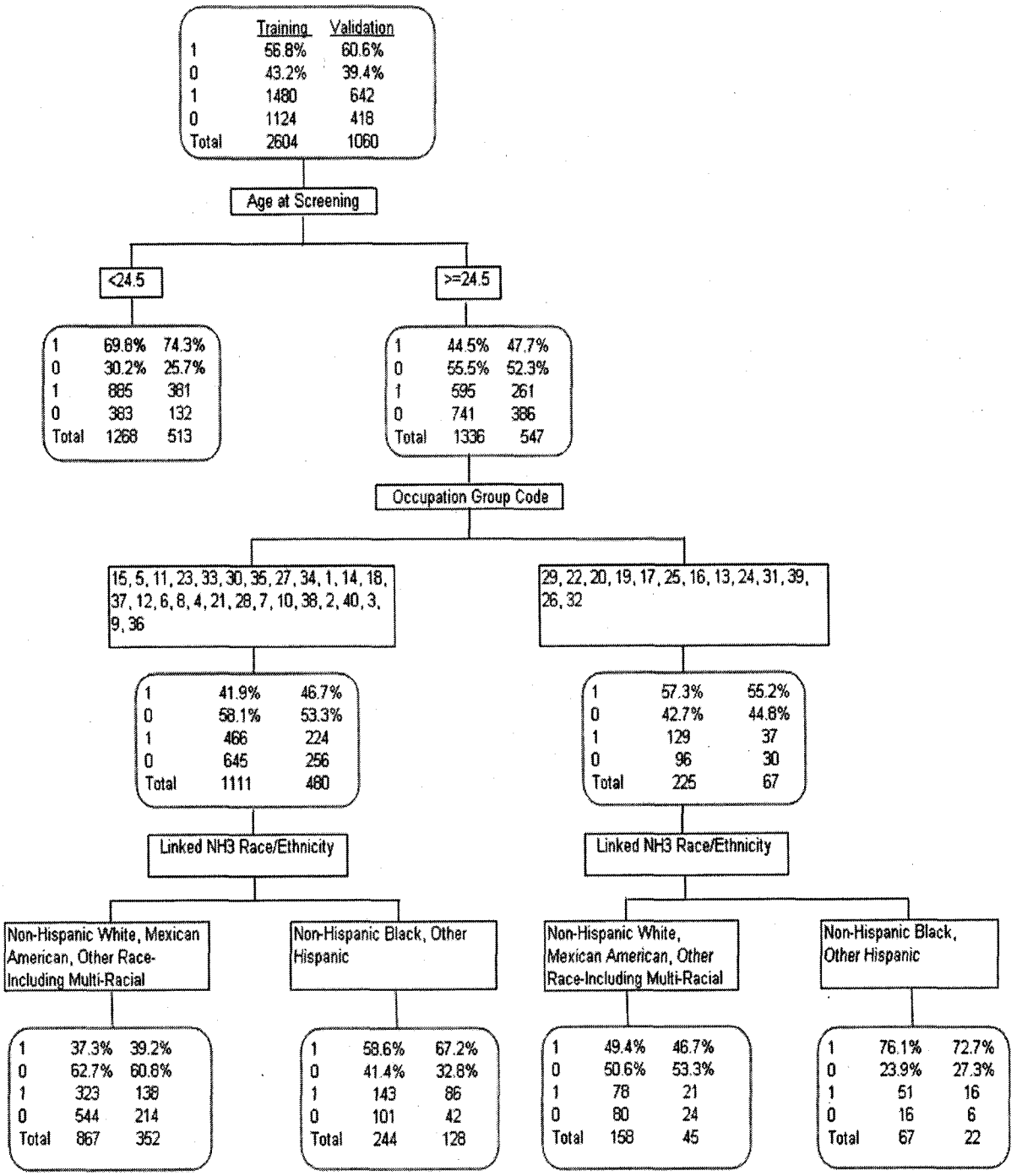
8.2.3 Characteristics of Individuals with High and Low Exposures:

8.2.3.1 Classification and Regression Tree:

Figure 9: Classification and Regression Tree for mono-n-butyl phthalate



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The first major binary split occurred with age, with those less than 24.5 years of age having a greater percentage of individuals being classified as high body burden. In the younger age category, 69.8% of individuals were classified as high body burden whereas only 44.5% of those greater than 24.5 years of age were. Occupation served to further partition the older age category, with 41.9% of individuals in occupational group 1 being high body burden, and 57.3% of individuals in occupational group 2 being high body burden. Finally, race/ethnicity was identified as a key variable in distinguishing high body burden individuals. Overall, those who were either Non-Hispanic Black or Other Hispanic had a greater percentage of individuals who were classified as high body burden over those with were either non-Hispanic White, Mexican, or Other Race in both occupational groupings (58.6% vs. 37.3% in one occupational grouping and 76.1% vs. 48.4% in the other). Please see Figure 9.

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Table 17: List of Occupations within Each Occupational Grouping for Mono-n-Butyl Phthalate

Occupational Group 1	Occupational Group 2
Material Recording, scheduling and distributing clerks (15)	Other Mechanics and Repairers (29)
Teachers (5)	Hleath Service Occupations (22)
Sales Workers, Retail and Personal Service (11)	Cooks (20)
Cleaning and Building Service (23)	Waiters and Waitresses (19)
Machine Operators, Assorted Materials (33)	Priivate Household (17)
Contruction Traders (30)	Farm Operators, Managers and Supervisors (25)
Motor Vehicle Operators (35)	Miscellaneous Adminstrative Support (16)
Related Agricultural, Forestry and Fishing (27)	Information Clerks (13)
Fabricators, Assemblers, Inspectors and Samplers (34)	Personal Service (24)
Executive, Administrators & Managers (1)	Extractive, and Precision Production (31)
Records Processing (14)	Freight, Stock, and Material Movers (39)
Protective Service (18)	Farm and Nursery Workers (26)
Construction Laborers (37)	Textile, Apparel and Furnishings Machine Operators (32)
Secretaries, Stenographers, and Typists (12)	
Writers, Arists, Entertainers and Athletes (6)	
Technicians and Related Support Occupations (8)	
Health Diagnosing, Assessing & Treating (4)	
Miscellaneous Food Preparation and Service (21)	
Vehicle and Mobile Equipment Mechanics, Repairs (28)	
Other Professional Specialty (7)	
Sales Representatives (10)	
Labourers, Except Construction (38)	
Management Related Occupations (2)	
Other Helpers, Equipment Cleaners (40)	
Engineers, Architects and Scientists (3)	
Supervisors and Proprietors (9)	
Other Transportation and Material Moving (36)	

This model had an overall misclassification rate of 0.35 for the training dataset and 0.32 for the validation dataset. As the figure below indicates, the Gini-index was reduced from approximately 0.49 to 0.45 within the first five leaves in the training dataset and from 0.48 to 0.43 in the validation dataset. After this leaf, the very little reduction in the Gini-index for the validation dataset could be achieved by the addition of new leaves, and over time, it actually increased with additional information. This resulted in the two trajectories crossing paths, and not cross-validating very well (see Figure 10).

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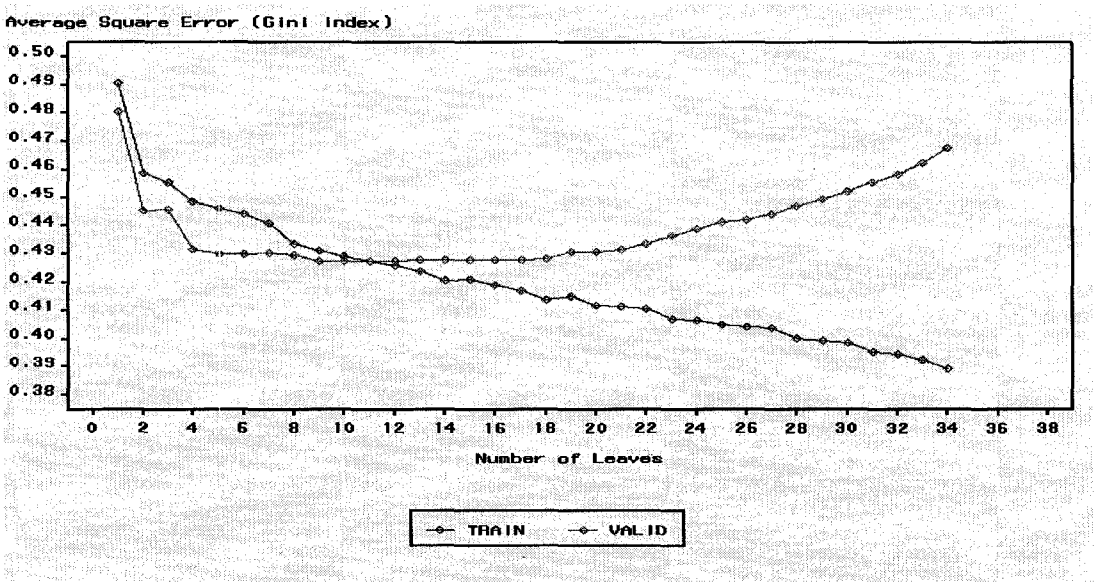
Figure 10: Average Square Error (Gini Index) for the training and validation Data for the Classification and Regression Tree for mono-n-butyl phthalate



Other variables identified by the importance measure of the classification and regression tree 'were prescription medications taken past month?' ; 'How many prescription medications taken?' ; 'Education'; 'Marital Status'; 'Caffeine'; ' Ever told you had weak/failing kidneys?'; ' Vigorous Activity over past 30 days?'; 'Type of Home'; and 'Country of Birth'.

8.2.3.2 Regression Analyses

Recall that phthalates are measured in urine and were subject to a linear adjustment for creatinine. Stratified regression analysis using age accounted for 33.84 % of the variability in mono-p-butyl phthalate for those under the age of 24.5 years of age; however, univariate analysis indicated that creatinine could account for 26.57% of the variability on its own. (Please see Table 18). It was found that as age increased, exposure to mono-p-butyl phthalate decreased (β=-0.07, p=0.0002). Although many of the variables identified

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by the importance measure of the classification tree gained statistical significance, the r^2 value was so small that adding it to the regression model would add complexity and not improve the amount of variability accounted for in the model. As well, despite the fact that occupation was significant in the classification and regression tree when multiple occupations were grouped together, no one occupation was relevant when included on its own. For this reason, occupation does not appear in the final model.

For those 24.5 years of age or older, the occupation 'miscellaneous administrative support', race/ethnicity, marital status and creatinine proved to be significant predictors of mono-p-butyl phthalate indicating that exposure levels for those greater than 24.5 years of age are more homogeneous in respect to age. In respect with ethnicity, both "other Hispanic" and "non-Hispanic Black" were shown to be significantly higher than those who were non-Hispanic white in this age category. Again, those who were "other Hispanic" had the highest exposure levels (β=0.37) with non-Hispanic black following behind (β=0.17).

The logistic regression models revealed similar trends within the data. A one year increase in age was found to decrease the odds of being high body burden slightly. This trend was found in all ages (OR: 0.99; CI: 0.98-0.99), as well as for those <24.5 years of age (OR: 0.83; CI: 0.80-0.86), with age showing a greater effect in decreasing the odds of being high body burden in the younger age category. Again, non-Hispanic Blacks were shown to have an increased odds of being high body burden when compared with non-Hispanic Whites. For those of all ages, the odds ratio was found to be 1.81 (1.32-2.49). For those greater than 24.5 years of age, this ratio was 1.71 (1.14-2.55). Marital status was also shown to be important in the logistic regression. Those who were widowed were over 4.5 times more likely to be high body burden when compared with their married counterparts (OR: 4.53; CI: 1.77-11.61). Please see Table 19.

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Table 18: Regression Analyses for mono-n-butyl phthalate stratified by Age

Characteristics affecting body burden of mono-n-butyl phthalate for those of all ages				
Parameter	*Estimate*	*p-value*	*Model R^2*	*p-value*
Intercept	2.35	<0.0001	0.3372	<0.0001
Age in Years	-0.01	<0.0001		
Race/Ethnicity		0.0011		
Non-Hispanic Black	0.17	0.0021		
Mexican American	0.04	0.3871		
Other Race-Including Multi-Racial	-0.17	0.0681		
Other Hispanic	0.34	0.0041		
Non-Hispanic White	0.00	.		
Creatinine	0.01	<0.0001		
Characteristics affecting body burden of mono-n-butyl phthalate for those <24.5 years				
Parameter	*Estimate*	*p-value*	*Model R^2*	*p-value*
Intercept	3.27	<0.0001	0.3384	<0.0001
Age in Years	-0.07	<0.0001		
Creatinine	0.01	<0.0001		
Characteristics affecting body burden of mono-n-butyl phthalate for those >=24.5 years				
Parameter	*Estimate*	*p-value*	*Model R^2*	*p-value*
Intercept	1.95	<0.0001	0.3856	<0.0001
Miscellaneous Administrative support				
Yes	0.24	0.0126		
No	0.00	.		
Race/Ethnicity		0.0011		
Non-Hispanic Black	0.17	0.0021		
Mexican American	0.04	0.3871		
Other Race-Including Multi-Racial	-0.17	0.0681		
Other Hispanic	0.34	0.0041		
Non-Hispanic White	0.00	.		
Marital Status		0.0067		
Widowed	0.35	0.0326		
Divorced	0.23	0.0198		
Separated	0.24	0.0657		
Never Married	0.02	0.7907		
Living with Partner	0.17	0.1624		
Married	0.00	.		
Creatinine	0.01	<0.0001		

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Table 19: Logistic Regression Analyses for mono-n-butyl phthalate stratified by Age

Characteristics affecting body burden of mono-n-butyl phthalate for those of all ages		
Parameter	*Odds Ratio*	*95% CI*
Age in Years	0.99	0.98-0.99
Race/Ethnicity		
Non-Hispanic Black vs. Non-Hispanic White	1.81	1.32-2.49
Mexican American vs. Non-Hispanic White	0.95	0.71-1.28
Other Race-Including Multi-Racial vs. Non-Hispanic White	0.95	0.53-1.68
Other Hispanic vs. Non-Hispanic White	1.80	0.81-4.009
Creatinine	1.03	1.02-1.03
Characteristics affecting body burden of mono-n-butyl phthalate for those <24.5 years		
Parameter	*Odds Ratio*	*95% CI*
Age in Years	0.83	0.80-0.86
Creatinine	1.03	1.02-1.04
Characteristics affecting body burden of mono-n-butyl phthalate for those >=24.5 years		
Parameter	*Odds Ratio*	*95% CI*
Race/Ethnicity		
Non-Hispanic Black vs. Non-Hispanic White	1.71	1.14-2.55
Mexican American vs. Non-Hispanic White	0.72	0.46-1.14
Other Race-Including Multi-Racial vs. Non-Hispanic White	0.75	0.24-2.30
Other Hispanic vs. Non-Hispanic White	1.95	0.63-6.06
Marital Status		
Widowed vs. Married	4.53	1.77-11.61
Divorced vs. Married	1.39	0.58-3.32
Separated vs. Married	1.28	0.34-4.89
Never Married vs. Married	0.89	0.48-1.68
Living with Partner vs. Married	1.46	0.55-3.89
Creatinine	1.03	1.02-1.03

8.3 Discussion of Phthalate Results

Age was found to be a significant predictor with a decreasing trend in exposure observed as age increased. This may potentially be a result of differences in metabolism between children and adults, however, it is most likely a result of differences in exposure. Exposures in this age category are most likely explained by plastic toy use and children's

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propensity for putting objects in their mouths. Interesting results may have been observed in the 0-5 age category had data been collected, given the use of plastic bottles, sippy cups, teething rings, etc.

Race was also found to be a significant predictor of phthalate concentrations, with Non-Hispanic Blacks and Other Hispanic showing the highest concentrations. This may be a result of increased, continuous and prolonged use of beauty and hair care products specifically marketed for this population. Oftentimes, this marketing begins at a very young age and continues through adulthood (Silva et al., 2004). Alternatively, these results may be result of differences in metabolism between races, proximity to industrial sources, or due to overall poorer health among these populations when compared to whites. Unfortunately, very little data existed within the NHANES dataset in order to confirm these hypotheses.

When the results were examined stratified by age (<24.5 years of age vs. >24.5 years of age), it was determined that only age was significant for those <24.5 years of age. However, in the older group, some interesting findings emerged. Age as a continuous variable was no longer significant, indicating some homogeneity in terms of age among this group. As well, miscellaneous administrative support was shown to be significant with those who worked in these types of occupations having higher levels. This is most likely due to an increased exposure to printing inks which can contain high levels of dibutyl phthalates. It was also found that those who were widowed, separated or divorced had significantly higher levels than those who were married. This raises several interesting possibilities. Could a stress response affect concentrations of phthalates in the body? Do people who are not married eat more pre-packaged foods that spend long periods of time in close proximity to plastic? Is their a common lifestyle between these populations that is not captured here? It is unlikely that these observations are a result of increased age, given that

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concentrations tend to decrease as age increases. Additional research is necessary in this area in order to fully understand these results.

CHAPTER 9: POLYCYCLIC AROMATIC HYDROCARBONS (PAH'S)

9.1 Introduction to Polycyclic Aromatic Hydrocarbons (PAH's)

9.1.1 Sources of Polycyclic Aromatic Hydrocarbons (PAH's)

In total, there are more than 100 different PAHs, which generally tend to occur as complex mixtures within the environment (ATSDR, 1995). PAHs are released into the environment as a result of incomplete combustion of substances such as coal, oil, gas, wood, garbage or other organic substances such as tobacco and charbroiled meat (CDC, 2005). Major sources of PAHs are motor vehicle exhaust, residential and industrial furnaces, tobacco smoke, volcanoes, agricultural burning, residential wood burning, and wildfires. They are also contained in the asphalt used in road construction and in substances such as crude oil, coal, coal tar pitch, creosote, and roofing tar (ATSDR, 1995).

9.1.2 Exposure Route and Exposed Populations

Exposure may occur through air, water, soil or food, however, the primary route of exposure is inhalation of air contaminated by tobacco smoke, wood smoke, and ambient air. Individuals may also be exposed via ingestion of PAHs in foods (CDC, 2005). Some occupations have been shown to have higher exposures than others. Workers may be exposed to PAHs via inhalation of engine exhaust or by using products that contain PAHs. Mining, oil refining, metalworking; chemical production, transportation, and the electrical

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industry are some industries which have been shown to have workers exposed to PAHs (ATSDR, 1995)

9.1.3 Fate, Transport and Metabolism

In the environment, PAHs are found in water, soil and air. In general, PAHs do not dissolve easily in water. Those particles that have dissolved into surface waters can evaporate into the atmosphere, but in general they bond to solid particles and settle to the bottoms of rivers or lakes. PAHs are typically found as air vapors or stuck to the surfaces of small solid particles. PAHs can travel long distances before returning to earth via particle settling or precipitation (ATSDR, 1995n soils, PAHs will bond tightly to particles; however, some PAHs have been known to evaporate from soils into air (ATSDR, 1995). Finally, photolytic or chemical transformation of PAHs in air may result in longer-lasting products. This process generally occurs over a period of days to weeks. Breakdown in soil and water typically takes weeks to months, and is catalyzed by micro-organisms living within these microenvironments.

After PAHs enter the body, PAHs can enter all tissues of the body which contain fat. They are mostly stored in kidneys, liver, and fat, but may be stored in smaller amounts in the spleen, adrenal glands, and ovaries as well. In all tissues, PAHs are metabolized to several different substances, some of which are more harmful than the original PAH. Most PAHs enter and leave the body within a few days with he primary route of excretion being urine and feces (ATSDR, 1995).

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Table 20: Polycyclic Aromatic Hydrocarbons (PAHs) of Interest and their Metabolites

PAH	Urinary Hydroxylated Metabolite
Fluorene	2-hydroxyfluorene 3-hydroxyfluorene 9-hydroxyfluorene
Phenanthrene	1-hydroxyphenathrene 2-hydroxyphenathrene 3-hydroxyphenathrene 4-hydroxyphenathrene 9-hydroxyphenathrene
Pyrene	1-hydroxypyrene

9.2 Results for Polycyclic Aromatic Hydrocarbons (PAHs)

9.2.1 Exposure Levels

With the exception of 3-hydroxybenzo[a] pyrene, all urinary polycyclic aromatic hydrocarbon (PAHs) metabolites had high levels of detection. For the most part, PAH metabolites had over 90% samples with detectable concentrations. 2-hydroxyfluorene had the highest percentage of detectable samples at 99.3%, followed by 9-hydroxyfluorene (98.9%), 1-hydroxypyrene (98.7%), 1-hydroxyphenanthrene (97.6%), 3-Hydroxyphenanthrene (97.1%), 3-hydroxyfluorene (95.6%), 2-hydroxyphenanthrene (93.4%), 9-Hydroxyphenanthrene (83.4%), 4-Hydroxyphenanthrene (75.1%), and finally 3-hydroxybenzo [a] pyrene (50.4%). Only 3-hydroxybenzo [a] pyrene did not have over 70% detectable samples, and therefore was not carried forward for further analysis.

Descriptive statistics revealed several occupations with high concentrations of PAH metabolites. Those occupations involving vehicles and transportation generally tended to be high, as well as those related to food preparation and service. Occupations such as 'vehicle, and mobile equipment mechanics & repairs'; 'other mechanics and repairs'; 'machine

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operators, assorted materials'; 'other transportation and material moving occupations'; 'miscellaneous food preparation and service occupations' ; 'cooks'; 'waiters and waitresses' repeated occurred when examining occupations with high levels. Occasionally, occupations such as 'heath service occupations' ; 'construction trades' or 'extractive and precision production occupations' also appeared, however, not as regularly or consistently as the afore mentioned occupations. To illustrate levels of exposure, vehicle and mobile equipment mechanics and repairers had concentrations of 2-hydroxyfluorene of 864.01 (CI: 580.98-1284.92), other mechanics and repairers levels of 844.03 (CI: 567.93-1254.35), and miscellaneous food preparation and service occupations levels equal to 781.86 (CI: 542.32-1127.21). It must be noted however, that these levels were higher than the majority of other PAH metabolites. For a full table of all the results please see Appendices 29-37.

Although a linear relationship could not be found with PAH metabolites and age, descriptive statistics revealed interesting trends in respect to age. In six of the nine PAH metabolites examined, those between the ages of 20-40 had the highest concentrations, with those on each end of the age continuum having the lowest levels. For example, those between the ages of 5-11 had concentrations of 2-hydroxyfluorene of 268.09 (CI: 217.33-330.72), those between the ages of 12-19 levels of 364.25 (CI: 294.39-450.68), those between the ages of 20-40 levels of 450.40 (CI: 351.98-576.35), those between the ages of 41-55 levels of 372.54 (307.26-451.70) and finally those 55 + had levels of 287.47 (234.93-351.77). Although slight variations to this trend occurred, in general, those who were either 5-11 years of age, or 55+ had the lowest body burden, with those in the middle categories having the highest levels (See Appendices 28-37).

In terms of ethnicity, those who were 'non-Hispanic black' or 'other Hispanic' had the highest concentrations of PAH metabolites, with non-Hispanic Blacks having the

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highest levels for the most part. On the opposite end of the spectrum, those who were other race-including multiracial had the lowest levels for six of the nine PAH metabolites. Of the remaining three instances, Mexican Americans had the lowest levels of 3-hydroxyfluorene, and 1-hydroxyphenanthrene with other Hispanics having the lowest concentrations of 4-hydroxyphenanthrene. In the case of 2-hydroxyfluorene, the mean concentration for non-Hispanic Blacks was 533.08 (CI: 416.83-681.76), Other Hispanics 469.79(CI: 311.54-708.43), non-Hispanic Whites 347.88 (CI: 274.74-442.10), Mexican Americans 281.82 (CI: 235.17-337.710) and other race-including multiracial 258.13 (190.99-348.89). See Appendices 29-37.

9.2.2 Patterns of Exposure:

The majority of PAH's had strong correlations with each other, with the exception of 4-hydroxyphenathrene which had correlations ranging from 0.23-0.29. 9-hydroxyphenathrene had slightly lower correlations with 9-hydroxyfluorene (r=0.53), 3-hydroxyphenathrene (r=0.57) and 2-hydroxyphenanthrene (r=0.54). The strongest correlations were observed between 2-hydroxyfluorene and 3-hydroxyfluorene (r=0.92). All correlations were highly significant ($p<0.001$) with a minimum sample size of 2737 (See Table 21).

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Table 21: Correlations among PolyAromatic Hydrocarbons (PAHs)

	2-hydroxy-fluorene	3-hydroxy fluorene	1-hydroxy phenanthrene	2-hydroxy phenanthrene	3-hydroxy phenanthrene	1-hydroxy pyrene	9-hydroxy fluorene	4-hydroxy phenanthrene	9-hydroxy phenanthrene
2-hydroxyfluorene	1.00	0.92	0.77	0.74	0.75	0.75	0.69	0.25	0.62
3-hydroxyfluorene	-	1.00	0.69	0.68	0.70	0.73	0.62	0.23	0.62
1-hydroxyphenanthrene	-	-	1.00	0.77	0.75	0.72	0.71	0.26	0.62
2-hydroxyphenanthrene	-	-	-	1.00	0.73	0.72	0.63	0.29	0.54
3-hydroxyphenanthrene	-	-	-	-	1.00	0.75	0.61	0.28	0.57
1-hydroxypyrene	-	-	-	-	-	1.00	0.64	0.25	0.60
9-hydroxyfluorene	-	-	-	-	-	-	1.00	0.26	0.53
4-hydroxyphenanthrene	-	-	-	-	-	-	-	1.00	0.23
9-hydroxyphenanthrene	-	-	-	-	-	-	-	-	1.00

* all correlations significant at p<0.0001
* minimum sample size n=2737

With the exception of 4-hydroxyfluorene, all PAH's had relatively similar mean correlations as well as percentage of detectable samples. However, the sample size was significantly reduced for 1-hydroxypyrene, 9-hydroxyfluorene, 4-hydroxyphenanthrene, and 9-hydroxyphenanthrene. As these chemicals often occur together in the environment and many have similar toxicological effects, environmental fate, etc, 2-hydroxyfluorene was chosen as it had the highest mean correlation, percentage of detectable samples, and sample size (See Table 22).

Table 22: Summary Table for Poly Aromatic Hydrocarbons

PAH	Mean correlation	% detectable	n
2-hydroxyfluorene	0.68	99.30%	5060
3-hydroxyfluorene	0.65	95.60%	5057
1-hydroxyphenanthrene	0.66	97.60%	4987
2-hydroxyphenanthrene	0.64	93.40%	4921
3-hydroxyphenanthrene	0.64	97.10%	5040
1-hydroxypyrene	0.64	98.70%	2745
9-hydroxyfluorene	0.59	98.90%	2745
4-hydroxyphenanthrene	0.26	75.10%	2741
9-hydroxyphenanthrene	0.54	83.40%	2741

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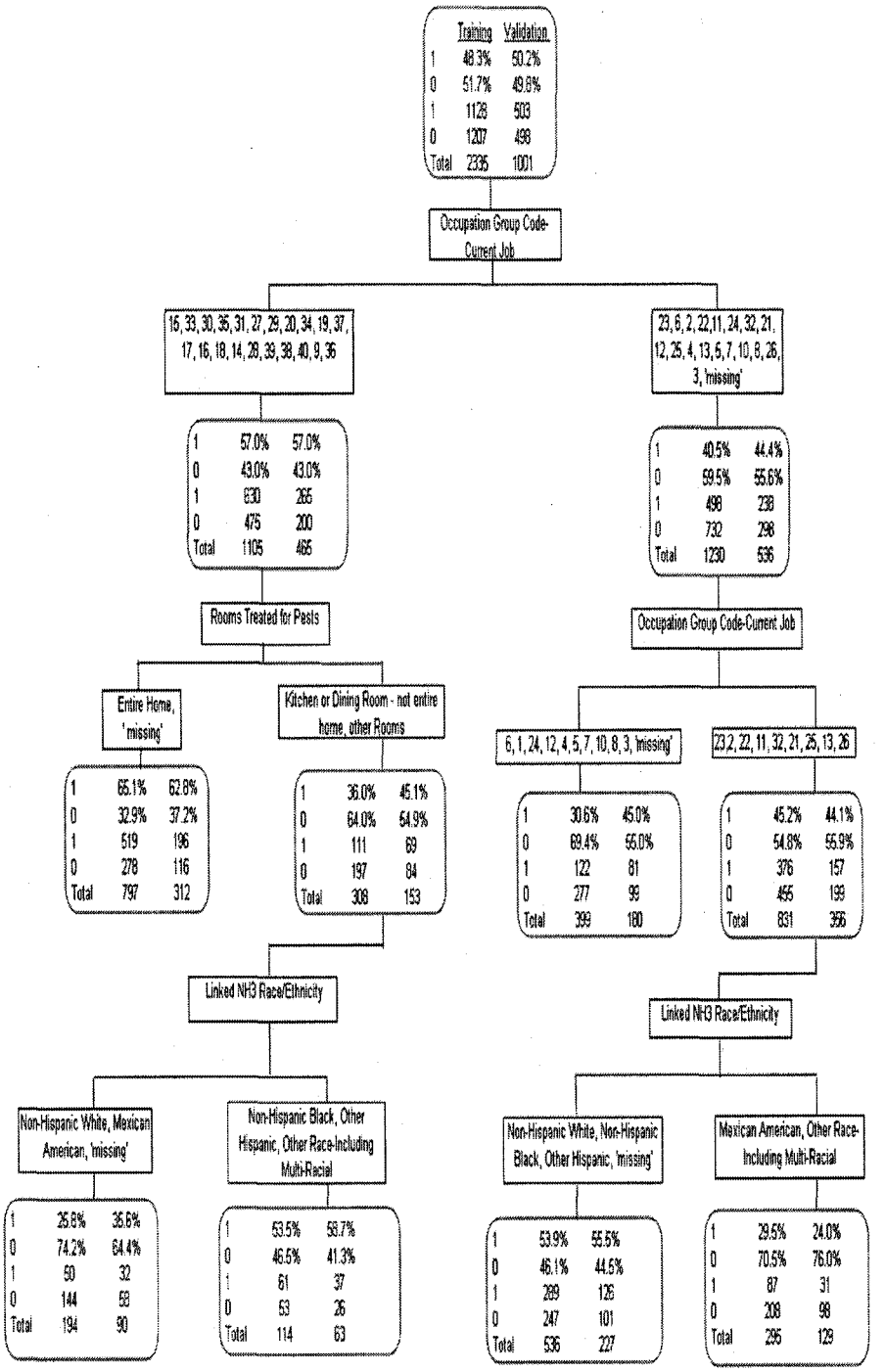
9.2.3 Characteristics of Individuals with High and Low Exposures

9.2.3.1 Classification and Regression Tree:

Figure 11: Classification and Regression Tree for 2-hydroxyfluorene



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The first split in the classification and regression tree occurred with occupation, with those in occupational group 1 having a greater percentage (57.0%) of individuals classified as high body burden then those in all other occupations (40.5%). The later category was further split to occupational groups 2 and 3 (see Table 23 for full list of occupations.. Ethnicity provided the final split for those in occupational group 3 with individuals who were 'non-Hispanic white', 'non-Hispanic black' and 'other Hispanic' having higher percentage of individuals (53.9%) classified as high body burden for 2-hydroxyfluorene than those who where 'Mexican American', or 'other race-including multi-racial' (29.5%).

For those in occupational group 1 the next split came with 'rooms treated for pests'. Those who had their entire home treated for pests had a higher percentage (65.1%) of individuals classified as high body burden than those who only had the kitchen or dining room-not entire home, other rooms (36.0%). Finally, the later category was split using race/ethnicity. Those who were non-Hispanic White, Mexican only had 25.8% of individuals classified as high body burden, whereas 53.5% of individuals who were non-Hispanic black or other race-including multiracial were classified as high body burden.

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Table 23: List of Occupations within Each Occupational Grouping for 2-hydroxyfluorene

Occupational Group 1	Occupational Group 2	Occupational Group 3
Material Recording, scheduling and distributing clerks (15)	Writers, Arists, Entertainers and Athletes (6)	Cleaning and Building Service (23)
Machine Operators, Assorted Materials (33)	Executive, Administrators & Managers (1)	Management Related Occupations (2)
Contruction Traders (30)	Personal Service (24)	Health Service Occupations (22)
Motor Vehicle Operators (35)	Secretaries, Stenographers, and Typists (12)	Sales Workers, Retail and Personal Service (11)
Extractive, and Precision Production (31)	Health Diagnosing, Assessing & Treating (4)	Textile, Apparel and Furnishings Machine Operators (32)
Related Agricultural, Forestry and Fishing (27)	Teachers (5)	Miscellaneous Food Preparation and Service (21)
Other Mechanics and Repairers (29)	Other Professional Specialty (7)	Farm Operators, Managers and Supervisors (25)
Cooks (20)	Sales Representatives (10)	Information Clerks (13)
Fabricators, Assemblers, Inspectors and Samplers (34)	Technicians and Related Support Occupations (8)	Farm and Nursery Workers (26)
Waiters and Waitresses (19)	Engineers, Architects and Scientists (3)	
Construction Laborers (37)		
Private Household (17)		
Miscellaneous Administrative Support (16)		
Protective Service (18)		
Records Processing (14)		
Vehicle and Mobile Equipment Mechanics, Repairs (28)		
Freight, Stock, and Material Movers (39)		
Labourers, Except Construction (38)		
Other Helpers, Equipment Cleaners (40)		
Supervisors and Proprietors (9)		
Other Transportation and Material Moving (36)		

In addition to these splits, the Classification and Regression Tree also identified education, annual family income, country of birth, age, professional treated home?, water treatment devices used? Gender, average level of physical activity each day, taken prescription medication past month, number of prescription medications taken, type of home were also identified from the importance measure. As a result, these variables were used as inputs into linear regression models, in order to further elucidate sources of exposure, and characteristics of individuals with high body burden.

The model however, had an overall misclassification rate of 0.36 for the training dataset, and 0.39 for the validation data. As well, by looking at the following graph, it can be observed that the model also did not cross validate very well. In total, this tree had 6 leaves and 5 nodes (including the root node).

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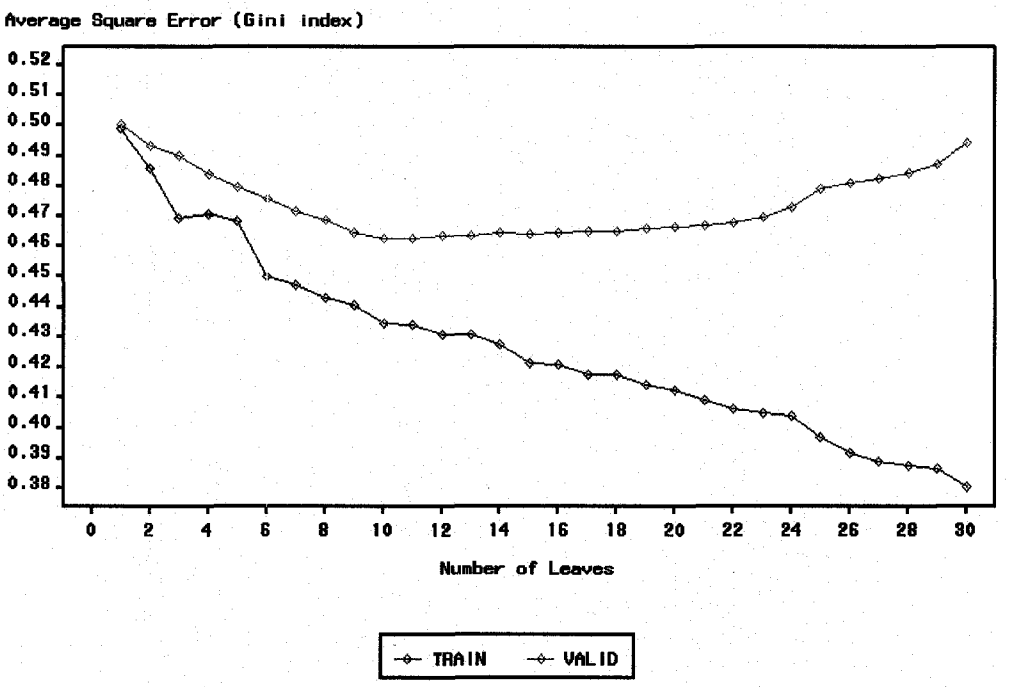
Figure 12: Average Square Error (Gini Index) for the training and validation data for the Classification and Regression Tree for 2-hydroxyfluorene



9.2.3.2 Regression Analyses:

Table 24 indicates the results for the three occupational groups identified by the Classification and Regression Tree. For occupational group, ethnicity and rooms treated for pests emerged as the most predictive variables for 2-hydroxyfluorene exposure. Here, those who were Other Race-Including Multi-Racial had the highest levels with an associated β-coefficient of 0.524, and those who were Mexican American had the lowest levels with a β-coefficient or -0.496. In terms of rooms treated for pests, those individuals who had the entire home treated had the highest levels with β=1.14. Creatinine predicted 12.53% of the variability in this occupational group, and had an associated β-coefficient of 0.004 (p=0.0025). Other variables identified by the Classification and Regression Tree were also

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tested, however, these were either non-significant or uninformative, and therefore were not included in the final model.

Predicting similar levels of variability as the model determined for Occupational Group 1, the model for occupational group 2 had an r^2 value of 27.47%. However, in this instance, creatinine accounted for 23.83% of that variability. Other variables determined to predict 2-hydroxyfluorene concentrations were ethnicity and educational attainment with those who were other Hispanic (β=0.78), and who achieved less than a high school education (β=0.41) having the highest levels.

Only one variable could be elucidated as a predictor of 2-hydroxyfluorene concentrations for occupation group3. Consistent throughout all three models, ethnicity appeared in this model again. However, the trends were different with non-Hispanic Whites having the highest concentrations (β=0), and other race-Including Multi-Racial having the lowest (β= -1.04). Overall, this model had an r^2 value of 20.78%. However, 17.84% of this variability was accounted for by creatinine, leaving very little of the variability being explained by ethnicity alone.

Logistic regression analysis revealed that those who were Mexican American had decreased odds of being high body burden when compared with Non-Hispanic Whites when all occupations were examined (OR: 0.45; CI: 0.22-0.95), when only those in occupational group 1 were examined (OR: 0.15; CI: 0.03-0.89) and finally when only those in occupational group 3 were examined (OR: 0.34; CI: 0.14-0.82). It was also found that those who achieved less than a high school education had higher odds of being high body burden when compared with those who achieved more than a high school education. This was found across all three occupational groupings (OR for occupational group 1: 18.04; CI: 2.58-126.28; OR for occupational group 2: 4.10; CI: 1.61-40.42; OR for occupational

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group 3: 2.94 (1.40-6.18). Finally, those who had their entire home treated for pests had greater odds of being high body burden. For those in all occupational groupings, this translated into an odds ratio of 5.78 (CI: 2.08-16.13) and for those in occupational group1, this translated into an odds ratio of 2.10 (1.12-3.92). Please see table 25.

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Table 23: Regression Analyses for 2-hydroxyfluorene Stratified by Occupation

Characteristics affecting body burden of 2-hydroxyfluorene for those of all occupations				
Parameter	*Estimate*	*p-value*	*Model R^2*	*p-value*
Intercept	6.98	<0.0001	0.2035	<0.0001
Vehicle and Mobile Equipment Mechanics		0.0007		
Yes	1.70	0.0007		
No	0.00	.		
Other Mechanics and repairers		0.0083		
Yes	0.67	0.0083		
No	0.00	.		
Rooms Treated for Pests		0.0002		
Entire Home	0.79	<0.0001		
Kitchen or dining Room, not entire home	0.38	0.0308		
other Rooms	0.00	.		
Creatinine	0.01	<0.0001		
Characteristics affecting body burden of 2-hydroxyfluorene for Occupation Group1				
Parameter	*Estimate*	*p-value*	*Model R^2*	*p-value*
Intercept	5.18	<0.0001	0.2336	<0.0001
Race/Ethnicity		0.0282		
Non-Hispanic Black	0.09	0.7726		
Mexican American	-0.50	0.1241		
Other Race-Including Multi-Racial	0.52	0.4239		
Other Hispanic	0.12	0.7741		
Non-Hispanic White	0.00	.		
Rooms Treated for Pests		0.0008		
Entire Home	1.14	0.0050		
Kitchen or dining Room, not entire home	0.24	0.4676		
other Rooms	0.00	.		
Creatinine	0.00	0.0025		
Characteristics affecting body burden of 2-hydroxyfluorene for Occupation Group 2				
Parameter	*Estimate*	*p-value*	*Model R^2*	*p-value*
Intercept	4.44	<0.0001	0.2747	<0.0001
Race/Ethnicity		0.0002		
Non-Hispanic Black	0.43	0.0280		
Mexican American	0.03	0.8482		
Other Race-Including Multi-Racial	-0.27	0.4082		
Other Hispanic	0.78	0.0022		
Non-Hispanic White	0.00	.		
Educational Attainment		0.0131		
Less than High School	0.41	0.0584		
High School Diploma	0.31	0.0284		
More than High School	0.00	.		
Creatinine	0.01	<0.0001		
Characteristics affecting body burden of 2-hydroxyfluorene for Occupation Group 3				
Parameter	*Estimate*	*p-value*	*Model R^2*	*p-value*
Intercept	5.21	<0.0001	0.2078	<0.0001
Race/Ethnicity		0.0013		
Non-Hispanic Black	-0.02	0.9375		
Mexican American	-0.44	0.0276		
Other Race-Including Multi-Racial	-1.04	<0.0001		
Other Hispanic	-0.15	0.6195		
Non-Hispanic White	0.00	.		
Creatinine	0.01	<0.0001		

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Table 24: Logistic Regression Analyses for 2-hydroxyfluorene Stratified by Occupation

Characteristics affecting body burden of 2-hydroxyfluorene for those of all occupations		
Parameter	*Estimate*	*p-value*
Race/Ethnicity		
Non-Hispanic Black vs. Non-Hispanic White	1.59	0.59-4.25
Mexican American vs. Non-Hispanic White	0.45	0.22-0.95
Other Race-Including Multi-Racial vs. Non-Hispanic White	0.25	0.07-0.82
Other Hispanic vs. Non-Hispanic White	2.02	0.72-5.64
Rooms Treated for Pests		
Entire Home vs. Kitchen or Kitchen or dining room, not entire room	2.10	1.12-3.92
Other Rooms vs. Kitchen or Dining Room, Not Entire Room	1.72	0.85-3.48
Creatinine	1.00	1.00-1.00
Characteristics affecting body burden of 2-hydroxyfluorene for Occupation Group 1		
Parameter	*Estimate*	*p-value*
Age in Years	1.09	1.04-1.14
Race/Ethnicity		
Non-Hispanic Black vs. Non-Hispanic White	0.85	0.10-7.28
Mexican American vs. Non-Hispanic White	0.15	0.03-0.89
Other Race-Including Multi-Racial vs. Non-Hispanic White	5.10	0.67-38.59
Other Hispanic vs. Non-Hispanic White	4.74	0.94-23.78
Rooms Treated for Pests		
Entire Home vs. Kitchen or Kitchen or dining room, not entire room	5.78	2.08-16.13
Other Rooms vs. Kitchen or Dining Room, Not Entire Room	0.16	0.01-2.98
Educational Attainment		
Less than High School vs. More than High School	18.04	2.58-126.28
High School Diploma vs. More than High School	0.31	3.35-86.30
Creatinine	1.00	0.99-1.01
Characteristics affecting body burden of 2-hydroxyfluorene for Occupation Group 2		
Parameter	*Estimate*	*p-value*
Race/Ethnicity		
Non-Hispanic Black vs. Non-Hispanic White	2.95	1.38-6.32
Mexican American vs. Non-Hispanic White	1.07	0.45-2.55
Other Race-Including Multi-Racial vs. Non-Hispanic White	0.16	0.03-1.06
Other Hispanic vs. Non-Hispanic White	3.69	0.72-18.79
Educational Attainment		
Less than High School vs. More than High School	4.10	1.61-10.42
High School Diploma vs. More than High School	2.34	0.86-6.32
Creatinine	0.99	0.99-1.00
Characteristics affecting body burden of 2-hydroxyfluorene for Occupation Group 3		
Parameter	*Estimate*	*p-value*
Race/Ethnicity		
Non-Hispanic Black vs. Non-Hispanic White	1.21	0.46-3.18
Mexican American vs. Non-Hispanic White	0.34	0.14-0.82
Other Race-Including Multi-Racial vs. Non-Hispanic White	0.20	0.01-2.72
Other Hispanic vs. Non-Hispanic White	0.97	0.29-3.25
Educational Attainment		
Less than High School vs. More than High School	2.94	1.40-6.18
High School Diploma vs. More than High School	1.43	0.65-3.14
Creatinine	0.99	0.99-1.00

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9.3 Discussion of Polycyclic Aromatic Hydrocarbon Results

The first split of the classification and regression tree occurred with occupation, indicating the importance of occupational exposures for body burden. Occupations such as machine operators, cooks, waiters and waitresses, as well as those related to vehicles such as vehicles and mobile equipment mechanics, and freight, stock and material movers were all classified as having a higher probability of having high body burden when compared with other occupations. This is not surprising given that PAHs are produced as a result of the incomplete combustion of substances such as coal, oil, gas, wood, garbage, tobacco, and charbroiled meat. In a regression analysis of all occupations however, only two gained statistical significance vehicle and mobile equipment mechanics, and other mechanics and repairers. This is likely due to a result of the relatively small sample size associated with other occupations.

Somewhat surprisingly, individuals who had had their entire homes treated for pests had higher concentrations of 2-hydroxyfluorene. Although there is no direct biological plausibility for this, it may indicate the ability of outdoor to infiltrate indoors thus increasing personal exposure levels.

Other indicators of socioeconomic status also emerged as statistically significant predictors of 2-hydroxyfluorene levels. These included race/ethnicity and educational attainment. Unfortunately, there is limited information outlining factors such as proximity to major roads, or proximity to industrial releases of polycyclic aromatic hydrocarbons, which may explain some of the variability being captured here by socioeconomic indicators.

Overall, however, the models for 2-hydroxyfluorene did not capture the total variability in urinary concentrations very well. This may be partially a result of the non-

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persistent nature of this chemical in the body, and partially a result of lack of relevant questionnaire data pertaining to polycyclic aromatic hydrocarbons. Detailed information on factors such as combustion sources in the home, burning of food, and time spent in transit or at work, would be helpful in developing better predictive models for this group of chemicals.

CHAPTER 10: NON-DIOXIN-LIKE POLYCHLORINATED BIPHENYLS

10.1 Introduction to Non-Dioxin-Like Polychlorinated Biphenyls

10.1.1 Sources of Non-Dioxin-Like Polychlorinated Biphenyls

Polychlorinated biphenyls (PCBs) were used as electrical insulating and heat-exchange fluids before 1979 when they were banned in the United States. PCB congeners are often subdivided into the co-planar, the mono-ortho-substituted PCBs, and the non-dioxin-like polychlorinated biphenyls. As the nomenclature suggests, those that are co-planar and mono-ortho substituted have dioxin-like toxicological effects, whereas the non-dioxin like PCBs do not (CDC, 2005).

10.1.2 Exposure Route and Exposed Populations

As in the co-planar and mono-ortho substituted PCBs, the primary route of exposure to PCBs is via ingestion of contaminated food. PCBs are found in higher concentrations in fatty foods, and therefore individuals that consume large quantities of these foods (ie. milk and dairy products, fish, and whales), have higher exposures to these contaminants. Breast milk is also a source of exposure in newborns (CDC, 2005). Some exposure also occurs directly through the release of these chemicals from waste-containing sites, and fires involving transformers and capacitors (ATSDR, 2000). Some occupational exposures have

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been known to occur. These include repairing or manufacturing transformers, capacitors, and hydraulic systems, as well as remediating hazardous-waste sites (ATSDR, 2000).

10.1.3 Fate, Transport and Metabolism

Polychlorinated biphenyls do not readily break down and persist for long periods of time in the environment. Polychlorinated biphenyls are primarily released into soil but can cycle easily between air, water and soil (ATSDR, 2000). They can travel long-distances in air, and have been known to be present in locations far from any known source. PCBs in general display low solubility in water, however, the potential for PCBs to migrate to ground water is expected to increase in the presence of non-aqueous phase liquids, co-contaminants such as chlorobenzenes or VOCs, and/or colloids (e.g. dissolved organic carbon, humic substances and other macromolecules). PCBs can be absorbed by plants, fish and animals, and stored in fatty-tissue, and have been shown to bio-accumulate through food chains. As a result, levels of PCBs are highest among top predators (ATSDR, 2000).

PCBs are absorbed on a congener specific basis by passive diffusion. Therefore, a large concentration gradient produced as a result of high levels of PCBs in the gut and very low levels in serum lipids will result in nearly complete absorption. Once in the blood, PCBs are carried by lipoproteins and accumulate in lipid rich tissue. They are therefore found in greater concentrations in the liver, adipose, skin and breast milk (ATSDR, 2000).

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10.2 Results for Non-Dioxin-Like Polychlorinated Biphenyls

10.2.1 Exposure Levels:

Recall that PCBs are measured in serum and subject to lipid adjustment. For the Non-Dioxin-like Polychlorinated Biphenyls, each individual sample had its own limit of detection (LOD) as well as each 2 year sampling period. Overall, 66.4% of all PCB-138 samples, 71.5% of all PCB-153 samples and 61.6% of all PCB-180 samples were above the LOD, and therefore further analysis on PCB-153 was deemed justified.

Where a geometric mean or percentile estimate was less than the maximum LOD, it was not reported in the table. As laboratory methodology differed between NHANES 99-00 and NHANES 01-02, distinct LODs were reported. In order to ensure only valid results were reported, the maximum LOD was applied. This resulted in most means and percentiles falling below this number, and in turn, preventing observation of trends from the descriptive portion of this analysis (see Appendices 11-13 for details).

10.2.2 Patterns of Exposure:

Table 26: Correlations among Non-Dioxin-like Polychlorinated Biphenyls

PCB	2,2',4,4',5,5'-hexachlorobiphenyl	2,2',3,4,4',5'-hexachlorobiphenyl	2,2',3,4,4',5,5'-heptachlorobiphenyl
2,2',4,4',5,5'-hexachlorobiphenyl	1.00	0.96	0.93
2,2',3,4,4',5'-hexachlorobiphenyl	-	1.00	0.86
2,2',3,4,4',5,5'-heptachlorobiphenyl	-	-	1.00

* all correlations significant at $p<0.0001$
* minimum sample size n=4203

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Strong correlations were observed between all non-dioxin-like biphenyls, however, there were particularly strong correlations between 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) with 2,2',3,4,4',5'-hexachlorobiphenyl(PCB138) (r=0.96) and 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) (r=0.83). The lowest correlation that was observed was between 2, 2', 3, 4, 4', 5,5'-heptachlorobiphenyl (PCB180) and 2,2',3,4,4',5'-hexachlorobiphenyl (PCB138).

Table 27: Summary Table for Non-Dioxin-like Polychlorinated Biphenyls

PCB	mean correlation	% detectable	sample size
2, 2',4,4',5,5'-hexachlorobiphenyl	0.96	64.40%	4232
2,2',3,4,4',5'-hexachlorobiphenyl	0.94	59.29%	4223
2,2',3,4,4', 5,5'-heptachlorobiphenyl	0.92	57.50%	4226

The mean correlation was found to be the highest for PCB153. As well, because of its predominance, PCB 153 has been used as a marker of exposure for the other PCBs (CDC, 2005). Finally, this PCB was the only PCB to have high enough detection frequencies to be included in further analysis, and therefore it was this chemical chosen for further analysis.

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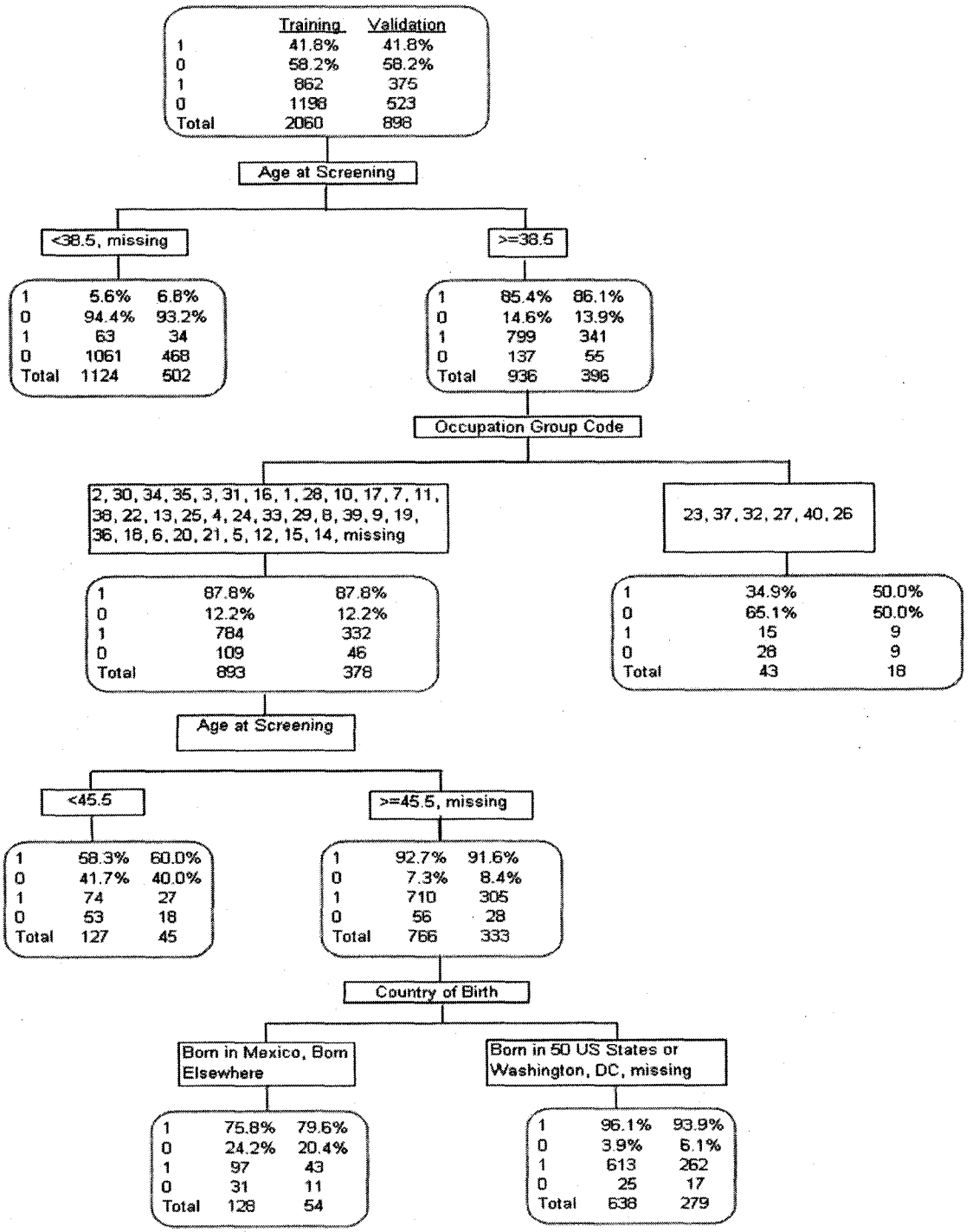
10.2.3 Characteristics of Individuals with High and Low Exposures

10.2.3.1 Classification and Regression Tree:

Figure 13: Classification and Regression Tree for PCB153 (Lipid Adjusted)



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For PCB153, the first major split occurred with age, with those greater than 38.5 years of age having a much greater percentage of individuals with a high body burden. Only 5.6% of individuals less than 38.5 years of age were classified as high body burden, as compared with 85.4% with those over the age of 38.5. Only those in occupational group 2 (see table 27), had lower percentages of individuals being classified as high body burden (34.9%). However, as only 15 people were classified as being high exposure, this may have merely been an artifact of sample size.

A second division in age occurred in those greater than 38.5 years of age at 45.5 years of age. The majority of those who were greater than or equal to 45.5 years of age and who were in occupational group 1 were classified as high body burden. Overall, 92.7% of individuals in this category were high body burden. In contrast, of those who were in the same occupational group, and less than 45 years of age but greater than 38.5 years of age, only 58.3% were classified as high body burden.

The final variable that proved to improve the ability of the model to accurately classify individuals as high or low body burden was country of birth. As outlined previously, of those who were greater than or equal than or equal than 45.5 years of age and belonged to occupational group 1, 92.7% were classified as high body burden. However, if those individuals were born in Mexico or born elsewhere then 75.8% of those individuals were high body burden. Conversely, if they were born in the United States, 96.1% of those individuals were high body burden.

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Table 28: List of Occupations within Each Occupational Grouping for PCB153

Occupational Group 1	Occupational Group 2
Management Related Occupations (2)	Cleaning and Building Service (23)
Contruction Traders (30)	Construction Laborers (37)
Fabricators, Assemblers, Inspectors and Samplers (34)	Textile, Apparel and Furnishings Machine Operators (32)
Motor Vehicle Operators (35)	Related Agricultural, Forestry and Fishing (27)
Engineers, Architects and Scientists (3)	Other Helpers, Equipment Cleaners (40)
Extractive, and Precision Production (31)	Farm and Nursery Workers (26)
Miscellaneous Adminstrative Support (16)	
Executive, Administrators & Managers (1)	
Vehicle and Mobile Equipment Mechanics, Repairs (28)	
Sales Representatives (10)	
Priivate Household (17)	
Other Professional Specialty (7)	
Sales Workers, Retail and Personal Service (11)	
Labourers, Except Construction (38)	
Hleath Service Occupations (22)	
Information Clerks (13)	
Farm Operators, Managers and Supervisors (25)	
Health Diagnosing, Assessing & Treating (4)	
Personal Service (24)	
Machine Operators, Assorted Materials (33)	
Other Mechanics and Repairers (29)	
Technicians and Related Support Occupations (8)	
Freight, Stock, and Material Movers (39)	
Supervisors and Proprietors (9)	
Waiters and Waitresses (19)	
Other Transportation and Material Moving (36)	
Protective Service (18)	
Writers, Arists, Entertainers and Athletes (6)	
Cooks (20)	
Miscellaneous Food Preparation and Service (21)	
Teachers (5)	
Secretaries, Stenographers, and Typists (12)	
Material Recording, scheduling and distributing clerks (15)	

This model performed relatively well, with a misclassification rate of 0.09 in the training dataset and 0.10 in the validation dataset. As well, there was good accordance between the training and validation datasets, with very similar trends followed in reductions made to the Gini index (see Figure 14).

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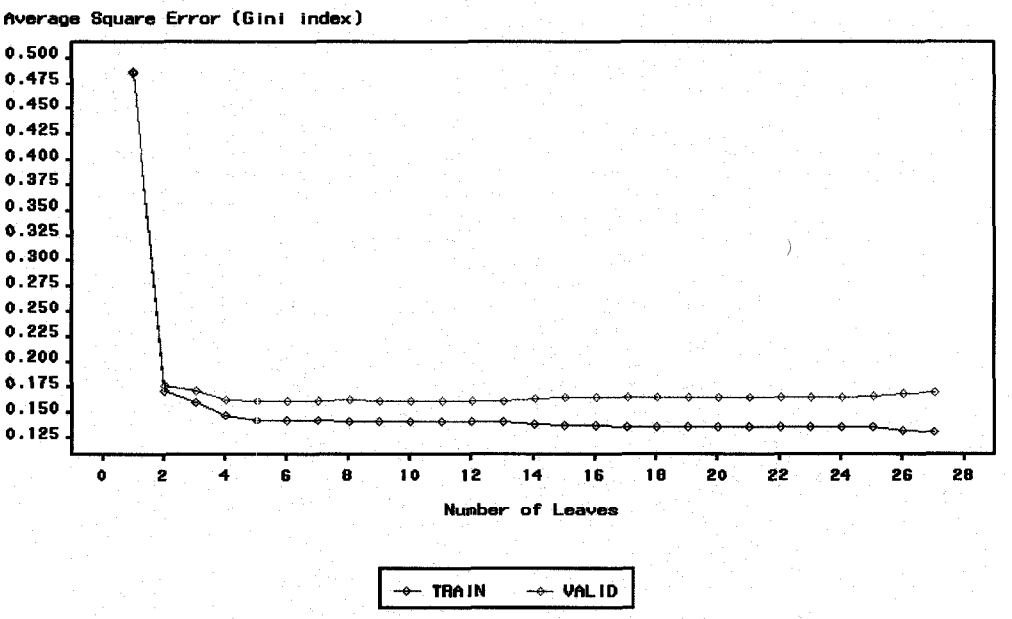
Figure 14: Average Square Error (Gini Index) for the training and validation Data for the Classification and Regression Tree for PCB153 (Lipid Adjusted)



Variables, other than age, occupation and country of birth, identified by the model importance measure were number of prescription medications taken, took prescription medications past month, marital status, vigorous activity over past 30 days, doctor told you have diabetes, and race/ethnicity.

10.2.3.2 Regression Analysis:

Using the age as a continuous variable and country of birth, 51.2% of the variability in PCB153 (lipid adjusted) could be accounted for. Although occupation was chosen by the classification tree, including it in the model reduced the r^2 value and was therefore not included.

Stratified analysis was done on each of the three age categories outlined by the CART analysis. That is individuals under 38.5 years of age, individuals between the ages of 38.5 and 45.5 and individuals over 45.5 years of age. For those under 38.5 years of age the

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major predictors of lipid adjusted PCB153 in serum proved to be age at screening, ethnicity, country of birth and body mass index with an overall r^2 value of 12.09. Not surprisingly, serum concentrations increased with age (β=0.03, $p<0.0001$). Non-Hispanic blacks had highest levels with a β-coefficient of 0.10 with all other race/ethnicities having a negative β-coefficient when compared with non-Hispanic whites. As Mexican Americans, and other Hispanics had negative β-coefficients, so did those individuals who were born in Mexico (β=-0.17, $p=0.021$) with those born in the 50 US States or Washington, DC as the reference. As well, a linear trend in BMI was observed with those who were above a healthy body weight having the lowest exposures (β= -0.45, $p<0.0001$) and those who were underweight having the highest. For the second age category (38.5-45.4 years of age), age at screening, ethnicity, marital status and country of birth were the best predictors of lipid adjusted serum PCB153 Concentrations. As per the previous model for PCB153, serum concentrations of PCB153 increased with increasing age (β=0.04, $p=0.0126$). Exposures for non-Hispanic Blacks were found to be the highest in this age category, with those for Mexican Americans and Other Hispanics being the lowest (β= -0.11 and β= -0.52 respectively). Similarly, those individuals born in Mexico had significantly lower exposures than those born in the United States (β=-0.37, $p=0.0059$). Overall, this model succeeded in predicting 21.41% of the variability in PCB153 exposure for individuals between the ages of 38.5 and 45.4 years of age.

A similar model was developed for individuals greater than 45.5 years of age. Age, race/ethnicity, country of birth and BMI proved to be the best predictors and accounted for 26.58% of the variability in lipid adjusted serum concentrations. Again, concentrations increased with increased age (β=0.02, $p<0.0001$), and non-Hispanic Blacks had the highest levels of PCB153 (β=0.49, $p<0.0001$) with Mexican Americans, Other Hispanics again

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showing negative β-coefficients when compared with non-Hispanic Whites. However, in this case, those individuals of other race (including multi-racial), had the lowest concentrations. As in other models for PCB153, individuals born in Mexico had the lowest levels. Similar to the trend show in the youngest age category, those individuals that were above a healthy body weight had the lowest levels (β=-0.35), and those that a healthy body weight also had a negative coefficient (β=-0.29) when compared with individuals who were underweight. Overall, all three models for the various age groups showed very similar predictors, with age at screening, ethnicity, country of birth and body mass index coming out as the most prominent and consistent predictors. Please See Table 29.

Logistic models revealed similar results. When all ages were examined, age, country of birth, race/ethnicity, and body mass index were all significant. It was found that a one year increase in age resulted in an increased odds of being high body burden (OR: 1.17; 1.15-1.19). As well, those born in Mexico had a decreased odds of being high body burden (OR: 0.18; CI: 0.05-0.58), whereas those who were Non-Hispanic Black had an increased odds of being high body burden (OR: 2.60; CI: 1.75-3.86). Finally, those who were above a healthy body weight had decreased odds of being body burden when compared with those who were underweight (OR: 0.26; CI: 0.08-0.82). Although predictors changed slightly across age categories, these general trends remained constant. Please see Table 30.

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Table 29: Regression Analysis for PCB153 (Lipid Adjusted) Stratified by Age

Characteristics affecting body burden of PCB153 for those of all ages				
Parameter	*Estimate*	*p-value*	*Model R^2*	*p-value*
Intercept	2.10	<0.0001	0.512	<0.0001
Age in Years	0.03	<0.0001		
Country of Birth		0.0002		
Mexico	-0.35	0.0002		
Elsewhere	0.10	0.1556		
50 US States	0.00	.		
Characteristics affecting body burden of PCB153 for those less than 38.5 years of age				
Parameter	*Estimate*	*p-value*	*Model R^2*	*p-value*
Intercept	2.39	<0.0001	0.1209	<0.0001
Age in Years	0.03	<0.0001		
Race/Ethnicity		0.0333		
Non-Hispanic Black	0.10	0.1270		
Mexican American	-0.02	0.8127		
Other Race-Including Multi-Racial	-0.01	0.9038		
Other Hispanic	-0.24	0.0135		
Non-Hispanic White	0.00	.		
Country of Birth		0.0340		
Mexico	-0.17	0.0210		
Elsewhere	0.24	0.0226		
50 US States	0.00	.		
Body Mass Index		<0.0001		
Above a healthy body weight	-0.45	<0.0001		
Healthy body weight	-0.20	0.0167		
Underweight	0.00	.		
Characteristics affecting body burden of PCB153 for those between 38.5 years and 45.5				
Parameter	*Estimate*	*p-value*	*Model R^2*	*p-value*
Intercept	1.78	0.0095	0.2141	<0.0001
Age in Years	0.04	0.0126		
Race/Ethnicity		<0.0001		
Non-Hispanic Black	0.29	0.0051		
Mexican American	-0.11	0.1770		
Other Race-Including Multi-Racial	0.13	0.5900		
Other Hispanic	-0.52	0.0185		
Non-Hispanic White	0.00	.		
Marital Status		0.0149		
Widowed	-0.22	0.1374		
Divorced	0.01	0.9466		
Separated	0.25	0.1487		
Never Married	0.18	0.0350		
Living with Partner	0.04	0.7622		
Married	0.00	.		
Country of Birth		0.0191		
Mexico	-0.37	0.0059		
Elsewhere	0.14	0.3616		
50 US States	0.00	.		
Characteristics affecting body burden of PCB153 for those greater than 45.5 years of age				
Parameter	*Estimate*	*p-value*	*Model R^2*	*p-value*
Intercept	3.13	<0.0001	0.2658	<0.0001
Age in Years	0.02	<0.0001		<0.0001
Race/Ethnicity		<0.0001		<0.0001
Non-Hispanic Black	0.49	<0.0001		
Mexican American	-0.05	0.3424		
Other Race-Including Multi-Racial	-0.25	0.0755		
Other Hispanic	-0.20	0.0528		
Non-Hispanic White	0.00	.		
Country of Birth		<0.0001		
Elsewhere	-0.47	<0.0001		
Mexico	0.12	0.1632		
50 US States	0.00	.		
Body Mass Index		0.0429		
Above a healthy body weight	0.35	0.0321		
Healthy body weight	-0.30	0.0708		
Underweight	0.00	.		

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Table 30: Logistic Regression Analysis for PCB153 (Lipid Adjusted) Stratified by Age

Characteristics affecting body burden of PCB153 for those of all ages		
Parameter	*Odds Ratio*	*95% CI*
Age in Years	1.17	1.15-1.19
Country of Birth		
Mexico vs. 50 US States	0.18	0.05-0.58
Elsewhere vs. 50 US States	1.48	0.63-3.46
Race/Ethnicity		
Non-Hispanic Black vs. Non-Hispanic White	2.60	1.75-3.86
Mexican American vs. Non-Hispanic White	0.68	0.41-1.45
Other Race-Including Multi-Racial vs. Non-Hispanic White	1.01	0.35-2.95
Other Hispanic vs. Non-Hispanic White	0.45	0.16-1.25
Body Mass Index		
Above a healthy body weight vs. underweight	0.26	0.08-0.82
Healthy body weight vs. underweight	0.36	0.12-1.08
Characteristics affecting body burden of PCB153 for those less than 38.5 years of age		
Parameter	*Odds Ratio*	*95% CI*
Age in Years	1.12	1.07-1.17
Country of Birth		
Mexico vs. 50 US States	0.26	0.08-0.86
Elsewhere vs. 50 US States	6.89	2.15-22.13
Race/Ethnicity		
Non-Hispanic Black vs. Non-Hispanic White	2.47	1.18-5.18
Mexican American vs. Non-Hispanic White	0.59	0.18-1.99
Other Race-Including Multi-Racial vs. Non-Hispanic White	1.03	0.28-3.83
Other Hispanic vs. Non-Hispanic White	0.14	0.02-1.13
Body Mass Index		
Above a healthy body weight vs. underweight	0.12	0.03-0.40
Healthy body weight vs. underweight	0.32	0.09-1.06
Characteristics affecting body burden of PCB153 for those between 38.5 years and 45.5 years of age		
Parameter	*Odds Ratio*	*95% CI*
Age in Years	1.24	1.03-1.50
Country of Birth		
Mexico vs. 50 US States	0.19	0.06-0.63
Elsewhere vs. 50 US States	1.60	0.71-3.62
Characteristics affecting body burden of PCB153 for those greater than 45.5 years of age		
Parameter	*Odds Ratio*	*95% CI*
Age in Years	1.12	1.07-1.16
Country of Birth		
Mexico vs. 50 US States	0.09	0.04-0.19
Elsewhere vs. 50 US States	0.24	0.09-0.59
Race/Ethnicity		
Non-Hispanic Black vs. Non-Hispanic White	4.31	1.50-12.39
Mexican American vs. Non-Hispanic White	0.79	0.42-1.48
Other Race-Including Multi-Racial vs. Non-Hispanic White	1.28	0.41-3.96
Other Hispanic vs. Non-Hispanic White	0.81	0.23-2.82

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10.3 Discussion of PCB153 Results

BMI emerged as an important predictor of PCB concentrations in the body. When those who were <38.5 years of age were examined, those who were above a healthy body weight had the lowest PCB levels in serum, and those who were underweight had the highest levels. However, when individuals who were above 45.5 years of age were examined, those who were above a healthy body weight had the highest concentrations, followed by those who were underweight and finally those who were a healthy body weight. Vo et al. (2008), has hypothesized that PCB levels may be influenced by BMI in couple different ways. It may be possible that the effect of higher BMI influences the rate of decline due to reduced metabolism by xenobiotic-metabolizing enzymes such as cytochrome P450 (CYP) as CYPs of the 1A, 2B and 3A family are most likely to be involved in the metabolism of various PCB congeners (ATSDR, 2000; Hansen, 1998; Hu and Bunce, 1999). There has also been some indication that increased fat as a result of weight gain may lead to the dilution of PCB concentrations, thereby resulting in a negative association between body fat and serum PCB levels (Wolff et al, 2005). These two hypotheses are somewhat contradictory; however, they may explain the results observed here. When individuals are younger, dilution may play a larger role whereas when individuals are older, metabolic differences may be the driving force in overall concentrations. As well, there may be a period in which these forces are approximately equivalent, as BMI was not a significant predictor in those between the ages of 38.5 and 45.5 years of age.

Country of birth was also a significant predictor, with people born in Mexico showing lower concentrations than those born in the United States or born elsewhere. It

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was hypothesized that Mexico had perhaps instituted legislation against PCBs earlier than the US or elsewhere; however, Mexico was importing PCBs even in the 1980's after many countries had prohibited their use. It is estimated that about 13 000 metric tons of liquid PCBs have been imported into Mexico (Yarto-Ramírez et al., 2005). A plausible explanation therefore exists in the global redistribution of PCBs. Studies have indicated a northward migration of PCBs from their source (Wania and Su, 2004) partially as a result of zonally and seasonally variable temperature on the phase distribution and degradation rates of a PCB congener (Wania and Su, 2004). This is the primary reason why the arctic region has been shown to have high levels of PCBs despite having very few, if any, releases (Wanla and Su, 2004). It is unknown as to why people born in Mexico but who are over the age of 45.5 years of age have higher levels than those in the US, but it may be that they have lived in the US for a longer period of time and their increased exposures are a result of "environmental racism", rather than exposures in Mexico.

It is unclear as to why marital status would have affected concentrations, particularly within a relatively small age category (38.5-45.5 years). Given that individuals who were separated had the highest concentrations, it may be that stress affects metabolism of toxicants in the body. However, given that PCBs accumulate in the body over time, and that short term exposure would be unlikely to result in increases in body burden, this may not be likely, however it may be a finding meriting further research in the future.

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CHAPTER 11: POLYCHLORINATED DIBENZO-P-DIOXINS, POLYCHLORINATED DIBENZOFURANS, AND COPLANAR AND MONO-ORTHO-SUBSTITUTED POLYCHLORINATED DIPHENYLS

11.1 Introduction to Polychlorinated Dibenzo-p-dioxins, Polychorinated DibenzoFurans, and Coplanar and Mono-ortho-Substituted Polychlorinated Biphenyls

11.1.1 Sources of Exposure to Polychlorinated Dibenzo-p-dioxins, Polychorinated DibenzoFurans, and Coplanar and Mono-ortho-Substituted Polychlorinated Biphenyls

Polychlorinated dibenzo-p-dioxins and dibenzofurans are two classes of chemicals that have no known commercial or natural use, but that are produced as byproducts of other reactions. For dioxins, production is a result of incineration or burning of waste; bleaching processes used in pulp and paper mills; as well as the chemical synthesis of trichlorophenoxyacetic acid, hexachlorophene, vinyl chloride, trichlorophenol, and pentachlorophenol (ATSDR, 1998). Furans, on the other hand, are produced due to synthesis and degradation of polychlorinated biphenyls (PCBs). Currently, the largest release of dioxins and furans is a result of open burning of household and municipal trash, as well as landfill, agricultural, and forest fires (ATSDR, 1994; CDC, 2005).

Coplanar and mono-ortho-substituted polychlorinated biphenyls (PCBs) were banned in the United States after 1979, after being commonly used as electrical insulating and heating-exchange fluids. Polychlorinated biphenyls were released into the environment before 1979 through the placement of wastes in landfills, accidental spills and leaks during transport, as well as leaks or fires in transformers and capacitors. Although not as common, release of PCBs into the environment still occurs today, as a result of poorly maintained hazardous waste sites that contain PCBs; illegal or improper dumping; leaks from electrical transformers containing PCBs; and improper disposal of PCB-containing consumer products. There may also be some release of PCBs due to burning of wastes in municipal and industrial incinerators. Production of PCBs peaked in the early 1970, and despite the

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fact that they have been banned since 1979, they can still be found in the environment due to their highly persistent nature (ATSDR, 1998).

11.1.2 Exposure Route and Exposed Populations:

The primary route of exposure to polychlorinated dibenzo-p-dioxins, dibenzofurans, and polychlorinated biphenyls is via ingestion of contaminated food (ATSDR, 1994; ATSDR, 1998). These substances readily enter the food chain, and accumulate in fatty-foods such as dairy products, eggs, animal fats, as well as some fish and wildlife. For infants, breast-milk is also a significant source (Beck et al., 1994). Exposed populations have been mentioned previously, and include those in Seveso, Italy; Yusho, Japan; Yucheng, Taiwan; and Vietnam. Today, occupational exposures are rare, but before 1979, employees working in the production, storage and use of electrical insulating and heating-exchange fluids would have been occupationally exposed.

11.1.3Fate, Transport and Metabolism:

Once in the environment, dibenzo-p-dioxins, dibenzofurans, and polychlorinated biphenyls do not readily break down and persist for long periods of time. Dibenzo-p-dioxins and dibenzofurans are primarily introduced into the environment through the air where they can attach to small particles. Polychlorinated biphenyls on the other hand are primarily released into soil. Dibenzo-p-dioxins, dibenzofurans, and polychlorinated biphenyls can cycle easily between air, water and soil. They can enter the air though evaporation from both soil and water, where they can travel long distances before returning to land and water by settling as dust or in rain and snow (ATSDR, 1994; ATSDR; 1998). In water, they may be transported by currents, attach to bottom sediment or particles in the

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water, and evaporate into air. Sediments can also release these chemicals into the surrounding water. These chemicals are then absorbed by plants, fish, and animals and stored in fatty tissue. Levels have been shown to bio-accumulate and therefore be highest among top predators.

Some dibenzo-p-dioxins, dibenzofurans, and polychlorinated biphenyls are converted into their respective metabolites after entering the body, some of which have the potential to be as harmful as the original chemical. Some of the metabolites are excreted within a few days via the feces; however, many others are deposited in body fat for months, and reach equilibrium with blood serum. Unchanged substances may also remain in the body, and be stores in fatty tissue and the liver with smaller amounts stores in other organs. They can also collect in milk fat and serve as a source of exposure for infants (ATSDR, 1994; ATSDR, 1998).

11.2 Results for Polychlorinated Dibenzo-p-dioxins, Polychorinated DibenzoFurans, and Coplanar and Mono-ortho-Substituted Polychlorinated Biphenyls

11.2.1 Exposure Levels:

Recall that PCBs are measured in serum and subject to lipid adjustment. Similar to the non-dioxin-like polychlorinated biphenyls, each individual sampled had their own limit of detection, as well as each 2-year sampling period. As a result, the maximum limit of detection by year and individual was used to replace mean concentrations below the detection limit. This resulted in most means being obscured by the detection limits, and therefore descriptive statistics could not be discussed here. Despite the difficultly with varying detection limits, 64.8% of samples were above the detection limit for 1, 2, 3, 4, 6, 7, 8 - Heptachorodibenzofuran (HpCDF), 69.86% of 1, 2, 3, 4, 6, 7, 8, 9-

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Octachlorodibenzo-p-dioxin (OCDD) samples and 74.9% of 1, 2, 3, 4, 6, 7, 8-Heptachorodibenzo-p-dioxins (HpCDD)samples, thereby justifying further analysis in order to elucidate hierarchical trends within the data.

11.2.2 Patterns of Exposure:

Table 31: Correlations among Non-dioxin-like Polychlorinated Biphenyls

	1, 2, 3, 4, 6, 7, 8, 9-Octachlorodibenzo-p-dioxin (OCDD)	1, 2, 3, 4, 6, 7, 8 - Heptachorodibenzofuran (HpCDF)	1, 2, 3, 4, 6, 7, 8-Heptachorodibenzo-p-dioxins (HpCDD)
1, 2, 3, 4, 6, 7, 8, 9-Octachlorodibenzo-p-dioxin (OCDD)	1.00	0.48	0.77
1, 2, 3, 4, 6, 7, 8 - Heptachorodibenzofuran (HpCDF)	-	1.00	0.43
1, 2, 3, 4, 6, 7, 8-Heptachorodibenzo-p-dioxins (HpCDD)	-	-	1.00

* all correlations significant at $p<0.0001$

* minimum sample size n=2856

The strongest correlation was observed between 1,2,3,4,6,7,8,9-Octachlordibenzo-p-dioxin (OCDD) and 1,2,3,4,6,7,8-Heptachorodibenzo-p-dioxin (HpCDD) with a correlation coefficient of 0.77. The remaining two correlation coefficients were 0.43 and 0.48 respectively.

Table 31 presents the summary statistics used to choose one chemical to be carried forward. As OCDD had the highest mean correlation among this group of compounds, it was chosen to be used in subsequent modeling.

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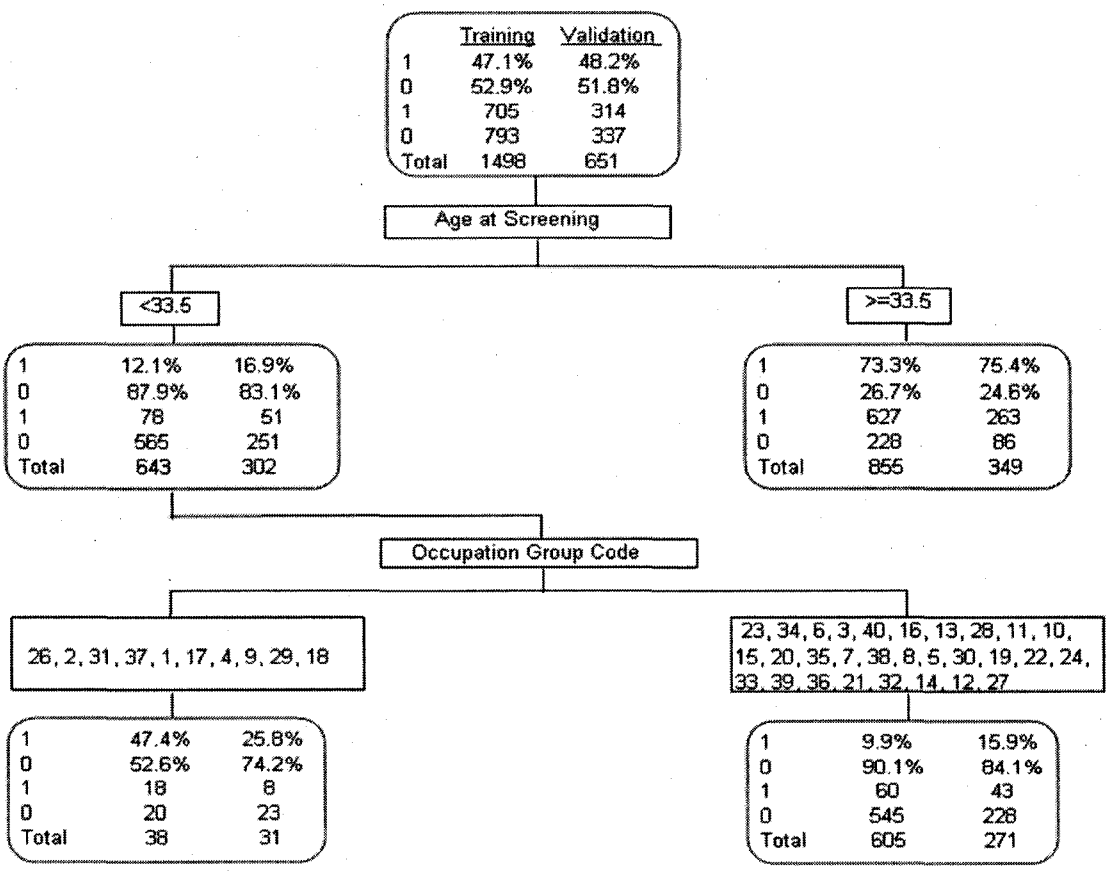
Table 32: Summary Table for Non-dioxin-like Polychlorinated Biphenyls

	mean correlation	% detectable	sample size
1, 2, 3, 4, 6, 7, 8, 9-Octachlorodibenzo-p-dioxin (OCDD)	0.62	69.80%	3092
1, 2, 3, 4, 6, 7, 8 - Heptachorodibenzofuran (HpCDF)	0.45	63.78%	2328
1, 2, 3, 4, 6, 7, 8-Heptachorodibenzo-p-dioxins (HpCDD)	0.60	74.90%	3114

11.2.3 Characteristics of Individuals with High and Low Exposures

11.2.3.1 Classification and Regression Tree:

Figure 15: Classification and Regression Tree for OCDD (Lipid Adjusted)



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Similar to PCB153, the first major split created by the classification and regression tree occurred in age, at around the mid-thirty mark. In the case of 1, 2, 3, 4, 6, 7, 8, 9-Octachlorodibenzo-p-dioxin (OCDD) the split occurred at 33.5 years of age, with only 12.1% of those individuals below 33.5 years of age being high body burden. On the other hand, of individuals greater than 33.5 years of age, 73.3% were high body burden. Among those individuals below 33.5 years of age, a second split occurred by occupation. Individuals in occupational group 1 (see Table 33) were more likely to be classified as high body burden when compared with all other occupations. Among individuals who were less than 33.5 years of age, and those belonging to the previously mentioned occupational categories, 47.4% were classified as high body burden. In contrast, only 9.9% in the remaining occupational groups were classified as high body burden. However, this split did not necessarily cross validate very well. This model had an overall misclassification rate of 0.20. The variables which were identified from importance measure of the classification and regression tree were age at screening, number of prescription medications taken, prescription medications taken-past month, vigorous activity over past 30 days, data release number, education and occupational group code. Including the variables as identified directly from the Classification and Regression Tree results in an r^2 value of 0.25 with both variables (age and occupation) showing statistical significance ($p<0.0001$ and $p=0.0049$ respectively). When entered into a logistic regression model, this resulted in individuals over the age of 33.5 years of age being 9.04 times more likely of being high body burden when compared with those less that 33.5 years of age (CI: 6.2-13.1; $p<0.0001$). For occupation, those in occupation group 1 the odds ratio was 0.67 (CI: 0.460-1.000; $p=0.0501$) indicating that those individuals in these occupations are at a decreased risk of being high body burden when compared with those in the other occupational group. This is

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contradictory to the classification tree; however, this also includes both age categories and not just those below the age of 33.5 years of age.

Table 33: List of Occupations within Each Occupational Grouping for OCDD

Occupational Group 1	Occupational Group 2
Farm and Nursery Workers (26)	Cleaning and Building Service (23)
Management Related Occupations (2)	Fabricators, Assemblers, Inspectors and Samplers (34)
Extractive, and Precision Production (31)	Writers, Arists, Entertainers and Athletes (6)
Construction Laborers (37)	Engineers, Architects and Scientists (3)
Executive, Administrators & Managers (1)	Other Helpers, Equipment Cleaners (40)
Priivate Household (17)	Miscellaneous Adminstrative Support (16)
Health Diagnosing, Assessing & Treating (4)	Information Clerks (13)
Supervisors and Proprietors (9)	Vehicle and Mobile Equipment Mechanics, Repairs (28)
Other Mechanics and Repairers (29)	Sales Workers, Retail and Personal Service (11)
Protective Service (18)	Sales Representatives (10)
	Material Recording, scheduling and distributing clerks (15)
	Cooks (20)
	Motor Vehicle Operators (35)
	Other Professional Specialty (7)
	Labourers, Except Construction (38)
	Technicians and Related Support Occupations (8)
	Teachers (5)
	Contruction Traders (30)
	Waiters and Waitresses (19)
	Health Service Occupations (22)
	Personal Service (24)
	Machine Operators, Assorted Materials (33)
	Freight, Stock, and Material Movers (39)
	Other Transportation and Material Moving (36)
	Miscellaneous Food Preparation and Service (21)
	Textile, Apparel and Furnishings Machine Operators (32)
	Records Processing (14)
	Secretaries, Stenographers, and Typists (12)
	Related Agricultural, Forestry and Fishing (27)

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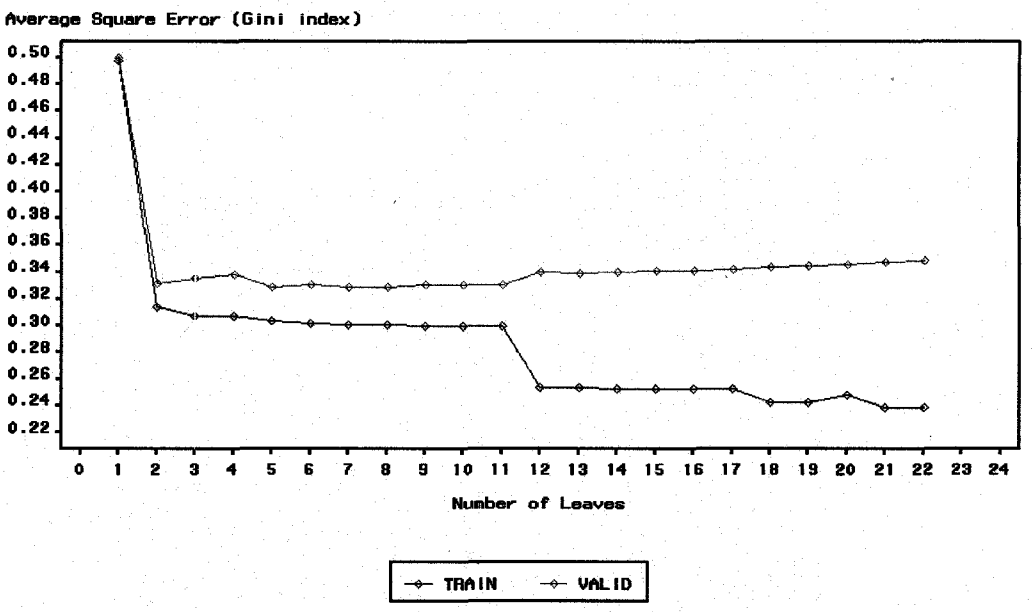
Figure 16: Average Square Error (Gini Index) for the training and validation Data for the Classification and Regression Tree for OCDD (Lipid Adjusted)



11.2.3.2 Regression Analyses

For all models, age proved to be the best predictor of lipid adjusted OCDD concentrations. However, for the older age group (≥33.5 years of age), the predictive power of age was improved over that of that of the younger age category. Univariate analysis revealed that age predicted approximately 5.9% of the variability of OCDD lipid adjusted concentrations in those <33.5 years of age, as compared to the 10.6% predicted in the older age category. This is most likely a result of the broader age range in compassed in the upper age category. In both models, age was highly significant with a p-value of <0.0001. Please see Table 34.

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Table 34: Regression Analysis for OCDD (Lipid Adjusted) Stratified by Age

Characteristics affecting body burden of OCDD for those of all ages				
Parameter	*Estimate*	*p-value*	*Model R^2*	*p-value*
Intercept	4.73	<0.0001	0.3146	<0.0001
Age in Years	0.21	<0.0001		
Characteristics affecting body burden of cadmium for those less than 33.5 years of age				
Parameter	*Estimate*	*p-value*	*Model R^2*	*p-value*
Intercept	4.45	<0.0001	0.069	<0.0001
Age in Years	0.02	<0.0001		
Race/Ethnicity		0.0113		
Non-Hispanic Black	0.07	<0.0001		
Mexican American	0.00	0.103		
Other Race-Including Multi-Racial	0.18	0.0016		
Other Hispanic	-0.18	0.0136		
Non-Hispanic White	0.00	.		
Characteristics affecting body burden of cadmium for those less than 33.5 years of age				
Parameter	*Estimate*	*p-value*	*Model R^2*	*p-value*
Intercept	5.00	<0.0001	0.1063	<0.0001
Age in Years	0.17	<0.0001		

Logistic regression analysis again revealed the importance of age. A one year increase in age resulted in an 8% increase in the odds of being high body burden when those of all ages were examined (OR: 1.08; CI: 1.07-1.09). When only those under the age of 33.5 were examined a 10% increase in the odds of being high body burden for a one year increase in age was found (OR: 1.10; CI: 1.07-1.16). This decreased slightly for those greater than 33.5 years of age, with a 7% increase (OR: 1.07; CI: 1.06-1.08). Race/Ethnicity was also found to be significant when all ages were examined, as well as those who were greater than 33.5 years of age. For non-Hispanic Blacks, Mexican Americans and those who were Other Race-Including Multi-Racial, the odds of being high body burden were statistically significantly higher when compared with those who were non-Hispanic White. Finally, country of birth was also important in those greater than 33.5 years of age. Those who were born elsewhere were found to have decreased odds of being

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high body burden when compared with those who were born in the United States. See Table 35.

Table 35: Logistic Regression Analysis for OCDD (Lipid Adjusted) Stratified by Age

Characteristics affecting body burden of OCDD for those of all ages		
Parameter	*Odds Ratio*	*95% CI*
Age in Years	1.08	1.07-1.09
Race/Ethnicity		
Non-Hispanic Black vs. Non-Hispanic White	1.98	1.38-2.84
Mexican American vs. Non-Hispanic White	1.47	1.01-2.14
Other Race-Including Multi-Racial vs. Non-Hispanic White	2.55	1.21-5.40
Other Hispanic vs. Non-Hispanic White	0.91	0.45-1.85
Characteristics affecting body burden of OCDD for those less than 33.5 years of age		
Parameter	*Odds Ratio*	*95% CI*
Age in Years	1.10	1.07-1.16
Characteristics affecting body burden of OCDD for those greater than 33.5 years of age		
Parameter	*Odds Ratio*	*95% CI*
Age in Years	1.07	1.06-1.08
Country of Birth		
Mexico vs. 50 US States	0.50	0.22-1.34
Elsewhere vs. 50 US States	0.41	0.18-0.95
Race/Ethnicity		
Non-Hispanic Black vs. Non-Hispanic White	2.41	1.52-3.81
Mexican American vs. Non-Hispanic White	2.93	1.35-6.35
Other Race-Including Multi-Racial vs. Non-Hispanic White	5.50	1.49-20.49
Other Hispanic vs. Non-Hispanic White	1.71	0.63-4.65

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11.3 Discussion of OCDD Results

The major predictor determined by both the classification and regression tree analysis and the linear regression model was age. In a model of all study participants, age could account for approximately 31.5% of the variability in OCDD concentrations. This is not surprising given the long half-life of dioxins in the body and their ability to bioaccumulate in biological tissues. It is also interesting that individuals who were "other race-including multiracial" had the highest levels for those individuals who were less than 33.5 years of age. Unfortunately, as this category composed a relatively broad class of individuals it is difficult to speculate as to why this trend was observed. The variable that emerged from the classification and regression tree analysis, which did not appear in the final models, was occupation. In the original model, occupations such as farm and nursery workers, management related occupations, extractive and precision production, construction laborers, executive, administrators and managers, private household, health diagnosing, supervisors and proprietors, other mechanics and repairers, protective services had were more likely to be high body burden when compared with those in other occupations. In some cases, it would be logical for occupations to be exposed to higher concentrations of waste incineration (i.e. farm and nursery workers, construction laborers), but in other cases, there was no biological plausibility for the increased exposures due to occupation (i.e. management related occupations; executive, administrators and managers). It is expected that these results were a statistical artifact, and due to the relatively small total n (n=38), individual occupations did not gain statistical significance in the final model.

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CHAPTER 12: ORGANOCHLORINE PESTICIDES

12.1 Introduction to Organochlorine Pesticides

12.1.1 Sources of Organochlorine Pesticides

Dichlorodiphenyltrichloroethane (DDT) is an insecticide which was used widely in the second half of World War II to control mosquitoes spreading malaria and lice transmitting typhus. It was used widely for approximately three decades to control insect pests on crop and forest lands, around homes and gardens and for industrial and commercial purposes, before being banned by the U.S. EPA in 1973. It is still used, however, in other countries. Commercially available DDT contains three chemical forms of DDT: *p,p'*-DDT, *o,o'*-DDT and *o,p'*-DDT (ATSDR, 2002; CDC, 2005).

Hexachlorocylcohexane (HCH) is an organochlorine pesticide with several isomeric forms; alpha, beta, gamma and delta. The gamma isomer is commonly known as lindane, and is the only isomer with insecticidal activity. The other isomers are used in the synthesis of other chemicals and also as fungicides. Hexachlorocyclohexane is highly persistent in the environment and as a result many agricultural uses of lindane were cancelled in 1985 (ATSDR, 2005; CDC, 2005). It is still has limited use in the preplanting treatment of seeds and in products to treat human scabies and lice (ATSDR, 2005).

Chlordane was primarily used on agricultural crops and lawns and in buildings to kill termites and other insects. Its production and use was cancelled in the United States in 1988 by the U.S. EPA, and its use is currently restricted. However, there are still some limited applications for controlling fire ants (ATSDR, 1994; CDC, 2005).

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12.1.2 Exposure Route and Exposed Populations

Ingestion is the primary route of exposure to DDT in the general population, as many foods contain detectable residues of DDT or a form of DDT. Despite the fact that the US banned this substance, many other countries which import food into the United States may still use DDT and as a result DDT or DDE residues may still be present (CDC, 2005). Some exposure to this chemical may also occur by breathing contaminated air or drinking contaminated water near waste sites and landfills that may contain higher levels of these chemicals. As well, breast milk from exposed mothers may pose a source of exposure to infants (ATSDR, 2002). Some studies have reported that levels of DDT and DDE increase as a person ages due to its persistent nature in the body (CDC, 2005). People exposed after a spraying of DDT may also have higher body burdens. In one study, DDT levels were seven-fold higher in people tested 1 year after a single application of DDT for malaria control when compared with a control group (Dua et al., 1996). Occupational exposures would be expected in individuals who worked in the fabrication or application of DDT.

Exposure to hexachlorocyclohexanes may occur by eating contaminated food or drinking contaminated water; breathing air contaminated with hexachlorocyclohexanes; or dermally through the application of shampoos or lotions designed to treat lice or scabies. Workers involved in the formulation or application of hexachlorocyclohexanes may be exposed to higher concentrations than the general public (ATSDR, 2005). For chlordane, the most likely source of exposure in the general population is fatty foods. Exposure to chlordane via inhalation of indoor concentrations may occur for decades after the treatment of a residence for termites. There has been some evidence to indicate that indoor-air concentrations of chlordane are higher than outdoor-air concentrations and that this

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microenvironment may be a major source of total exposure (US EPA, 1990; Whitemore et al., 1994).

12.1.3 Fate, Transport, and Metabolism

DDT entered the environment through pesticide application in the U.S. before 1973. Once in the environment, DDT is converted into 1,1'-(2,2-dichloro-ethenylidene)-bis [4-chlorobenzene] (DDE) and 1,1'-dichloro-(2,2-bis(p-chlorophenyl) ethane (DDD). In the air, DDT, DDE and DDD are degraded rapidly by sunlight, with half of the concentration degraded within 2 days (ATSDR, 2002). In soil, however, it takes between 2 to 15 years for DDT to be broken down to DDE and DDD by miroorganisms, depending on the type of soil (ATSDR, 2002). Very little DDT ever enters ground water, due to its strong adhesion to soil and its low solubility in water. Once DDT enters the environment, it has been known to accumulate in plants, as well as the fatty tissues of fish, birds, and other animals including humans (ATSDR, 2002).

Components of technical-grade hexachlorocyclohexanes have found in soil and surface waters near hazardous waste sites (ATSDR, 2005). They have also been found in the air as vapor or attached to small particles such as soil or dust. In air, hexachlorocyclohexanes can travel for long distances before being degraded or removed by rain. In soil, sediments and water, algae, fungi and bacteria degrade Hexachlorocyclohexanes to less toxic compounds. Hexachlorocyclohexanes can also accumulate in the fatty tissue of fish.

Chlordane entered the environment through pesticide applications. It is not likely to enter groundwater due to its strong affinity for soil particles. In fact, has been know stay in the soil for over 20 years (ATSDR, 1994). It may however, leave soil through evaporation

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to the air. Chlordane is also highly persistent and can bioaccumulate in the tissues of fish, birds, and mammals (ATSDR, 1994).

In the body, ingested DDT undergoes reductive dechloronation to DDE, which is further broken down and excreted as DDA (Roan et al., 1971). Although at a much slower rate, DDT is also converted via dehydrodechlorination to DDE (Morgan and Roan, 1971). Further metabolism of DDE is relatively slow, and most is retained in adipose tissue where it reaches equilibrium with serum (Hayes et al., 1971; Morgan and Roan 1971).

Similarly hexachlorocyclohexane and chlordane, and their metabolites distribute widely in the body and accumulate in fatty tissues. Due to their persistent nature, these compounds and their metabolites are eliminated from the body very slowly. For example, beta-hexachlorocyclohexane has a blood elimination half-life of 7 years (ATSDR, 1995; ATSDR, 2005).

12.2 Results for Organochlorine Pesticides

12.2.1 Exposure Levels:

Recall that organochlorine pesticides are measured in serum and subject to lipid adjustment. Age proved to be the most important variable in discriminating individuals who were classified as high body burden from those who were low body burden in all organochlorine pesticides examined. For both trans-nonachlor and β-hexachlorocylcohexane individuals below the age of forty had mean concentrations below the limit of detection. Concentrations, however, increased with age. Those 41-55 years of age had a mean β-hexachlorocylcohexane concentrations of 9.75 (CI: <LOD-10.64), and those 55+ had a mean concentration of 25.58 (CI: 22.33-29.31). Similarly, concentrations of trans-nonachlor increased. Those 41-55 had a mean concentration of 23.38 (21.59-25.32)

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and those 55+ had a mean concentration of 43.85(40.06-48.01). The linear trend in age was even more apparent with p-DDE as there was a greater percent of detectable samples (99.9% as compared with 58.6% and 72.5% respectfully). The mean concentrations for p-DDE were as follows: 122.78 (CI: 110.60-136.29) for those 12-19 years of age; 194.03 (174.28-216.01) for those 20-40 years of age; 366.81 (332.89-404.19) for those 41-55 years of age; and 660.02 (605.77-719.14) for those over 55 years of age (See Appendices 17-19).

In addition to age, country of birth as well as race/ethnicity also proved to be useful variables to distinguish between those who were high versus low body burden for β-hexachlorocylcohexane and p-DDE. This trend however, was not apparent for trans-nonachlor where only age proved to be a major predictor. For β-hexachlorocylcohexane and p-DDE those born in Mexico had the highest mean concentration when compared with those born in the United States or born elsewhere. The mean concentration of β-hexachlorocylcohexane for those born in Mexico was 21.09 (CI: 18.03-24.67). By comparison, those born in the United States had a mean concentration below the limit of detection and those born elsewhere had a mean concentration of 19.27 (14.54-25.56). This trend was even more apparent for p-DDE. The mean concentration for those born in Mexico was 1073.56 (CI: 910.98-1265.15), whereas those born elsewhere nearly half at a mean concentration of 543.65 (CI: 538.65-673.78). A more significant reduction in mean concentration was observed for those born in the United States. The mean concentration for this group was found to be 250.79 (230.66-272.67). Somewhat surprisingly, for trans-nonachlor the trend was reversed. Those born in Mexico had a mean concentration below the detection limit, and those born in the United States had the highest mean concentration at 18.48 (CI: 17.12-19.95).

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Similar trends were observed for race/ethnicity as country of birth. Those who were Mexican Americans or Other Race-including Multi-Racial had the highest mean concentration for both β-hexachlorocylcohexane (13.17 and 24.51 respectively) and p-DDE (668.00 and 501.74). Those who were non-Hispanic white had the lowest mean concentration for both β-hexachlorocylcohexane (<LOD) and p-DDE (244.19 ng/g). See Appendices 17-19 for full results.

12.2.2 Patterns of Exposure:

Table 36: Correlations between Organochlorine Pesticides

	Dichlorodiphenyl-trichloroethane (p,p'-DDE)	Chlordane (trans-nonachlor)	β-hexachlorocyclohexane
Dichlorodiphenyltrichloroethane (p,p'-DDE)	1.00	0.56	0.72
Chlordane (trans-nonachlor)	-	1.00	0.60
β-hexachlorocyclohexane	-	-	1.00

* all correlations significant at p<0.0001
* minimum sample size n=2270

The strongest correlation observed between organochlorine pesticides was between p,p-DDE and β-hexachlorocyclohexane (r=0.72). β-hexachlorocyclohexane and trans-nonachlor were correlated with a correlation coefficient of 0.60, and trans-nonachlor was correlated with p,p'-DDE with a correlation coefficient of 0.56.

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Table 37: Summary Table for Organochlorine Pesticides

	mean correlation	% detectable	n
Dichlorodiphenyltrichloroethane (p,p'-DDE)	0.63	99.90%	4262
Chlordane (trans-nonachlor)	0.57	72.50%	4219
B-hexachlorocyclohexane	0.66	58.60%	4184

Overall, β-hexachlorocyclohexane had the highest mean correlation; however, it also had the lowest frequency of detectable samples. Dichlorodiphenyltrichloroethane (*p,p'*-DDE) had the highest frequency of detectable samples with 99.0% of samples greater than the detection limit. As *p,p'*-DDE is a known endocrine disruptor with exposed populations being relatively well characterized, this was chosen as a reference by which to judge the effectiveness of the Classification and Regression Trees.

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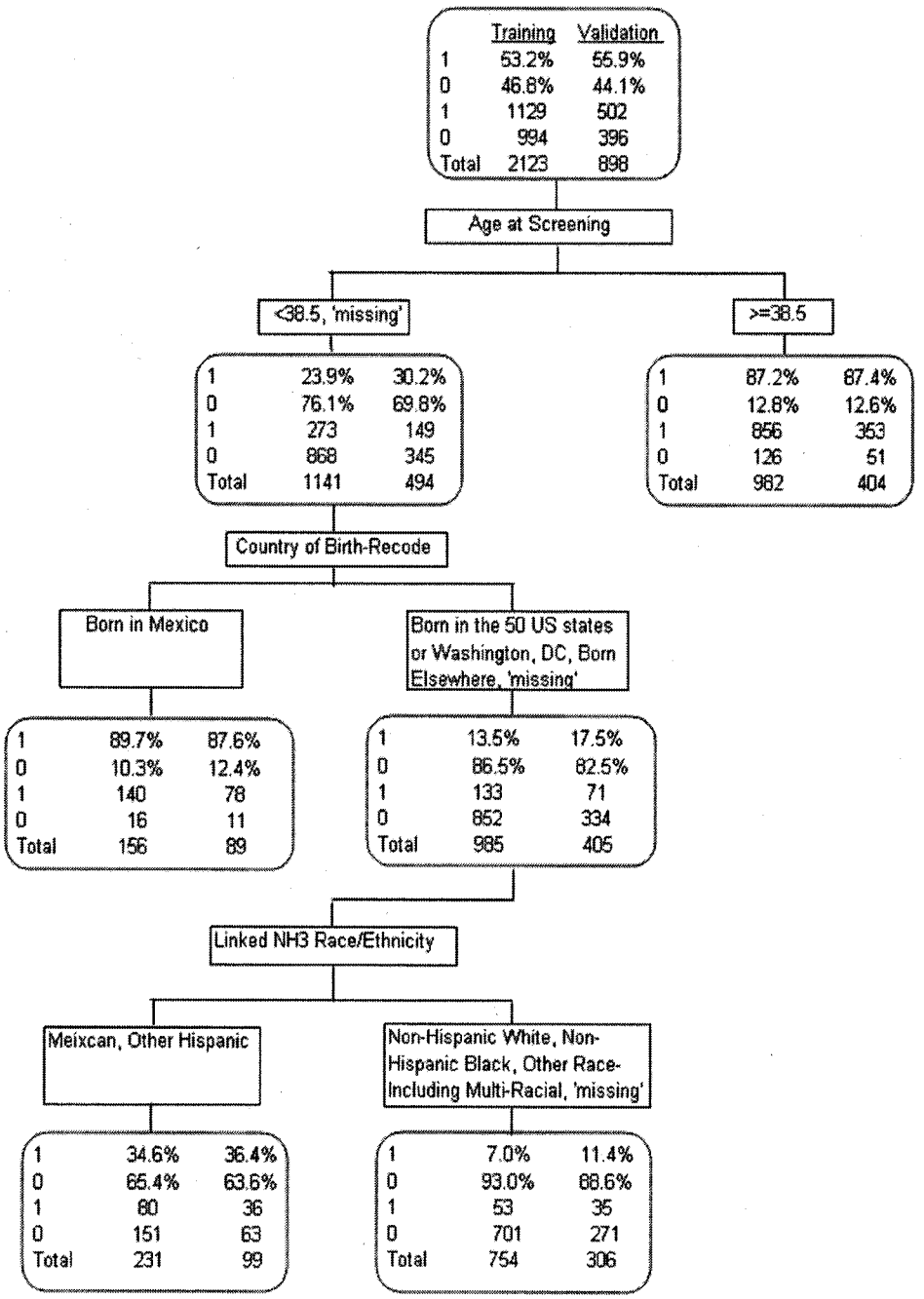
12.2.3 Characteristics of Individuals with High and Low Exposures

12.2.3.1 Classification and Regression Tree

Figure 17: Classification and Regression Tree for p,p-DDE



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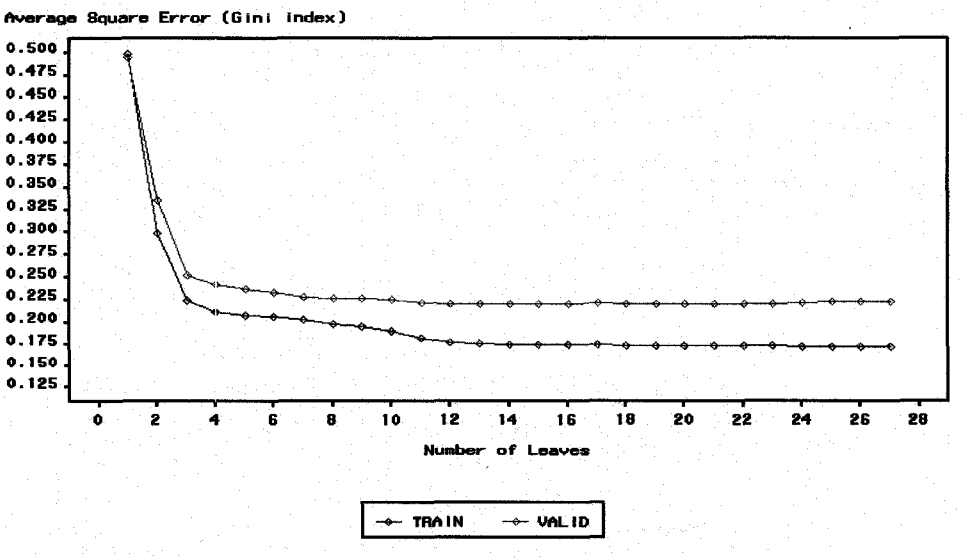
The first split in the classification tree occurred with age, with the majority (87.2%) of individuals who were high body burden being over the age of 38.5 years. Only 23.9% of individuals who were classified as being high body burden, were under the age of 38.5 years (See Figure 17). For those less than 38.5 years of age, two additional splits occurred in the tree, the first of which was country of birth and second of which was race/ethnicity. Overall, those who were born in Mexico had a much greater percentage of individuals being classified as high body burden (89.7%) as compared with those born in the US or born elsewhere (13.5%). However, when the node containing those born in the US or born elsewhere was further split, it also became apparent that those of Mexican or Other Hispanic decent had a greater percentage of high body burden individuals (34.6%) than those who were non-Hispanic white, non-Hispanic black, or other race-including multi-racial (7.0%). There was good cross-validation with this model (see figure 18) with a relatively low misclassification rate (0.13).

Figure 18: Average Square Error (Gini Index) for the training and validation Data for the Classification and Regression Tree for p,p-DDE (Lipid Adjusted)



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12.2.3.2 Regression Analyses

Further modeling of each age group revealed similar trends as age, country of birth and race/ethnicity proved to be the major predictors. BMI could have also been included in the model for those ≥38.5 years of age; however, as this variable only improved the model slightly, it was not included. It was found however, that these variables could predict a greater percentage of the variability in the younger age category (45.6% versus 29.8%). Somewhat surprisingly, the greatest change decrease came from country of birth between these two age groups. As would be expected, body burden increased with increased age. It was also found that those born in Mexico or born elsewhere had higher levels than those born in the United States for both age categories, and that those that were Mexican or were other race-including multiracial, had higher levels when compared with those who were non-Hispanic white (See table 38).

Logistic regression again revealed that age, country of birth and race/ethnicity were important predictors of body burden. The increased odds per one year increase in age were relatively consistent across all analysis (OR for all ages: 1.13; CI: 1.11-1.14; OR for those <38.5 years of age: 1.12; CI: 1.07-1.16; OR for those greater than >38.4 years of age: 1.10; CI: 1.07-1.13). As well, as indicated by the regression analysis, those born in Mexico had higher concentrations. This translated into an odds ratio of 13.13 (CI: 5.63-30.64) for those of all ages; of 12.85 (CI: 4.91-33.63) for those younger than 38.5 years of age, and 20.52 (CI: 1.97-213.75) for those greater than 38.4 years of age. This same trend was seen those who were Mexican American when compared with Non-Hispanic Whites. In this case, the

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odds ratios for being high body burden ranged from approximately 18.5 to 20.0. See Table 39.

Table 38: Linear Regression Analysis for p,p-DDE (Lipid Adjusted) Stratified by Age

Characteristics affecting body burden of p,p'-DDE for those of all ages				
Parameter	*Estimate*	*p-value*	*Model R^2*	*p-value*
Intercept	3.94	<0.0001	0.5055	<0.0001
Age in Years	0.03	<0.0001		
Race/Ethnicity		0.0333		
Non-Hispanic Black	0.36	<0.0001		
Mexican American	0.94	<0.0001		
Other Race-Including Multi-Racial	0.51	<0.0001		
Other Hispanic	0.33	0.0072		
Non-Hispanic White	0.00	.		
Country of Birth		<0.0001		
Mexico	0.86	<0.0001		
Elsewhere	0.58	<0.0001		
50 US States	0.00	.		
Characteristics affecting body burden of p,p'-DDE for those <38.5 years of age				
Parameter	*Estimate*	*p-value*	*Model R^2*	*p-value*
Intercept	-1.45	<0.0001	0.451	<0.0001
Age in Years	0.04	<0.0001		
Race/Ethnicity		0.0333		
Non-Hispanic Black	0.08	0.2876		
Mexican American	0.85	<0.0001		
Other Race-Including Multi-Racial	0.28	0.0220		
Other Hispanic	0.17	0.1440		
Non-Hispanic White	0.00	.		
Country of Birth		<0.0001		
Mexico	1.10	<0.0001		
Elsewhere	0.76	<0.0001		
50 US States	0.00	.		
Characteristics affecting body burden of p,p'-DDE for those >=38.5 years of age				
Parameter	*Estimate*	*p-value*	*Model R^2*	*p-value*
Intercept	-0.68	<0.0001	0.2984	<0.0001
Age in Years	0.03	<0.0001		
Race/Ethnicity		<0.0001		
Non-Hispanic Black	0.65	<0.0001		
Mexican American	1.02	<0.0001		
Other Race-Including Multi-Racial	1.05	<0.0001		
Other Hispanic	0.79	0.0001		
Non-Hispanic White		.		
Country of Birth		<0.0001		
Mexico	0.53	<0.0001		
Elsewhere	0.19	0.0904		
50 US States	0.00	.		

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Table 39: Logistic Regression Analysis for p,p-DDE (Lipid Adjusted) Stratified by Age

Characteristics affecting body burden of p,p'-DDE for those of all ages		
Parameter	*Odds Ratio*	*95% CI*
Age in Years	1.13	1.11-1.14
Country of Birth		
Mexico vs. 50 US States	13.13	5.63-30.64
Elsewhere vs. 50 US States	5.67	2.66-12.11
Race/Ethnicity		
Non-Hispanic Black vs. Non-Hispanic White	3.86	2.33-6.39
Mexican American vs. Non-Hispanic White	18.55	8.93-38.55
Other Race-Including Multi-Racial vs. Non-Hispanic White	5.26	2.34-11.82
Other Hispanic vs. Non-Hispanic White	2.79	1.09-7.14
Characteristics affecting body burden of p,p'-DDE for those <38.5 years of age		
Parameter	*Odds Ratio*	*95% CI*
Age in Years	1.12	1.07-1.16
Country of Birth		
Mexico vs. 50 US States	12.85	4.91-33.63
Elsewhere vs. 50 US States	8.75	3.24-23.64
Race/Ethnicity		
Non-Hispanic Black vs. Non-Hispanic White	2.73	1.11-6.75
Mexican American vs. Non-Hispanic White	19.97	7.45-53.50
Other Race-Including Multi-Racial vs. Non-Hispanic White	3.44	1.08-10.93
Other Hispanic vs. Non-Hispanic White	2.43	1.08-5.47
Characteristics affecting body burden of p,p'-DDE for those >=38.5 years of age		
Parameter	*Odds Ratio*	*95% CI*
Age in Years	1.10	1.07-1.13
Country of Birth		
Mexico vs. 50 US States	20.52	1.97-213.75
Elsewhere vs. 50 US States	2.55	1.00-6.52
Race/Ethnicity		
Non-Hispanic Black vs. Non-Hispanic White	5.62	2.57-12.27
Mexican American vs. Non-Hispanic White	20.03	7.79-55.55
Other Race-Including Multi-Racial vs. Non-Hispanic White	16.22	1.42-185.96
Other Hispanic vs. Non-Hispanic White	4.46	0.74-26.87

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12.3 Discussion of p,p-DDE results

In the case of p,p-DDE, age, race/ethnicity and country of birth emerged as important predictors of exposure. This was consistent across the classification and regression trees, all ages, as well as the stratified analysis. When all ages were modeled, an impressive 50.5% of the variability could be accounted using these only these three variables.

As expected, as age increased, the concentrations measured in serum also increased. This is not surprising for two reasons 1) the persistent nature of DDT and its metabolites, and its ability to bioaccumulate in biological tissues and 2) many of the younger study participants would not have been alive when DDT was in use.

It was also interesting that both those born in Mexico and those who were Mexican American had higher concentrations than other study participants. In the US, most uses for DDT were banned in 1972 (US EPA, 2007), whereas Mexico did not eliminate its use until 2000 (Mexico National Center for Environmental Health,2000). This would therefore explain why individuals who were born in Mexico had higher concentrations than those born in the US, and to some extent indicates the success of this intervention. Another interesting finding is that those who were Mexican American had higher concentrations, even if they were born in the US. This is most likely a result of the high numbers of Mexican Americans employed in agriculture. It has been estimated that nearly nine out of ten (88%) of farm workers are Hispanic (Villarejo et al., 2000). As a result, when DDT was in use, this population would have been exposed to much higher levels than the general population. Even Mexican Americans not working directly in agriculture may have had more indirect exposure due to the presence of residues on clothing, or the passage of concentrations via breast milk to younger generations. They may also have been more

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likely to consume food from the fields that had not been properly cleansed. As a result, epidemiological studies interested the effects of DDT would benefit from targeting those of Mexican decent living in the U.S.

CHAPTER 13: GENERAL DISCUSSION

This thesis was conducted in order to elucidate the characteristics of individuals with a high body burden of endocrine disruptors within the general population using data from the National Health and Nutrition Survey years 1999-2002 was examined. Generally, populations characterized as non-Caucasian appear to have higher body burdens of the endocrine disruptors examined. These characteristics were successfully identified using CART analysis, and confirmed using linear regression and logistic modeling techniques. Regression models could predict between 7.83% and 37.91% of the non-persistent chemicals analyzed (genistein, cadmium, mono-n-butyl phthalate, and 2-hydroxyfluorene. For persistent chemicals (OCDD, p,p-DDE, PCB153) between 22.52% and 50.55% variability could be accounted for. Overall, models for both linear and logistic regression revealed very similar predictors of body burden.

One difficulty encountered in these analyses was the lack of clear definition of high body burden within the scientific literature, particularly at the population level. In this study, the top third of the individuals in the distribution were defined as "high body burden" however; this was a somewhat arbitrary distinction. In fact, the general population is believed to have chronic low-level exposures, and therefore, high body burden in this instance, actually refers to those in the highest portion of low level exposures. One problem with this approach is that detection limits can alter the meaning of the distribution. Over the course of NHANES, analytical methods improved, which in turn resulted in a

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change in the LOD for the same chemical from year to year. For dioxins, furans, PCBs, and organochlorine pesticides each individual sample had its own LOD. This was primarily a result of varying sample volumes for each individual. Increased sample volume resulted in an increased ability to detect a result, and therefore a lower LOD. One problem with this is that the average blood volume changes an average of 80ml/kb body weight, and therefore children would have a higher LOD. As a result, more children would be classified as below the limit of detection when compared with adults.

Reporting of means and percentiles is also problematic given the changing limit of detection. To be conservative, the highest LOD for both study periods and for all individuals was used in order to determine if a mean was below the detection limit. However, this obscured many of the trends in chemicals such as PCBs. Despite the fact that over 60% of the data were above the detection limit, many of the values had to be reported as <LOD as a result of applying this restriction. It is expected that future releases of NHANES will have similar problems and that future research is necessary to address issues of analytical variability.

For non-persistent chemicals (genistein, cadmium, mono-n-butyl phthalate, 2-hydroxyfluorene), the majority of the variability reported could be accounted for by the adjustment for urinary creatinine, therefore prompting readers to interpret these findings with caution. For example, creatinine on its own explains 31.16% of the variation in mono-n-butyl phthalate concentrations, whereas in combination with other predictors, only 37.91% of the variation can be accounted for. In the case of genistein, no predictors could be found that could effectively account for variation within this metabolite.

There has been some debate over the past couple years as to how to best adjust for urinary dilution in a spot urine sample as was collected in NHANES (Boeniger et al., 1993,

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Rigas et al., 2001; Barr et al, 2005). Although the collection of urine samples have many advantages, they are also difficult to interpret due to variability in water content. The most common form of dilution adjustment is to divide the analyte concentration (micrograms analyte per liter urine) by the creatinine concentration (grams creatinine per liter urine). However, the rate of secretion of creatinine has been shown to vary considerably by various biological factors. Creatinine has been shown to vary by muscle mass (Edwards and Whyte, 1959; Fuller and Rich, 1992); by gender- with men having higher urinary creatinine concentrations (Bjornsson, 1979; Turner and Cohn 1975); by age- with decreasing urinary concentrations with increasing age (Alessio et al., 1985; Driver and McAlvey, 1980), and by diet- with persons having a high red meat intake having a higher urinary creatinine concentration (Lykken et al., 1980). As well, some seasonal variation has been observed in children (Freeman et al., 1995; O' Rourke et al., 2000). Give this concern, often both the analyte concentration and the analyte per gram of creatinine are reported.

The method applied here was that used by Barr et al. (2005). For this method of dilution adjustment the dependent variable is the urinary chemical concentration, unadjusted for creatinine. The urinary creatinine concentration is then input into the model as an independent variable. This allows for urinary creatinine concentrations and other covariates in the model to be adjusted for urine dilution. Statistical significance of independent variables is therefore not due to an association with urinary creatinine concentrations. Despite the strength of this approach, it requires caution in interpretation of final models, as the variability in concentrations may be primarily a result of creatinine adjustments rather than the predictor variables of interest. Here an effort has been made to indicate what percentage of the variability is accounted for solely by creatinine so that the remaining model may be interpreted with some prudence.

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With the exception of creatinine, the remaining independent variables did not successfully explain the variability in non-persistent chemicals. In some cases, such as that of genistein, no variables could be found that could significantly predict levels. In most other cases, less than 10% of the variability could be accounted for by various predictor variables. Non-persistent chemicals often have very short biological half-lives- often in the order of hours (Needham and Sexton, 2000). Therefore urinary metabolite concentrations reflect exposures that occurred a day or less preceding collection of the specimen (Calafat, 2007). However, when chronic exposure to a non-persistent chemical occurs, the exposure is continually replenishing in the blood, and urinary elimination may reach a steady state (Barr, 2005). These models may have been uninformative due to intermittent exposures to various non-persistent chemicals. For example, in the case of genistein, if soy products were not consumed consistently within the diet, the levels would have fluctuated from day to day, as

well as hourly.

Figure 19: Hypothetical post exposure fate from chronic exposure to a non-persistent toxicant in blood and urine.*

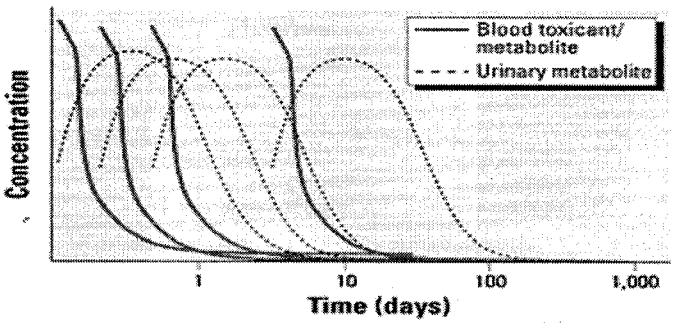

*figure reproduced from Barr et al. (2005) with permission from the author.

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Variables which were identified from this analysis for non-persistent chemicals were age, race/ethnicity, educational attainment, rooms treated for pests, several occupations (vehicle and mobile equipment mechanics, other mechanics and repairers, administrative assistants), and marital status. Although these characteristics will facilitate future epidemiological studies in targeting the appropriate populations, many of these characteristics serve as surrogates for sources or routes of exposure, rather than the exposure itself. This study was limited by using cross-sectional data, with limited relevant questionnaire data. As a result, future studies should collect multiple urine collections, as well as detailed information on sources of exposure via questionnaires in order to implement effective risk management strategies.

For persistent chemicals (OCDD, PCB153, p,p-DDE), age, race/ethnicity, country of birth, martial status and BMI emerged as important predictors, with age proving to be the most powerful predictor. This is not surprising given the ability of these chemicals to bioaccumulate in biological tissues, and that many of these chemicals have been banned in recent decades, leading to lower exposures among younger populations. Measurements of persistent chemicals are less likely to show the variability in daily measurements potentially associated with non-persistent chemicals, and be more indicative of total body burden. However, given that it integrates exposures over several years, it is impossible to know if these concentrations were due to a recent exposure or an exposure of several decades previously. As well, given that many of these exposures can be passed from mother to child via breast milk, it is uncertain if these exposures represent that individual's exposure, or the exposure of the mother. Without detailed questionnaire information on lifetime exposures, and parental exposures to these chemicals, it is remains difficult to link measured concentrations to a direct source or route of exposure.

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This analysis was successful in identifying the characteristics of individuals within the general population who have a high body burden of endocrine disruptors for both persistent and non-persistent chemicals. What this study did not capture well was the reasons why these populations have higher body burdens. This would necessitate detailed information on the sources of exposure, which was not available through the NHANES questionnaire. For example, questions on soy consumption, cosmetic use, chemical product use, geographic location, or even seasonality were not available. Some of this information, such as seasonality and geographic location is collected, through the CDC however, to protect privacy; these data are not available in the public datasets. Furthermore, NHANES is not designed to be an exposure assessment study but rather a cross-sectional survey on the health of the US non-institutionalized population. Despite this, NHANES remains one the largest biomonitoring studies to date, and was well suited to this particular analysis, as the objective of this study was to elucidate the characteristics of individuals who were high body burden. It would therefore be expected that all variables would be proxy measures for exposure rather than exposure sources themselves.

One personal characteristic variable that was consistently a component of the models of both persistent and non-persistent chemicals was race/ethnicity. This may indicate that various racial or ethnic groups have different exposures to environmental contaminants. This is a trend that has been extensively studied and cited in the scientific literature. These studies have shown that in many communities it is the non-whites and the poor who tend to live near environmentally hazardous sites, and who bear a larger share of the heath burden from exposures to toxicants (Brown, 2995; Mohai et al., 1992; Ringquist, 2005; Szasz et al., 1997). These populations may be more likely to live in close proximity to hazardous waste sites, have higher exposures to air and water pollution, be exposed to

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higher levels of ambient noise, as well as live in higher population density areas, or live in lower quality housing. Children may also attend lower quality schools, and adults may seek employment in occupations with higher exposures to chemicals (Evans and Kantrowitz, 2002).Unfortunately, these populations tend to be more isolated socially and relatively powerless politically, and therefore are subjected to increased risks while being limited from the benefits from such risk (Brulle and Pellow, 2006).

Although some debate has arisen over whether these disparities are a result of race or class (Anderson et al., 1994; Been et al., 1994; Downey, 1998), the results presented here indicate that race is a stronger predictor than class. Although income was often significant in univariate analysis, the variability predicted was approximately 1% across most models with no clear linear trends. It was not consistent that those in the higher incomes (or visa versa) had a lower body burden than those in the lower incomes. This analysis lends support towards the theory that racial differences in exposures exist, and that this effect can not be solely accounted for by the effects of income. One explanation for this is that different races may have different behaviours. For example, it has been speculated that increased levels of phthalates in non-Hispanic blacks may due to an increased, continuous and prolonged use of beauty and hair care products specifically marketed for this population. Oftentimes, this marketing begins at a very young age and continues through adulthood (Silva et al., 2004). Unfortunately, as NHANES did not collect data related to personal care product use, it was not possible to confirm this hypothesis. These populations may also obtain employment in various sectors, and as a result have different exposures. The most notable example in this study is that Mexican Americans had the highest levels of *p,p'*-DDE. This is not surprising as these individuals were often employed

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as immigrant workers on farms (Rothlein et al., 2006), and therefore would be expected to have high levels of bio-accumulated pesticides.

Another explanation is that genetic differences exist between racial and ethnic populations that could alter the levels of a given metabolite in blood or urine. Biotransformation of potentially toxic chemicals into water soluble chemicals which can be readily eliminated, involves two stages -1) catalyzed by the P450 (CYP) family 2) catalyzed by conjugation enzymes like glutathione S transferase (GST), UDP-glucuronosyltransferase and N-acetyltransferase (NAT) (Raunio et al., 1995; Hatagima, 2002; ATSDR, 2006). Genetic mutations can produce defective, partially defective enzymes, or ones with altered specificities to the substrate (Hatagima, 2002). As a result, some studies have indicated the potential for marked interindividual and interethnic differences in their capability to metabolize chemicals (Ingleman-Sundberg, 1998). However, this variation has been attributed to a variety of factors in addition to genetic polymorphisms, inclucing physiological, pathological and environmental factors (Ingelman-Sundberg, 1998).

There is also some evidence that genetic mutations can alter susceptibility to environmental contaminants in various ethnic and racial groups. Some examples include: deficiency of the enzyme glucose-6-phosphate dehydrogenase (G-6-PD) in people from Africa, Asia, and the Mediterranean may increase vulnerability to the effects of ozone and nitrogen dioxide; sickle cell anemia in African Americans may increase risks from carbon monoxide exposures; and the slow rate of acetylation in the liver may increase the risk of bladder cancer from exposure to aromatic amines (Sexton et al., 1993). In general, however, the interaction between genetics and environment in terms of susceptibility to various biomarkers is not well understood. To date, few studies have been conducted which

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examine the intrinsic susceptibility associated with ethnicity, however, current evidence indicates that the variability within a particular racial/ethnic group is most likely greater than that between groups (Sexton et al., 1993). Unfortunately, this area has not been extensively studied, and more research is required to fully elucidate the role of genetics in levels of biomarkers in various matrices. Therefore, the most likely explanation for differences in biomarker results is that these populations do in fact have different exposures, with individuals who are non-white typically having higher exposures. Despite the fact that this trend has been observed for decades, the roots of the problem are complex and substantial political will is necessary to address this problem.

Independent of race/ethnicity, country of birth also emerged as a major predictor in many of the models. In many instances, those who were born in Mexico had higher levels of exposure than those who were born in the United States. Given varying policies between these two countries, these differences are not surprising. The case of DDT is probably the best example of this. In the US, most uses for DDT were banned in 1972 (US EPA, 2007), whereas Mexico has eliminated the use of DDT since the year 2000 (Mexico National Centre for Environmental Health, 2000). Mexico has not been alone however, in its late phasing out of DDT. Many developing countries have relied on pesticides such as DDT in order to eradicate or control insect-born endemic diseases and to produce adequate food and resources (Ecobichon, 2001). These countries have also emerged as major exporters of non-traditional agricultural produce for areas of the world limited by colder climates and shorter growing seasons (Ecobichon, 2001). However, due to limited economic resources, increased reliance on older, unpatented, more toxic and environmentally persistent chemicals has occurred as these products are often inexpensive in comparison to the less-toxic alternatives. The consequence however, is increased levels

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of contaminants present in individuals originally from such countries, with potential adverse health effects in these populations.

The increased levels of DDT metabolites observed in individuals born in Mexico was used here as an example to illustrate the point that legislation implemented in various countries can have an enormous impact on exposures of a given population to environmental contaminants. However, results from this analysis indicate that there are instances when those who were born in Mexico or born elsewhere may have lower levels than those born in the US. Many countries in Europe have much stricter environmental policies, and therefore would be expected to have lower levels of various biomarkers. One difficulty in this analysis was that this variable was categorized as Born in the United States, Born in Mexico, or Born Elsewhere. Therefore, an individual who lived in Beijing before moving to the States would be classified in the same category as someone who lived in Sweden. This category also does not differentiate between individuals who had recently immigrated to the States, or who had only been born in another country and have lived in the US for the majority of their lives. Despite this, this variable does yield some interesting insights and indicates the success of policies which have been implemented to protect human health and the environment.

Occupation frequently emerged from the Classification and Regression Tree Analysis as a prominent factor in differentiating between those who were high those and who were low body burden. However, when these occupations were tested on their own, very few achieved statistical significance as a result of the reduced sample size. It is difficult to assess the validity of the splits created by the tree as very little is know about exposures by occupational category. In some cases, the results had biological plausibility and could be supported by the scientific literature (vehicle mechanics had high exposures to

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PAH's) however, in other cases, such as sales representatives having high levels of genistein, the results are not as intuitive. Although classification and regression tree are extremely useful in teasing apart hierarchical relationships, they can result in spurious associations and therefore the results should be interpreted with caution. As a result, only those occupations which gained statistical significance on their own were included in final models.

Given the fact that Classification and Regression Trees can result in false associations, they were only used to reduce the number of variables available through the NHANES dataset and potentially elucidate relationships which would be biological plausible but not readily identified. Although they did not include sample weights, and therefore the results can not be applied to the entire US non-institutionalized population, they were internally valid and incredibly useful in teasing apart relationships present in this population. In this analysis, they were not applied as an end in themselves, but rather as a variable reduction technique. Other variables which would have been expected to influence levels were also tested in the final weighted regression models. These models were weighed, and yield important insights into the characteristics of individuals in the general US-population who would have high body burdens of endocrine disrupting chemicals.

Another variable that consistently emerged from the models was age. This was important for both persistent and non-persistent chemicals, however, the trends varied between these two classifications of chemicals. Not surprisingly as age increased, biomarkers of exposure to persistent, bio-accumulative chemicals also increased indicating a clear linear relationship between these two variables. For non-persistent chemicals, it was those in the younger age categories who often had higher levels. Unfortunately, exposures to non-persistent chemicals are more difficult to capture due to their transient nature, which

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is problematic in that children may be more susceptible to the effects of endocrine disrupting chemicals.

Somewhat surprisingly sex did not emerge in any of the models as a significant predictor of body burden. It has been hypothesized that men and women may have differences in chemical levels as a result of potential differences in their personal environments, their absorption of the chemical across various physical barriers, and in the amount of active substance that reaches the target site (Arbuckle, 2006). As noteworthy differences exist between men and women in terms of their daily activities, as well as their physiology (ex: lower body weight, higher fat composition, smaller plasma volume (Gandhi et al, 2004)), it would not have been unexpected to observe such trends in this data. One explanation for this may have been that although one factor may increase body burden in one sex, another factor may reduce it. For example, due to occupation, men may have higher exposures; however, increased body mass and metabolism may reduce the total body burden. It is expected that the role of gender in body burden is complex, and requires further research.

One difficulty in interpreting these results is that no current guidelines exist as to at what concentrations adverse health effects may be seen. This becomes particularly difficult when comparing the exposures of adults to those of children. Despite the fact that adults may have higher levels of persistent chemicals, they may not be at risk of being adversely affected by changes to the endocrine system due to the intermittent nature of critical windows in adulthood. Alternatively, low exposures in children may have sizeable effects due to the fact that numerous developmental processes are occurring in children that may be disrupted irreversibly (Lippman et al., 2003). As well, metabolic pathways of children

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are immature compared with adults, and therefore this population can not metabolize, detoxify or excrete toxicants as efficiently as their adult counterparts (Lippman, 2003).

As previously mentioned, this analysis revealed some of the characteristics of individuals within the general population who are in the upper tertile of the distribution. These individuals were not occupationally exposed, and did not experience a high exposure event. It therefore comes into question as to whether or not these individuals are, in fact, carrying a high body burden of endocrine disruptors. Generally exposures within the general population are at a level far below that of where an acceptable risk to health would be expected to occur. However, to date, very few epidemiological studies have examined the effects of endocrine disruptors at the population level, and these questions remain unanswered. Recent studies have indicated elevated levels of some endocrine mediated disease in populations identified here as being high body burden. For example, non-Hispanic Black breast cancer patients of all ages are more likely to have advanced disease at diagnosis, higher risk of recurrence, and poorer overall prognosis as compared to their non-Hispanic White counterparts (Rose et al., 2007). Prostate cancer disproportionately affects African American men when compared to other ethnic groups, and they are two to three times more likely to die of this disease than white men (Jones et al., 2007). Non-Hispanic Blacks and Mexican American Populations in the United States have been found to be at a greater risk of developing type 2 diabetes (Moore et al, 2003), and non-Hispanic Black and Hispanic women are more likely to have tubal factor infertility (Jain, 2006). Non-Hispanic Blacks are also at increased risk of developing uterine fibroid tumours (Evans, 2007). However, as these populations have different rates of obesity, dietary habits, income, access to healthcare, etc. it is difficult to incriminate endocrine disruptors in these

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observed trends. Further research is necessary to better understand the effects that low-dose exposure to endocrine disrupting chemicals might have within the general population.

Recent technological advancements in the areas of genomics, proteomics, and metabolomics have created the tools necessary for the development of improved biomarkers, which reflect both chemical exposure and biological effect (Benninghoff, 2007; Tyshenko et al., 2007; Phillips and Foster, 2008). These "omics" assess simultaneously changes of hundreds to thousands or genes, proteins or metabolites. By comparing the expression values of a control compared with that of an exposed sample, biomarkers indicating an exposed state can then be derived (Benninghoff, 2007). Toxicogenomics has been particularly useful in developing biomarkers of exposure to endocrine disrupting chemicals. DNA microarray platforms have been one instrument used to evaluate changes in gene expression in response to a number of xenoestrogens (Benninghoff and Williams, 2006; Brown et al., 2004, Larken et al., 2003; Moens et al., 2006; Naciff et al. 2002; Wang et al., 2004), however others such as PAH adducts also exist. Although useful, difficulties still remain in understanding the correlations between changes in rates of gene transcription and protein expression and activity (Anderson and Seilhamer, 1997), as it is these proteins that are responsible for cellular responses. However, to date, efforts to establish protein expression profiles indicative of xenoestrogen exposure have been limited (Hook et al., 2007; Shrader et al. (2003). It is also not yet known if all xenoestrogens will elicit the same protein expression profiles, although early evidence indicates that protein expression for four structurally diverse estrogen agonists is similar (Benninghoff, 2007). Other difficulties that remain with these "omics" technologies are temporal changes in gene and protein expression, and addressing the issue of chemical mixtures. As a result, these technologies are still in their infancy and have many

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complexities. However, they may provide a solution to current problems with biomarkers and provide a method of tying exposure to physiological effect.

Future epidemiological attempts to imply causation between endocrine disruptors and disease will almost certainly be plagued with the problem of chemical mixtures and multiple exposures- a problem that neither biomonitoring or evolving "omics" technologies are well equipped to manage. Results presented from this analysis indicate that most within category chemicals are moderately to strongly correlated. There are also stronger correlations within persistent chemicals and non-persistent chemicals than between these two classifications of chemicals. As similar patters of exposure are observed for most persistent chemicals, i.e. increasing exposure with increasing age, epidemiological studies will have difficulties in deciphering the causative agent responsible for adverse health effects. This topic has elicited much discussion over recent years, however, an effective way of addressing this problem has yet to emerge. Future research is unquestionably necessary in this area, as modern luxuries have created a wealth of chemical exposures, and adverse health affects are most likely not a result of one exposure but a combination of synergistic and antagonistic effects from multiple endocrine disruptors.

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CHAPTER 14: CONCLUSIONS AND RECOMMENDATIONS

Using classification and regression tress, in concert with multiple linear regression models, it was found that between 7.83-33.72% of the variability in exposure to non-persistent chemicals could be accounted for using only a handful of variables such age, race/ethnicity, country of birth, occupation, marital status, and rooms treated for pests. As creatinine accounted for the majority of variability for these exposures, it was found that exposures to non-peristent chemicals are difficult to capture using proxy measures, and more detailed exposure information is necessary to develop effective predictive models for these substances.

For persistent chemicals, models were successful in predicting between 22.53-51.21% of the variability in exposure levels, with age proving to be the strongest predictor. Other variables found to significantly predict exposures were race, country of birth, BMI, and marital status.

Based on the results of this study, several recommendations can be made. First of which is need to address environmental racism from a policy perspective. Despite increasing evidence of disparities among races in terms of environmental exposures, this issue remains unaddressed, and continues to place added burden on the health care system. The second of which is the need of more large scale bio-monitoring studies, which in addition to collecting demographic information, also gather data on personal care product use, daily activities, season, and geographic location. Despite the wealth of data collected by NHANES, very few variables were directly related to exposures, but instead, served as proxy measures of exposures.

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One major difficulty in interpreting the results of a study such as NHANES, is that the exposure data represents but a snapshot in time, and does not capture daily fluctuations in exposure. Although this does not pose a significant source of error for persistent chemicals, it can be problematic for non-persistent chemicals. As a result, it is recommended that future studies involving bio-monitoring data for non-persistent chemicals gather repeated measurements on the same subject over multiple seasons.

Finally, more bio-monitoring studies are needed globally in order to assess the role of country of birth in exposure to endocrine disruptors. These studies would allow researchers to understand the role of geography, culture, and policy in terms of exposure to endocrine disruptors.

Overall, however, this study indicates the importance of a small subset of factors, which influence exposures to endocrine disruptors. It is recommended that future epidemiological studies take into account races, age, country of birth, and occupation, which have been shown to have higher concentrations of endocrine disruptors.

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APPENDIX 1: LIST OF CONTAMINANTS AND THEIR POTENTIAL SOURCES

Contaminant	Source
Cadmium	• burning of fossil fuels such as coal, oil, or incineration of municipal waste materials • emitted into air by zinc, lead or copper smelters • terrestrial food contaminated by soil – exposure may be increased by application of phosphate fertilizers or sewer sludge to farm fields • tobacco smoke • petroleum refining
Lead	• lead based paint • leaded gasoline • water contaminated by lead solder used to join pipes • food stored in leaded crystal, lead soldered cans, lead glazed ceramic ware • home remedies and certain cosmetics popular in some cultures • Occupational sources: construction, demolition, painting, radiator repair shops
Mercury	• Eating certain freshwater and saltwater fish-especially those at the top of the food chain • volcanoes • Thermometers, thermostats, barmometers, electrical switches • Dental fillings and medical equipment • Some lightbulbs • Clock pendulums • Folk remedies • Old alkaline batteries • Some drugs such as thimerosol, tincture, merthiolate tincture, some types of mercurochrome, some ointments, and nasal sprays • Some fungicides, some latex paints, some exterior and oil base paints, some caulks, and some eye area cosmetics, toiletries, and other products • Manufacturing, fuel or coal combustion • Occupational Sources: Municipal incinerators, power plants, hazardous waste sites, dentist offices, hospitals, manufacturers of products containing mercury

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Polycyclic Aromatic Hydrocarbons	• Occur naturally in coal, crude oil, and gasoline • Created from incomplete burning of coal, oil and gas, garbage or tobacco • Present in creosote wood preservative, roofing tar, certain medicines and pesticides • Volcanos • Enter atmosphere from vehicle exhaust, emissions from residential and industrial furnaces, tobacco smoke, forest fires • grilled or charred meats
Polychlorinated biphenyls	• used as coolants and lubricants in transformers, capacitors, and other electrical equipment • used as microscope and hydraulic oils pre 1977 • fluorescent lighting • exposure through eating contaminated food, (especially fish from contaminated waters, meat and dairy products) , drinking contaminated water, or occupationally through repair and maintenance of PCB transformers, accidents, fires or spills involving transformers, fluorescent lights, old electrical devices and disposal of PCB material in hazardous waste sites.
Phthalates	• Used as plasticizers or softeners added to polyvinyl chloride plastic (PVC) or vinyl • Present in building materials and furnishings, clothing and accessories, food and medical devices, personal care products such as hair spray, nail polish, deodorant and fragrances, contained in pesticides, lubricants and adhesives.
Phytoestrogens	• Soybeans and soy products • Chickpeas and other legumes • Oilseeds such as flax • Cereal bran • Alcohol • Alfalfa • Clover
Beta-hexachlorocyclohexane	• Broad spectrum insecticide used since 1949 for agricultural as well as non-agricultural purposes • Mostly used as ingredient for seed and soil treatment • Used for the treatment of scabies • Exposure during filling of tank, dilution and spraying without adequate personal protection equipment, application to cattle with bare hands • eating contaminated food

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	• improper and direct application to scalp or skin-especially in young children
P,p'-DDE	• DDT is a pesticide for use against invertebrate animals • Although banned, DDT has been detected in air, rain, soil, water, animal and plant tissues, food and the work environment • Exposure is primarily from ingestion of small amounts in the diet, particularly from meat, fish, poultry and root and leafy vegetables • Occupational exposure to those workers involved in synthesizing DDT, formulating and dispensing DDT, agricultural spray workers, crop harvesters during vector control periods, public health workers involved in vector control
Trans-nonachlor	• Chlordane is a pesticide used from 1948-1988 on crops like corn and citrus and on home lawns and gardens • Exposure through eating crops grown in soil that contains chlordane • Through eating fish or shellfish caught in water containing chlordane • Breathing air or touching soil near homes treated for termites by chlordane • Breathing air or touching soil near waste sites or landfills
2,4-Dichlorophenol	• 2-4 D is a widely used herbicide that is used to control weed growth • exposures can occur as a result of ingesting foods with containing residues of 2-4 D, handling or laundering clothes contaminated with 2-4 D, using lawns or recreational areas too soon after application, homeowners who have applied 2-4 D to lawn or guarden, and workers who manufacturer, treat lawns, turfs, recreational areas, highways, railways, agricultural land, and forest with herbicide.

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APPENDIX 2: OCCUPATIONAL CODES

1=Executive, Administrators, & Managers
2=Management Related Occupations
3=Engineers, Architects, and Scientists
4=Health Diagnosing, Assessing & Treating Occupations
5=Teachers
6=Writers, Artists, Entertainers & Athletes
7=Other Professional Specialty Occupations
8=Technicians and Related Supported Occupations
9=Supervisors and Proprietors, Sales Occupations
10=Sales Representatives, finance, business & commodities
11=Sales Workers, retail & personal services
12=Secretaries, Stenographers, and typists
13=Information Clerks
14=Records Processing Occupations
15=Material Recording, Scheduling, and distributing clerks
16=Miscellaneous administrative support occupations
17=Private Household Occupations
18=Protective Service Occupations
19=Waiters and Waitresses
20=Cooks
21=Miscellaneous food preparation and service occupations
22=Health Service Occupation
23=Cleaning and Building Service Occupations
24=Personal Service Occupations
25=Farm Operators, Managers and Supervisors
26=Farm and Nursery Workers
27=Related Agricultural, Forestry and Fishing Occupations
28=Vehicle, and Mobile Equipment Mechanics & Repairs
29=Other Mechanics and repairers
30=Construction traders
31=Extractive and Precision Production Occupations
32=Textile, apparel and furnishings machine operators
33=Machine Operators, Assorted Materials
34=Fabricators, Assemblers, Inspectors, and Samplers
35=Motor vehicle operators
36=Other transportation and material moving occupations
37=Construction laborers
38=Laborers, except constuction
39=Frieght, Stock, and Material Movers, hand
40=Other helpers, equipment cleaners, hand packages and laborers

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APPENDIX 3: ENGLISH RULES FOR CLASSIFICATION AND REGRESSION TREES

English Rules for Genistein:

- **IF** Occupation group code: Current Job IS ONE OF: 'Material Recording, Scheduling, and distributing clerks (15)'; 'Teachers(5)'; 'Information Clerks (13)'; 'Writers, Artists, Entertainers & Athletes (6)'; 'Motor Vehicle Operators(35)'; 'Engineers, Architects, and Scientists(3)'; ' Fabricators, Assemblers, Inspectors, and Samplers (34)'; 'Health Service Occupation (22)'; 'Construction Laborers(37)'; 'Personal Service Occupations(24)'; 'Waiters and Waitresses(19)'; 'Textile, Apparel and Furnishings Machine Operators(32)'; 'Construction Traders(30)'; 'Health Diagnosing, Assessing & Treating Occupations(4)'; 'Miscellaneous Administrative Support Occupations (16)'; 'Vehicle, and Mobile Equipment Mechanics & Repairs (28)'; 'Freight, Stock, and Material Movers (39)'; 'Other helpers, equipment cleaners, hand packages, and laborers (40)'; 'Supervisors and Prioprietors, Sales Occupations(9)'; 'Farm Operators, Managers, and Supervisors' (25); or ' Laborers, except construction'

THEN
N: 880
1: 50.3%
0: 49.7%

-**IF** Occupation group code: current job IS ONE OF: 'Farm and Nursery Workers(26)'; 'Related Agricultural, Forestry and Fishing Occupations (27); 'Other Mechanics and repairers (29)'; 'Technicians and Related Support Occupations (8)'; 'Management Related Occupations (2)'; 'Records Processing Occupations (14)', 'Other Transportation and Material Moving Occupations (36)'

THEN
N: 175
1: 37.1%
0: 62.9%

-**IF** Race/ Ethnicity is ONE OF: 'Non-Hispanic Black' or 'Other Hispanic'
AND Occupation group code: current job is ONE OF: 'Cleaning and Building Service Occupations (23)'; 'Machine Operators, Assorted Materials (33)'; 'Sales Representatives, finances, business & commodities(10)'; 'Sales Workers, Retail and Personal Service(11)'; 'Extractive and Precision Production Occupations'(31); 'Executive, Administrators, & Managers (1)'; 'Cooks (20)'; 'Protective Service Occupations (18)'; 'Private Household Occupations (17)'; 'Secretaries, Stenographers, and typists(12)'; 'Other Professional Specialty Occupations (7)'; or 'Miscellaneous Food Preparation and Service Occupations(21). '

THEN
N: 478
1: 62.8%
0: 37.2%

-**IF** 10.5<= How often drink beer (per month)
AND Race/Ethnicity IS ONE OF: Non-Hispanic White, Mexican American, Other Race-including multiracial

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AND Occupation group code: current job is ONE OF: 'Cleaning and Building Service Occupations (23)'; 'Machine Operators, Assorted Materials (33)'; 'Sales Representatives, finances, business & commodities(10)'; 'Sales Workers, Retail and Personal Service(11)'; 'Extractive and Precision Production Occupations'(31); 'Executive, Administrators, & Managers (1)'; 'Cooks (20)'; 'Protective Service Occupations (18)'; 'Private Household Occupations (17)'; 'Secretaries, Stenographers, and typists(12)'; 'Other Professional Specialty Occupations (7)'; or 'Miscellaneous Food Preparation and Service Occupations(21). '

THEN
N: 15
1: 13.3%
0: 86.7%

-**IF** Occupation group code: current job IS ONE OF: 'Machine Operators, Assorted Materials (33)' 'Extractive and Precision Production Occupations'(31); 'Cooks (20)'; 'Protective Service Occupations (18)'; 'Other Professional Specialty Occupations (7)'
AND How often drink beer (per month) <10.5
AND Linked NH3 Race/Ethnicity-Recode is ONE OF: Non-Hispanic White, Mexican American, Other Race-including multiracial

THEN
NODE: 28
N: 93
1: 36.6%
0: 63.4%

-**IF** Occupation group code: current job is ONE OF: 'Cleaning and Building Service Occupations (23)'; 'Sales Representatives, finances, business & commodities(10)'; 'Sales Workers, Retail and Personal Service(11)'; 'Executive, Administrators, & Managers (1)'; 'Private Household Occupations (17)'; 'Secretaries, Stenographers, and typists(12)'; 'Miscellaneous Food Preparation and Service Occupations (21).'
AND How often drink beer (per month) <10.5
AND Race/Ethnicity IS ONE OF: Non-Hispanic White, Mexican American, Other race-including multiracial

THEN
NODE: 29
N: 876
1: 52. 5%
0: 47.5%

English Rules for Cadmium:
-**IF** Age at Screening <28.5

THEN

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N=1114
1 =16.2%
0= 83. 8%

-**IF** Occupation Group Code: current job is ONE of : 'Executive, Administrators, & Managers (1)'; 'Writers, Artists, Entertainers & Athletes (6)'; 'Teachers (5)'; Miscellaneous food preparation and service occupations (21)'; 'Farm Operators, Managers, & Supervisors (25)'; 'Sales Workers, retail & personal services (11)'; Management Related Occupations (2); 'Secretaries, Stenographers, and Typists (12)'; 'Engineers, Architects, and Scientists (3)'; 'Sales Representatives, finance, business & commodities (10)'; 'Material Recording, Scheduling, and distributing clerks (15)'; 'Health Diagnosing, Assessing & Treating Occupations(4)'; 'Fabricators, Assemblers, Inspectors, and Samplers (34)'; 'Other Mechanics and repairers (29)';
AND 28.5 <= Age at Screening

THEN
N: 375
1: 64.5%
0: 35.5%

-**IF** Occupation group code: current job is ONE OF: 'Miscellaneous administrative support occupations (16)'; 'Machine Operators, Assorted Materials(33) '; 'Other transportation and material moving occupations (36)'; Cleaning and Building Service Occupations (23)'; ' Frieght, Stock, and Material Movers, hand (39)' ; 'Technicians and Related Supported Occupations (8)'; Related Agricultural, Forestry and Fishing Occupations (27)'; 'Construction traders (30)'; 'Laborers, except constuction (38)'; 'Farm and Nursery Workers (26)'; 'Other helpers, equipment cleaners, hand packages and laborers (40)'; 'Records Processing Occupations'(14); 'Private Household Occupations (17)'; ; 'Textile, apparel and furnishings machine operators(32)'; 'Cooks (20)'; 'Extractive and Precision Production Occupations (31)'; ; 'Construction laborers (37)'; 'Supervisors and Proprietors, Sales Occupations' (9); Vehicle, and Mobile Equipment Mechanics & Repairs (28)'; 'Other Professional Speciality Occupations' (7); 'Motor vehicle operators (35)'; 'Information Clerks (13)'; 'Waiters and Waitresses(19)'; Health Service Occupation (22)'; 'Personal Service Occupations (24)'; 'Protective Service Occupations (18)'.
AND 28.5 <= Age at Screening

THEN
N: 742
1: 79.2%
0: 20.8%

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English Rules for PCB153:

-**IF** Age at Screening <38.5
THEN
N: 1124
1: 5.6%
0: 94.4%

- **IF** Occupation group code: current job is ONE OF: Cleaning and Building Service Occupations (23)'; 'Construction laborers (37)' ; 'Textile, apparel and furnishings machine operators(32)'; 'Related Agricultural, Forestry and Fishing Occupations (27)'; 'Other helpers, equipment cleaners, hand packages and laborers (40)'; 'Farm and Nursery Workers (26)'
AND 38.5 <= Age at Screening
THEN
N: 43
1: 34.9%
0: 65.1%

-**IF** 38.5 <= Age at Screening <45.5
AND Occupation group code: current job is ONE OF: 'Management Related Occupations' (2); 'Construction traders (30)'; 'Fabricators, Assemblers, Inspectors, and Samplers (34)'; 'Motor vehicle operators (35)'; 'Engineers, Architects, and Scientists (3)'; 'Extractive and Precision Production Occupations (31)'; 'Miscellaneous administrative support occupations (16)'; 'Executive, Administrators, & Managers (1)'; Vehicle, and Mobile Equipment Mechanics & Repairs (28)'; 'Sales Representatives, finance, business & commodities (10)'; 'Private Household Occupations (17)'; 'Other Professional Speciality Occupations' (7); 'Sales Workers, retail & personal services (11)'; 'Labourers, except construction (38)'; Health Service Occupation (22)'; 'Information Clerks (13)'; 'Farm Operators, Managers, & Supervisors (25)'; 'Health Diagnosing, Assessing & Treating Occupations(4)'; 'Personal Service Occupations (24)'; 'Machine Operators, Assorted Materials (33) '; 'Other Mechanics and repairers (29)'; 'Technicians and Related Supported Occupations (8)'; ' Frieght, Stock, and Material Movers, hand (39)' ; 'Supervisors and Proprietors, Sales Occupations' (9); 'Waiters and Waitresses(19)'; 'Other transportation and material moving occupations (36)' ; 'Protective Service Occupations (18)'; 'Writers, Artists, Entertainers & Athletes (6)'; 'Cooks (20)'; Miscellaneous food preparation and service occupations (21)'; 'Teachers (5)'; 'Secretaries, Stenographers, and Typists (12)'; 'Material Recording, Scheduling, and distributing clerks (15)'; 'Records Processing Occupations'(14)
THEN
N: 127
1: 58.3%
0: 41.7%

-**IF** Country of Birth IS ONE OF Born in Mexico, Born Elsewhere

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AND 45.5 <= Age at Screening
AND Occupation group code: current job IS ONE OF: 'Management Related Occupations' (2); 'Construction traders (30)'; 'Fabricators, Assemblers, Inspectors, and Samplers (34)'; 'Motor vehicle operators (35)'; 'Engineers, Architects, and Scientists (3)'; 'Extractive and Precision Production Occupations (31)'; 'Miscellaneous administrative support occupations (16)'; 'Executive, Administrators, & Managers (1)'; Vehicle, and Mobile Equipment Mechanics & Repairs (28)'; 'Sales Representatives, finance, business & commodities (10)'; 'Private Household Occupations (17)'; 'Other Professional Speciality Occupations' (7); 'Sales Workers, retail & personal services (11)'; 'Labourers, except construction (38)'; Health Service Occupation (22)'; 'Information Clerks (13)'; 'Farm Operators, Managers, & Supervisors (25)'; 'Health Diagnosing, Assessing & Treating Occupations(4)'; 'Personal Service Occupations (24)'; 'Machine Operators, Assorted Materials (33) '; 'Other Mechanics and repairers (29)'; 'Technicians and Related Supported Occupations (8)'; ' Frieght, Stock, and Material Movers, hand (39)' ; 'Supervisors and Proprietors, Sales Occupations' (9); 'Waiters and Waitresses(19)'; 'Other transportation and material moving occupations (36)' ; 'Protective Service Occupations (18)'; 'Writers, Artists, Entertainers & Athletes (6)'; 'Cooks (20)'; Miscellaneous food preparation and service occupations (21)'; 'Teachers (5)'; 'Secretaries, Stenographers, and Typists (12)'; 'Material Recording, Scheduling, and distributing clerks (15)'; 'Records Processing Occupations'(14) .

THEN
N: 128
1: 75.8%
0: 24.2%

-**IF** Country of Birth Equals 1
AND 45.5 <= Age at Screening
AND Occupation group code: current job IS ONE OF: 'Management Related Occupations' (2); 'Construction traders (30)'; ; 'Fabricators, Assemblers, Inspectors, and Samplers (34)'; 'Motor vehicle operators (35)'; 'Engineers, Architects, and Scientists (3)'; 'Extractive and Precision Production Occupations (31)'; 'Miscellaneous administrative support occupations (16)'; 'Executive, Administrators, & Managers (1)'; Vehicle, and Mobile Equipment Mechanics & Repairs (28)'; 'Sales Representatives, finance, business & commodities (10)'; 'Private Household Occupations (17)'; 'Other Professional Speciality Occupations' (7); 'Sales Workers, retail & personal services (11)'; 'Labourers, except construction (38)'; Health Service Occupation (22)'; 'Information Clerks (13)'; 'Farm Operators, Managers, & Supervisors (25)'; 'Health Diagnosing, Assessing & Treating Occupations(4)'; 'Personal Service Occupations (24)'; 'Machine Operators, Assorted Materials (33) '; 'Other Mechanics and repairers (29)'; 'Technicians and Related Supported Occupations (8)'; ' Frieght, Stock, and Material Movers, hand (39)' ; 'Supervisors and Proprietors, Sales Occupations' (9); 'Waiters and Waitresses(19)'; 'Other transportation and material moving occupations (36)' ; 'Protective Service Occupations (18)'; 'Writers, Artists, Entertainers & Athletes (6)'; 'Cooks (20)'; Miscellaneous food preparation and service occupations (21)'; 'Teachers (5)'; 'Secretaries, Stenographers, and Typists (12)'; 'Material Recording, Scheduling, and distributing clerks (15)'; 'Records Processing Occupations'(14)

THEN
N: 638

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1: 96.1%
0: 3.9%

English Rules for OCDD:

- **IF** 33.5 <= Age at Screening Adjudicated-Recode
THEN
N=855
1=73.3%
0=26.7%

- **IF** Occupation Group Code: Current job is one of 'Farm and Nursery Workers (26)'; : 'Management Related Occupations' (2); 'Extractive and Precision Production Occupations (31)'; Construction labourers (37)' ; 'Executive, Administrators, & Managers (1)'; 'Private Household Occupations (17)'; 'Health Diagnosing, Assessing & Treating Occupations(4)'; 'Supervisors and Proprietors, Sales Occupations' (9); 'Other Mechanics and repairers (29)'; 'Protective Service Occupations (18)'
AND Age at Screening <33.5
THEN
N=38
1=47.4%
0=52.6%

- **IF** Occupation Group Code: current job is ONE OF: Cleaning and Building Service Occupations (23)'; 'Fabricators, Assemblers, Inspectors, and Samplers (34)'; 'Writers, Artists, Entertainers & Athletes (6)'; 'Engineers, Architects, and Scientists (3)'; 'Other helpers, equipment cleaners, hand packages and laborers (40)'; 'Miscellaneous administrative support occupations (16)'; 'Information Clerks (13)'; Vehicle, and Mobile Equipment Mechanics & Repairs (28)'; 'Sales Workers, retail & personal services (11)'; 'Sales Representatives, finance, business & commodities (10)'; 'Material Recording, Scheduling, and distributing clerks (15)'; 'Cooks (20)'; 'Motor vehicle operators (35)'; 'Other Professional Speciality Occupations' (7); 'Labourers, except construction (38)'; 'Technicians and Related Supported Occupations (8)'; 'Teachers (5)'; 'Construction traders (30)'; 'Waiters and Waitresses(19)'; Health Service Occupation (22)'; 'Personal Service Occupations (24)'; 'Machine Operators, Assorted Materials (33) '; ' Frieght, Stock, and Material Movers, hand (39)' ; 'Other transportation and material moving occupations (36); Miscellaneous food preparation and service occupations (21)'; 'Textile, apparel and furnishings machine operators(32)'; 'Records Processing Occupations'(14) ; 'Secretaries, Stenographers, and Typists (12)'; 'Related Agricultural, Forestry and Fishing Occupations (27)'
THEN:
N=605
1=9.9%
0=90.1%

English Rules for p,p'-DDE:

- **IF** 38.5 <=Age at Screening
THEN
N: 982
1: 87.2%

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0: 12.8%

-**IF** Country of Birth EQUALS 'Born in Mexico'
AND Age at Screening < 38.5
THEN
1: 89.7%
0: 10.3%

-**IF** Race/Ethnicity is ONE OF 'Mexican' or 'Other Hispanic'
AND Country of Birth IS ONE OF: 'Born in the United States'; 'Born Elsewhere'
AND Age at Screening < 38.5
THEN:
1: 34.6%
0: 65.4%

-**IF** Race/Ethnicity is ONE OF: 'Non-Hispanic White'; 'Non-Hispanic Black'; or 'Other Race-including Multi-racial'
AND Country of Birth is ONE OF: 'Born in the 50 US States or Washington, DC'; or Born Elsewhere
AND Age at Screening is <38.5
THEN
N: 754
1: 7.0%
0: 93.0%

English Rules for mono-p-butyl phthalate:

-**IF** Age at Screening Adjudicated - Recode < 24.5
THEN
N: 1268
1: 69.8%
0: 30.2%

- **IF** Linked NH3 Race/Ethnicity-Recode is ONE OF: 'Non-Hispanic White', 'Mexican American'; 'Other Race-Including Multi-Racial'
AND Occupation Group code: current job is ONE OF: ' Material recording, scheduling, and distributing clerks(15)'; 'Teachers(5)'; 'Sales Workers, retail, and personal service(11)'; 'Cleaning and Building Service Occupations(23)'; 'Machine Operators, assorted materials(33)'; 'Construction trades(30)'; 'Motor vehicle operators (35)'; 'Related Agricultural, forestry, and fishing occupations (27)'; 'Fabricators, assemblers, inspectors, and samplers (34)'; 'Executive, administrators, and managers(1)'; 'Records processing occupations (14)'; 'Protective service occupations (18)'; 'Construction laborers (37)'; 'Secretaries, stenographers, and typists (12)'; 'Writers, artists, entertainers, and athletes (6)'; 'Technicians and related support occupations(8)'; 'Health Diagnosing, assessing and treating occupations (4)'; 'Miscellaneous food preparation and service occupations (21)'; 'Vehicle and mobile equipment mechanics and repairers (28)'; 'other professional specialty occupations (7)'; 'Sales representatives, finance, business, & commodities ex: retail (10)'; 'Laborers, except construction (38)'; 'Management related occupations (2)'; 'Other helpers, equipment cleaners, hand packagers, and laborers (40)';

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'Engineers, architects and scientists' (3); 'Supervisors and proprietors, sales occupations (9)'; 'Other transportation and material moving occupations (36)'.
AND 24.5 <= Age at Screening
THEN
1: 37.3%
0: 62.7%

- **IF** Race/Ethnicity is ONE OF: ' Non-Hispanic Black', 'Other Hispanic'
AND Occupation group code: current job IS ONE OF: ' Material recording, scheduling, and distributing clerks(15)'; 'Teachers(5)'; 'Sales Workers, retail, and personal service(11)'; 'Cleaning and Building Service Occupations(23)'; 'Machine Operators, assorted materials(33)'; 'Construction trades(30)'; 'Motor vehicle operators (35)'; 'Related Agricultural, forestry, and fishing occupations (27)'; 'Fabricators, assemblers, inspectors, and samplers (34)'; 'Executive, administrators, and managers(1)'; 'Records processing occupations (14)'; 'Protective service occupations (18)'; 'Construction laborers (37)'; 'Secretaries, stenographers, and typists (12)'; 'Writers, artists, entertainers, and athletes (6)'; 'Technicians and related support occupations(8)'; 'Health Diagnosing, assessing and treating occupations (4)'; 'Miscellaneous food preparation and service occupations (21)'; 'Vehicle and mobile equipment mechanics and repairers (28)'; 'other professional specialty occupations (7)'; 'Sales representatives, finance, business, & commodities ex: retail (10)'; 'Laborers, except construction (38)'; 'Management related occupations (2)'; 'Other helpers, equipment cleaners, hand packagers, and laborers (40)'; 'Engineers, architects and scientists' (3); 'Supervisors and proprietors, sales occupations (9)'; 'Other transportation and material moving occupations (36)'
AND 24.5 <= Age at Screening
THEN
N: 244
1: 58.6
0: 41.4%

-IF Race/Ethnicity IS ONE OF: Non-Hispanic Black, Other Hispanic
AND Occupation group code: current job IS ONE OF: 'Other mechanics and repairers (29)'; 'Health service occupations (22)'; 'Cooks (20)'; 'Waiters and waitresses (19)'; 'Private household occupations (17)' ; 'Farm operators, managers and supervisors (25)'; 'Miscellaneous administrative support occupations (16)'; 'Information clerks(13)'; 'Personal service occupations (24)'; 'Extractive and precision production occupations (31)'; 'Freight, stock, and material movers, hand (39)'; 'Farm and nursery workers (26)'; 'Textile, apparel, and furnishings machine operators (32)'
AND 24.5<= Age at Screening

THEN
N: 67
1: 76.1%
0: 23.9%

-IF Race/Ethnicity IS ONE OF: 'Non-Hispanic White', 'Mexican American'; 'Other Race-Including Multi-Racial'
AND Occupation group code: current job IS ONE OF: 'Other mechanics and repairers (29)';

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'Health service occupations (22)'; 'Cooks (20)'; 'Waiters and waitresses (19)'; 'Private household occupations (17)' ; 'Farm operators, managers and supervisors (25)'; 'Miscellaneous administrative support occupations (16)'; 'Information clerks(13)'; 'Personal service occupations (24)'; 'Extractive and precision production occupations (31)'; 'Freight, stock, and material movers, hand (39)'; 'Farm and nursery workers (26)'; 'Textile, apparel, and furnishings machine operators (32)'
AND 24.5<= Age at Screening
THEN
N: 158
1: 49.4%
0: 50.6%

English Rules for 2-hydroxyfluorene:

-**IF** Rooms treated for pests? Equals 'Entire Home'
AND Occupation group code: current job IS ONE OF: ' Material recording, scheduling, and distributing clerks(15)'; 'Machine Operators, assorted materials(33)'; 'Construction trades(30)'; 'Motor vehicle operators (35)'; 'Extractive and precision production occupations (31)'; 'Related Agricultural, forestry, and fishing occupations (27)'; 'Other mechanics and repairers (29)'; 'Cooks (20)'; 'Fabricators, assemblers, inspectors, and samplers (34)'; 'Waiters and waitresses (19)'; 'Construction laborers (37)'; 'Private household occupations (17)'; 'Miscellaneous administrative support occupations (16)'; 'Protective service occupations (18)'; 'Records processing occupations (14)'; 'Vehicle and mobile equipment mechanics and repairers (28)'; 'Freight, stock, and material movers, hand (39)'; 'Laborers, except construction (38)'; Other helpers, equipment cleaners, hand packagers, and laborers (40)'; 'Supervisors and proprietors, sales occupations (9)'; 'Other transportation and material moving occupations (36)'
THEN
N: 797
1: 65.1%
0: 34.9%

-**IF** Occupation group code: current job IS ONE OF: 'Writers, artists, entertainers, and athletes (6)'; 'Executive, administrators, and managers(1)'; 'Personal service occupations (24)'; 'Secretaries, stenographers, and typists (12)'; 'Health Diagnosing, assessing and treating occupations (4)'; 'Teachers(5)'; 'other professional specialty occupations (7)'; 'Sales representatives, finance, business, & commodities ex: retail (10)'; ''Technicians and related support occupations(8)'; 'Engineers, architects and scientists' (3)

THEN:
N: 399
1: 30.6%
0: 69.4%

-**IF** Race/Ethnicity is ONE OF : 'Non-Hispanic White', 'Mexican American'
AND Rooms treated for Pests? IS ONE OF: 'Kitchen or Dining Room - not entire home', 'other Rooms'
AND Occupation group code: current job is ONE OF: ' Material recording, scheduling, and

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distributing clerks (15)'; 'Machine Operators, assorted materials(33)'; 'Construction trades(30)'; 'Motor vehicle operators (35)'; 'Extractive and precision production occupations (31)'; ''Related Agricultural, forestry, and fishing occupations (27)'; 'Other mechanics and repairers (29)'; 'Cooks (20)'; 'Fabricators, assemblers, inspectors, and samplers (34)'; 'Waiters and waitresses (19)'; 'Construction laborers (37)'; 'Private household occupations (17)'; 'Miscellaneous administrative support occupations (16)'; 'Protective service occupations (18)'; 'Records processing occupations (14)'; 'Vehicle and mobile equipment mechanics and repairers (28)'; 'Freight, stock, and material movers, hand (39)'; 'Laborers, except construction (38)'; 'Other helpers, equipment cleaners, hand packagers, and laborers (40)'; 'Supervisors and proprietors, sales occupations (9)'; 'Other transportation and material moving occupations (36)'.

THEN:
N: 194
1: 25.8%
0: 74.2%

- **IF** Race/Ethnicity IS ONE OF: 'Non-Hispanic Black', 'Other Hispanic', 'Other Race-Including Multi-Racial'
AND rooms treated for pests? IS ONE OF: 'Kitchen or Dining Room - not entire home', 'other Rooms'
AND Occupation group code: current job IS ONE OF: ' Material recording, scheduling, and distributing clerks (15)', 'Machine Operators, assorted materials(33)', 'Construction trades(30)', 'Motor vehicle operators (35)', 'Extractive and precision production occupations (31)'; 'Related Agricultural, forestry, and fishing occupations (27); 'Other mechanics and repairers (29)'; 'Cooks (20)'; 'Fabricators, assemblers, inspectors, and samplers (34)'; 'Waiters and waitresses (19)'; 'Construction laborers (37)'; 'Private household occupations (17)' ; 'Miscellaneous administrative support occupations (16)'; 'Protective service occupations (18)'; 'Records processing occupations (14)'; 'Vehicle and mobile equipment mechanics and repairers (28); 'Freight, stock, and material movers, hand (39)'; 'Laborers, except construction (38)'; 'Other helpers, equipment cleaners, hand packagers, and laborers (40)'; 'Supervisors and proprietors, sales occupations (9)'; 'Other transportation and material moving occupations (36)'.

THEN
N: 114
1: 53.5%
0: 46.5%

-**IF** Race/Ethnicity IS ONE OF: 'Non-Hispanic White', 'Non-Hispanic Black', 'Other Hispanic'
AND Occupation group code: current job IS ONE OF: 'Cleaning and Building Service Occupations(23)', 'Management related occupations (2)', ''Health service occupations (22)', 'Sales Workers, retail, and personal service (11)', 'Textile, apparel, and furnishings machine operators (32)', 'Miscellaneous food preparation and service occupations (21)', 'Farm operators, managers and supervisors (25)', 'Information clerks(13)'; 'Farm and nursery workers (26)'

THEN
N: 536

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1: 53.9%
0: 46.1%

-**IF** Race/Ethnicity IS ONE OF: 'Mexican American', 'Other Race-Including Multi-Racial' **AND** Occupation group code: current job IS ONE OF: 'Cleaning and Building Service Occupations(23)', 'Management related occupations (2)', ''Health service occupations (22)', 'Sales Workers, retail, and personal service (11)', 'Textile, apparel, and furnishings machine operators (32)', 'Miscellaneous food preparation and service occupations (21)', 'Farm operators, managers and supervisors (25)', 'Information clerks(13)'; 'Farm and nursery workers (26)'

THEN:
N: 295
1: 29.5%
0: 70.5%

APPENDIX 4: LIMIT OF DETECTION

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Chemical	Matrix	Units	1999-2000	2001-2002
Diadzein	urine	µg/L	0.5	1.6
o-Desmethylangolensin	urine	µg/L	0.2	0.4
Equol	urine	µg/L	3	3.3
Enterodiol	urine	µg/L	0.8	1.5
Enterolactone	urine	µg/L	0.6	1.9
Genistein	urine	µg/L	0.3	0.8
Urinary Cadmium	urine	µg/L	0.6	0.06
Blood Cadmium	whole blood	µg/L	0.3	0.3
Urinary Lead	urine	µg/L	0.1	0.1
Blood Lead	whole blood	µg/dL	0.3	0.3
Total Mercury	whole blood	µg/L	0.14	0.14
Urinary Mercury	urine	µg/L	0.14	0.14
PCB138	serum	ng/g of lipid	41.1*	10.5*
PCB153	serum	ng/g of lipid	55.6*	10.5*
PCB180	serum	ng/g of lipid	28.2*	10.5*
OCDD	serum	pg/g of lipid	329*	319*
HPCDD	serum	pg/g of lipid	55.9*	10.3*
HPCDF	serum	pg/g of lipid	-	7.00*
β-hexachlorocyclohexane	serum	ng/g of lipid	9.36*	6.76*
Dichlorodiphenyltrichloroethane(p-DDE)	serum	ng/g of lipid	18.6*	8.3*
trans-nonachlor	serum	ng/g of lipid	14.5*	10.5*
mono-n-butyl phthalate	urine	µg/L	0.9	1.1
mono-benzyl phthalate	urine	µg/L	0.8	0.3
mono-ethyl phthalate	urine	µg/L	1.2	0.9
mono-2-ethylhexyl phthalate	urine	µg/L	1.2	1
mono- methyl phthalate	urine	µg/L	-	0.2
mono-isobutyl phtalate	urine	µg/L	-	1
mono-(2-ethyl-5-hydroxyhexyl) phthalate	urine	µg/L	-	1
mono-(2-ethyl-5-oxohexyl) phthalate	urine	µg/L	-	1.1
mono-3-carboxypropyl phthalate	urine	µg/L	-	0.4
2-hydroxyfluorene	urine	ng/L	9.5	3.6
3-hydroxyfluorene	urine	ng/L	15.1	2
1-hydroxyphenanthrene	urine	ng/L	15	3.5
2-hydroxyphenanthrene	urine	ng/L	11.2	3.2
3-hydroxyphenanthrene	urine	ng/L	15.3	3.6
1-hydroxypyrene	urine	ng/L	2	3.3
9-hydroxyfluorene	urine	ng/L	-	2.8
4-hydroxyphenanthrene	urine	ng/L	-	5.7
9-hydroxyphenanthrene	urine	ng/L	-	3.1

* Maximum LOD. Each person's sample has its own LOD.

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APPENDIX 5: DIADZEIN

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Table 1: Concentrations Diadzein µg/L found in urine by age category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Age 5-11	726	88.05	77.97	99.43	<LOD	8650.00	32.51	81.90	261.00	544.00	1104.00
Age 12-19	1497	89.67	73.18	109.87	<LOD	46000.00	28.53	87.60	299.25	790.00	1360.00
Age 20-40	1211	64.95	56.52	74.64	<LOD	16225.00	20.10	57.80	237.00	620.00	1528.00
Age 41-55	762	53.03	44.76	62.83	<LOD	18400.00	16.94	56.60	181.00	501.00	1170.00
Age 55+	1151	43.25	36.84	50.78	<LOD	11100.00	14.60	43.59	131.65	397.00	722.00

Table 2: Concentrations Diadzein µg/L found in urine and Occupation

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Executive, Administrators, & Managers	143	71.82	51.34	100.46	<LOD	12400.00	25.27	70.00	213.38	541.00	1620.00
Management Related	51	35.66	23.78	53.47	<LOD	1400.00	19.17	39.20	81.56	199.00	501.00
Engineers, Architects, and Scientists	54	78.75	44.89	138.12	2.41	7110.00	22.10	74.08	220.00	512.00	6850.00
Health Diagnosing, Assessing & Treating	43	54.44	34.93	84.86	<LOD	1980.00	29.10	76.40	193.00	425.00	520.00
Teachers	81	39.48	23.32	66.83	<LOD	4420.00	12.20	25.30	177.00	541.00	1370.00
Writers, Artists, Entertainers & Athletes	39	55.17	30.66	99.27	<LOD	1090.00	22.20	62.30	204.65	401.00	422.00
Other Professional Speciality	54	38.94	28.12	53.94	<LOD	1740.00	18.00	41.10	61.40	148.00	505.00
Technicians and Related Supported	55	80.61	44.35	146.50	<LOD	4320.00	26.50	57.20	244.00	1542.00	4200.00
Supervisors and Proprietors, Sales	41	54.02	34.75	83.96	<LOD	15680.00	10.90	54.80	167.00	1410.00	3280.00
Sales Representatives,finance,business,commodities	60	73.31	49.54	108.49	<LOD	10200.00	31.93	72.82	212.53	541.57	838.40
Sales Workers, retail & personal services	148	69.79	46.91	103.83	<LOD	36900.00	23.30	75.70	204.00	642.00	1330.00
Secretaries, Stenographers, and typists	33	113.57	70.60	182.69	<LOD	3160.00	57.33	119.91	191.00	343.91	343.91
Information Clerks	31	61.55	32.80	115.53	2.70	1456.00	15.40	51.50	215.00	685.00	989.00
Records Processing	66	53.57	27.61	103.93	<LOD	5760.00	20.90	53.00	217.00	638.00	945.00
Material Recording, Scheduling,distributing clerks	35	86.84	48.73	154.74	<LOD	3370.00	32.90	170.00	340.00	774.00	1250.00
Miscellaneous administrative support	133	49.83	32.70	75.94	<LOD	3910.00	15.80	57.50	165.00	725.00	1460.00
Private Household	18	49.70	36.41	67.84	<LOD	980.00	13.28	31.60	212.00	456.00	456.00
Protective Service	34	43.26	21.94	85.29	4.00	2540.00	18.10	49.50	111.00	162.06	582.00
Waiters and Waitresses	43	65.42	28.00	152.81	<LOD	46000.00	23.90	84.60	289.00	366.46	950.00
Cooks	58	78.88	58.62	106.15	<LOD	4640.00	18.66	48.90	312.00	2080.00	2080.00
Miscellaneous food preparation and service	61	67.59	31.36	145.71	<LOD	18400.00	20.80	55.00	226.54	1191.08	2335.00
Health Service Occupation	52	59.97	39.58	90.86	<LOD	1910.00	16.50	92.06	230.00	333.00	658.00
Cleaning and Building Service	71	76.95	55.44	106.82	<LOD	3180.00	17.70	62.00	356.00	632.00	987.00
Personal Service	54	76.78	34.98	168.53	<LOD	7650.00	16.30	86.80	372.00	1300.00	3740.00
Farm Operators, Managers and Supervisors	8	52.52	.	.	4.40	1576.00	10.20	41.70	127.00	1576.00	1576.00
Farm and Nursery Workers	31	44.19	19.93	97.95	<LOD	1369.60	11.58	29.82	106.13	393.00	393.00
Related Agricultural, Forestry and Fishing	47	39.06	22.45	67.97	<LOD	989.00	16.50	30.10	163.00	521.00	747.00
Vehicle and Mobile Equipment Mechanics, Repairs	28	44.74	35.27	56.77	<LOD	2880.00	16.94	27.20	95.00	663.00	1150.00
Other Mechanics and repairers	38	71.42	51.04	99.94	<LOD	3510.00	32.70	56.60	209.00	853.00	1555.20
Construction traders	127	37.90	27.09	53.02	<LOD	8350.00	9.80	47.11	121.00	332.00	1020.00
Extractive and Precision Production	48	62.22	24.51	157.94	<LOD	15300.00	16.60	65.90	232.82	920.00	931.00
Textile, apparel and furnishings machine operators	19	54.17	40.44	72.55	<LOD	458.40	27.99	72.09	180.00	235.00	235.00
Machine Operators, Assorted Materials	67	53.78	32.08	90.16	<LOD	6000.00	18.90	40.29	211.00	355.00	2748.00
Fabricators, Assemblers, Inspectors, and Samplers	51	57.25	34.28	95.60	<LOD	4000.00	16.20	67.13	182.00	780.80	990.40
Motor vehicle operators	70	69.32	49.72	96.64	<LOD	7608.00	21.90	71.05	234.00	445.72	1400.00
Other transportation and material moving	21	68.74	29.92	157.93	1.79	1860.00	22.57	80.64	168.00	793.00	793.00
Construction laborers	29	51.78	23.32	114.98	<LOD	2256.00	12.90	53.40	183.00	578.00	656.00
Laborers, except construction	6	114.22	.	.	30.60	1070.00	63.64	75.40	77.20	1070.00	1070.00
Frieght, Stock, and Material Movers, hand	44	56.71	23.37	137.57	<LOD	2240.00	15.00	62.00	452.24	593.18	935.00
Other helpers, equipment cleaners, hand packages and laborers	27	69.07	42.76	111.58	<LOD	2630.00	21.43	82.00	169.00	517.00	616.00

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Table 3: Concentrations Diadzein µg/L found in urine and Employment Status

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Working at a Job or Business	1073	47.88	40.16	57.07	<LOD	36900.00	13.70	49.80	170.00	505.00	1250.00
With a Job but not at Work	53	51.31	32.73	80.44	<LOD	2310.00	12.20	53.20	256.00	658.00	2200.00
Looking for Work	56	27.64	13.42	56.91	<LOD	4960.00	6.80	20.10	138.00	706.00	1960.00
Not working at a job or Business	829	47.82	40.34	56.69	<LOD	11300.00	14.10	48.70	184.00	568.00	1210.00

Table 4: Concentrations Diadzein µg/L found in urine and Income

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
$0-$4 999	117	96.58	60.20	154.93	<LOD	46000.00	32.00	91.40	331.00	1216.00	2490.00
$ 5000-$9 999	313	51.31	32.73	80.44	<LOD	2310.00	12.20	53.20	256.00	658.00	2200.00
$10 000-$14 999	408	27.64	13.42	56.91	<LOD	4960.00	6.80	20.10	138.00	706.00	1960.00
$15 000-$19 999	419	47.82	40.34	56.69	<LOD	11300.00	14.10	48.70	184.00	568.00	1210.00
$20 000-$24 999	386	52.90	37.28	75.06	<LOD	3664.00	18.90	47.97	192.00	495.00	780.80
$25 000-$34 999	626	50.28	39.49	64.00	<LOD	19950.00	16.23	48.96	204.00	572.00	1190.00
$35 000-$44 999	492	60.52	46.01	79.62	<LOD	7608.00	18.10	58.10	218.00	640.00	1380.00
$45 000-$54 999	408	62.59	48.55	80.70	<LOD	18400.00	19.30	62.00	220.00	501.00	945.00
$55 000-$64 999	327	49.76	38.20	64.82	<LOD	16225.00	18.10	51.60	192.00	451.64	977.60
$65 000-$74 999	244	57.97	42.23	79.56	<LOD	7110.00	23.60	50.80	152.00	389.00	1120.00
$75 000 and over	898	64.10	54.45	75.45	<LOD	12400.00	22.92	61.80	192.00	512.00	1370.00

Table 5: Concentrations Diadzein µg/L found in urine and Race/Ethnicity

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Non-Hispanic White	2139	58.31	52.90	64.27	<LOD	15680.00	19.44	56.20	190.00	508.00	1290.00
Non-Hispanic Black	1313	76.13	62.48	92.76	<LOD	46000.00	23.50	88.30	268.00	637.00	1360.00
Mexican American	1495	55.93	45.94	68.09	<LOD	19950.00	16.80	52.50	226.00	622.00	1060.00
Other Race-Including MultiRacial	136	97.35	66.49	142.52	<LOD	11100.00	26.30	78.40	452.24	1104.00	3450.00
Other Hispanic	264	56.56	40.35	79.27	<LOD	36900.00	21.30	66.80	192.00	377.00	824.00

Table 6: Concentrations Diadzein µg/L found in urine and Gender

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Male	2595	64.82	57.25	73.40	<LOD	46000.00	21.30	63.00	226.54	544.00	1140.00
Female	2752	57.52	51.95	63.69	<LOD	36900.00	18.60	56.01	192.00	557.05	1310.00

Table 7: Concentrations Diadzein µg/L found in urine and Education

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Less than High School	3077	71.09	62.57	80.76	<LOD	46000.00	23.60	71.00	237.00	593.18	1240.00
High School Diploma	828	52.10	43.74	62.06	<LOD	16225.00	16.60	50.70	205.00	452.24	855.00
More than High School	1433	57.45	50.93	64.81	<LOD	15680.00	19.10	57.07	184.00	541.00	1410.00

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Table 8: Concentrations Diadzein µg/L found in urine and Marital Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Married	1748	53.01	46.75	60.11	<LOD	18400.00	18.00	53.40	168.00	505.00	1210.00
Widowed	268	40.34	29.92	54.38	<LOD	5680.00	12.80	38.98	122.00	418.58	804.00
Divorced	273	40.15	29.38	54.87	<LOD	8520.00	13.70	39.20	148.00	407.00	702.00
Separated	112	53.06	32.76	85.94	<LOD	15680.00	16.10	36.12	185.83	816.00	1620.00
Never Married	1487	76.08	64.89	89.20	<LOD	46000.00	23.00	76.10	280.14	790.00	1576.00
Living with Partner	162	58.76	48.29	71.51	<LOD	8080.00	20.50	62.00	219.17	459.20	771.00

Table 9: Concentrations Diadzein µg/L found in urine and Country of Birth

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Born in the US	4284	64.15	58.59	70.23	<LOD	46000.00	20.50	61.72	216.00	558.00	1300.00
Born in Mexico	645	42.41	31.76	56.62	<LOD	8000.00	12.10	41.60	184.04	554.00	964.00
Born Elsewhere	384	45.23	33.53	61.02	<LOD	36900.00	16.94	40.27	157.00	479.00	1008.00

Table 10: Concentrations Diadzein µg/L found in urine and Pregnancy Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Pregnant	223	70.00	44.20	110.86	<LOD	10200.00	18.60	69.40	289.00	511.00	806.00
Not Pregnant	1360	57.89	50.29	66.65	<LOD	36900.00	17.33	56.60	201.28	656.00	1410.00

Table 11: Concentrations Diadzein µg/L found in urine and Type of Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
A Mobile Home or Trailer	424	51.90	41.43	65.02	<LOD	16225.00	13.74	51.50	217.00	491.00	987.00
A detached single family home	3235	61.89	55.75	68.72	<LOD	19950.00	21.10	59.59	203.00	529.00	1131.20
Attached Single Family Home	424	66.17	51.48	85.05	<LOD	8080.00	20.78	72.09	243.47	543.00	1070.00
An Apartment	1132	61.12	50.03	74.67	<LOD	46000.00	19.17	57.70	218.37	657.00	1860.00
Something Else	51	40.60	24.20	68.11	<LOD	2870.00	14.10	37.30	181.00	824.00	1960.00
Dormitory	22	80.18	.	.	2.40	1860.00	36.50	56.10	191.00	450.00	1490.00

Table 12: Concentrations Diadzein µg/L found in urine and Water Source

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Private-Public Water Company	4737	61.56	55.04	68.84	<LOD	46000.00	20.17	59.60	212.00	545.01	1259.20
Private Public Well	486	58.30	49.13	69.17	<LOD	18400.00	18.00	56.20	196.61	557.05	1310.00
Some other Water Source	25	51.21	11.07	236.84	3.20	3740.00	16.97	56.00	202.00	229.00	577.00

Table 13: Concentrations Diadzein µg/L found in urine and Helpings of Protein per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	15	88.44	10.10	774.59	<LOD	745.00	12.62	192.00	403.00	745.00	745.00
1	191	60.30	45.35	80.18	<LOD	4785.00	18.60	61.78	180.00	554.00	756.00
2	203	66.83	54.74	81.58	<LOD	5050.00	26.88	62.16	170.12	418.00	570.02
3+	103	63.57	44.78	90.24	<LOD	3664.00	25.15	57.23	144.00	422.00	559.98

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Table 14: Concentrations Diadzein µg/L found in urine and Helpings of Milk/Dairy per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	77	64.93	41.10	102.57	<LOD	5050.00	21.04	61.78	177.22	440.00	859.20
1	237	62.03	45.63	84.33	<LOD	2880.00	23.00	61.72	170.12	545.01	756.00
2	148	63.75	50.07	81.17	<LOD	2160.00	23.50	58.60	170.47	418.00	538.88
3+	52	70.70	48.18	103.73	4.62	3664.00	23.20	59.79	187.86	342.00	559.13

Table 15: Concentrations Diadzein µg/L found in urine and Helpings of Fruit per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	52	82.26	59.98	112.80	<LOD	4785.00	25.88	85.11	229.25	515.59	1025.60
1	216	56.99	43.32	74.96	<LOD	3664.00	20.00	57.97	144.00	427.58	855.00
2	162	68.01	49.45	93.53	<LOD	5050.00	27.80	58.64	189.92	444.80	570.02
3+	83	63.37	45.61	88.04	1.96	2964.00	22.78	65.90	182.16	422.00	538.88

Table 16: Concentrations Diadzein µg/L found in urine and Helpings of Vegetables per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	47	65.48	29.27	146.47	<LOD	4785.00	18.71	65.30	166.81	361.19	1528.00
1	259	58.17	47.06	71.90	<LOD	2880.00	18.09	69.30	170.47	414.00	722.00
2	203	66.83	54.74	81.58	<LOD	5050.00	26.88	62.16	170.12	418.00	570.02
3+	67	86.39	60.11	124.15	4.72	3664.00	24.30	65.90	324.73	557.05	557.05

Table 17: Concentrations Diadzein µg/L found in urine and Helpings of Bread/grain per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	36	57.22	16.30	200.90	<LOD	4785.00	15.76	60.89	224.00	444.80	745.00
1	191	59.53	46.61	76.02	<LOD	2880.00	22.50	59.21	152.99	538.88	814.00
2	174	66.75	51.00	87.36	<LOD	3984.00	23.85	62.16	170.12	416.31	642.00
3+	112	69.67	56.36	86.11	<LOD	5050.00	23.75	58.64	216.33	354.59	516.87

Table 18: Concentrations Diadzein µg/L found in urine and Servings of Beans per month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	279	75.06	52.44	107.45	<LOD	4330.00	26.30	68.20	275.00	638.00	1330.00
1 to 5	1066	47.94	40.96	56.12	<LOD	11300.00	16.50	50.10	160.00	505.00	978.00
6 to 10	548	55.36	44.13	69.44	<LOD	18400.00	14.10	77.40	220.00	591.00	1950.00
11 to 15	311	41.20	32.13	52.83	<LOD	12400.00	12.50	40.30	118.00	520.00	1540.00
15+	499	52.39	38.67	70.98	<LOD	36900.00	13.70	50.80	230.00	571.00	1210.00

Table 19: Concentrations Diadzein µg/L found in urine and Fish Consumed in Past Month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	1529	68.13	54.89	84.56	<LOD	16225.00	24.21	61.72	212.00	478.00	980.00
No	917	85.39	68.63	106.25	<LOD	46000.00	24.10	75.53	271.41	824.00	1740.00

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Table 20: 2,4- D and Shellfish Consumed in Past Month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	1008	63.70	47.49	85.44	<LOD	46000.00	21.43	58.40	194.00	467.00	1090.00
No	1442	81.67	68.94	96.76	<LOD	19950.00	29.10	73.09	237.00	572.00	1370.00

Table 21: Concentrations Diadzein µg/L found in urine and Body Mass Index Category

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Under Weight	94	77.80	40.26	150.35	<LOD	7240.00	16.80	58.10	251.00	2110.00	2748.00
Healthy Weight	2205	64.62	55.16	75.71	<LOD	18400.00	20.36	61.20	228.00	636.00	1528.00
Over Weight	2911	57.47	51.10	64.63	<LOD	46000.00	19.30	57.80	192.00	515.59	998.00

Table 22: Concentrations Diadzein µg/L found in urine and Ever told you have Weak/Failing Kidneys

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	49	90.11	40.08	202.58	<LOD	4000.00	31.47	131.65	343.91	1216.00	1370.00
No	1417	66.03	54.22	80.42	<LOD	16225.00	22.20	59.40	204.65	512.00	1259.20

Table 23: Concentrations Diadzein µg/L found in urine and total number of beers consumed per month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	952	69.98	58.25	84.07	<LOD	16225.00	23.85	60.60	193.00	538.88	1370.00
0-5	292	66.81	46.83	95.33	<LOD	5750.00	20.04	57.80	286.00	573.00	1340.00
6 to 10	78	66.84	45.25	98.72	<LOD	7650.00	26.23	78.40	170.12	418.58	931.00
11 to 15	42	47.86	31.80	72.05	<LOD	2256.00	24.40	57.80	90.73	238.75	324.73
16+	106	55.14	37.86	80.31	<LOD	8080.00	15.90	52.50	217.46	433.00	521.00

Table 24: Concentrations Diadzein µg/L found in urine and Water (gm)/day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0 to 896	2315	64.57	58.86	70.82	<LOD	46000.00	21.10	58.70	209.00	569.00	1290.00
897-1792g	1275	54.83	46.29	64.95	<LOD	15300.00	17.30	54.80	186.00	557.05	1400.00
>1792g	888	55.67	46.94	66.02	<LOD	15680.00	19.15	56.91	199.52	521.00	1210.00

Table 25: Concentrations Diadzein µg/L found in urine and Alcohol (gm)/day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	4098	63.53	58.57	68.90	<LOD	46000.00	20.40	61.60	215.00	583.00	1330.00
0-28	671	60.88	50.26	73.75	<LOD	16225.00	21.10	61.40	181.00	433.00	935.00
>28	346	41.49	30.19	57.02	<LOD	11300.00	13.30	36.40	116.00	545.01	1542.00

Table 26: 2,6-D and Caffeine(gm)/day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	1002	62.76	49.98	78.80	<LOD	19950.00	19.40	70.20	238.46	582.00	1410.00
0-400	3839	61.55	55.25	68.58	<LOD	46000.00	19.80	58.70	208.00	570.02	1302.00
400+	274	50.23	42.24	59.73	<LOD	8480.00	19.21	48.16	123.00	405.32	702.00

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Table 27: Concentrations Diadzein µg/L found in urine and Fiber (gm) /day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0g	10	12.09	<LOD	700.34	<LOD	1060.00	2.40	7.40	53.40	433.00	433.00
1 to 10	1783	70.80	63.84	78.52	<LOD	19950.00	20.53	68.29	244.10	597.00	1210.00
11 to 24	2681	56.84	49.86	64.80	<LOD	46000.00	19.40	56.60	180.00	508.00	1260.00
25+	641	53.91	44.91	64.72	<LOD	11300.00	18.09	49.80	179.00	529.49	1896.00

Table 28: Concentrations Diadzein µg/L found in urine and Breastfeeding Status

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Currently Breastfeeding	42	122.87	86.36	174.81	2.80	1630.00	34.30	110.00	511.00	1210.00	1210.00
Not currently Breastfeeding	100	116.03	58.90	228.58	<LOD	16225.00	39.13	133.00	410.00	1528.00	2748.00

Table 29: Concentrations Diadzein µg/L found in urine and Liver Conditions

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Ever had a liver condition	88	33.27	20.24	54.71	<LOD	7080.00	10.70	37.30	137.00	403.00	852.00
Never had a liver condition	3029	55.39	49.84	61.56	<LOD	18400.00	18.00	55.00	189.92	517.50	1216.00

Table 30: Concentrations Diadzein µg/L found in urine and Anyone Smoke in the Home

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	1140	56.12	44.92	70.12	<LOD	46000.00	16.30	53.40	238.75	572.00	1150.00
No	4150	62.56	56.45	69.33	<LOD	36900.00	20.78	60.89	199.00	538.88	1260.00

Table 31: 2, 4-D and Ever told that you have Diabetes?

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	281	48.85	36.93	64.62	<LOD	5050.00	15.40	46.50	191.00	422.00	825.60
No	5020	61.89	55.93	68.48	<LOD	46000.00	20.10	59.80	212.00	555.94	1270.00

Table 32: Concentrations Diadzein µg/L found in urine by Currently Taking Birth Control Pills?

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	151	68.32	46.58	100.21	<LOD	3740.00	20.37	62.20	319.00	611.00	1712.00
No	430	58.86	47.08	73.57	<LOD	18400.00	19.10	68.30	193.00	572.00	1410.00

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Table 33: Concentrations Diadzein µg/L found in urine and Now Use Depo-Provera Injectables

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	44	74.27	62.08	88.86	<LOD	4365.00	23.08	76.27	366.46	987.00	1360.00
No	154	72.23	40.79	127.88	<LOD	6500.00	18.11	93.90	340.00	541.00	1950.00

Table 34: Concentrations Diadzein µg/L found in urine and Currently Taking Estrogen Only Pills

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	126	33.36	22.498	49.46	1.13	7240	13	37.54	74.9	216	461
No	131	50.47	22.498	49.46	1.13	7240	13	37.54	74.9	216	461

Table 35: Concentrations Diadzein µg/L found in urine and Currently Taking Projestin Only Pills

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	28	45.12	18.14	112.25	1.70	705.00	16.30	46.95	127.00	171.00	705.00
No	52	33.76	19.95	57.13	<LOD	3910.00	10.40	32.55	115.00	437.00	1370.00

Table 36: Concentrations Diadzein µg/L found in urine and Currently Taking Estrogen-Projestin Pills

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	46	80.46	56.65	114.29	<LOD	12400.00	22.42	57.80	217.00	1250.00	3910.00
No	29	32.30	21.55	48.40	<LOD	4420.00	10.10	19.10	113.00	231.00	636.00

Table 37: Concentrations Diadzein µg/L found in urine and Number of Prescription Medications Taken

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	3238	67.62	59.31	77.09	<LOD	46000.00	21.20	64.80	234.00	654.00	1380.00
1	834	54.61	46.94	63.52	<LOD	15680.00	19.53	51.20	199.00	451.64	790.00
2	448	65.66	49.85	86.48	<LOD	9660.00	21.20	65.90	217.00	557.05	1370.00
3	336	49.23	38.31	63.25	<LOD	16225.00	14.80	43.59	219.37	656.00	1900.00
4	161	47.46	34.64	65.03	<LOD	11100.00	15.82	51.70	130.83	332.00	570.00
5	116	48.96	29.07	82.47	<LOD	12400.00	18.20	44.02	191.00	416.31	1310.00
6+	214	48.41	36.80	63.69	<LOD	5630.00	15.55	54.20	129.25	361.19	828.00

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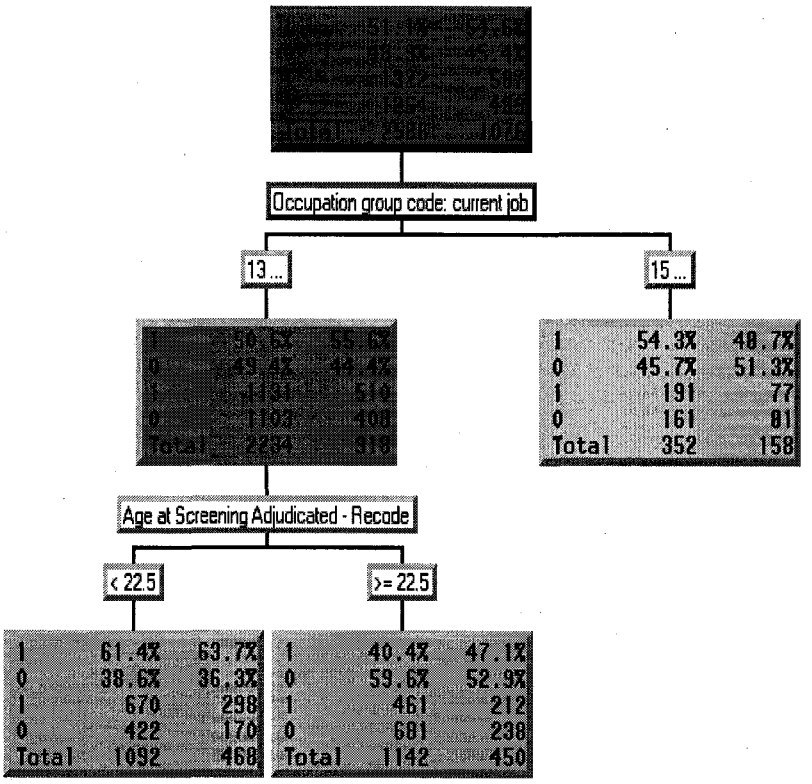
Figure 1: Classification and Regression Tree for Diadzein*



*occupations truncated

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APPENDIX 6: EQUOL

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Table 1: Concentrations of Equol (µg/L) found in urine by age category

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Age 5-11	668	11.50	9.82	13.47	<LOD	722.00	4.52	13.50	25.73	46.20	67.50
Age 12-19	1401	10.40	9.08	11.92	<LOD	3700.00	3.98	10.50	21.20	43.10	71.64
Age 20-40	1114	8.84	7.69	10.16	<LOD	4970.00	<LOD	8.30	18.70	38.60	62.89
Age 41-55	731	8.38	7.04	9.96	<LOD	17200.00	<LOD	7.80	15.30	36.15	74.16
Age 56+	1062	7.28	6.39	8.30	<LOD	3668.55	<LOD	6.48	15.90	33.10	49.20

Table 2: Concentrations of Equol (µg/L) found in urine by Occupation

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Executive, Administrators, & Managers	138	8.08	6.57	9.95	<LOD	3360.00	<LOD	7.10	18.00	35.50	53.70
Management Related	48	10.12	7.60	13.46	<LOD	111.00	3.32	10.30	21.91	46.20	75.27
Engineers, Architects, and Scientists	50	13.16	10.04	17.25	<LOD	3020.00	3.80	12.60	27.00	34.70	152.00
Health Diagnosing, Assessing & Treating	40	8.59	6.73	10.98	<LOD	984.00	<LOD	7.90	16.40	27.80	63.30
Teachers	77	9.41	6.71	13.19	<LOD	390.00	3.40	8.30	24.65	38.19	77.90
Writers, Artists, Entertainers & Athletes	35	12.30	9.32	16.21	<LOD	219.00	4.39	9.90	23.30	176.00	193.00
Other Professional Speciality	52	13.71	11.76	15.99	<LOD	2110.00	6.44	14.00	24.20	36.80	93.90
Technicians and Related Supported	50	7.46	5.23	10.65	<LOD	133.14	<LOD	6.35	19.40	44.60	67.00
Supervisors and Proprietors, Sales	37	7.15	5.19	9.85	<LOD	89.00	<LOD	8.27	14.30	16.07	29.10
Sales Representatives,finance,business,commodities	60	9.90	7.11	13.77	<LOD	838.81	<LOD	10.50	20.02	58.80	102.00
Sales Workers, retail & personal services	137	8.57	7.02	10.47	<LOD	4970.00	<LOD	7.80	16.40	38.60	56.90
Secretaries, Stenographers, and typists	32	7.77	4.86	12.42	<LOD	88.30	<LOD	10.80	19.40	28.49	42.10
Information Clerks	28	10.10	4.92	20.72	<LOD	75.90	<LOD	9.60	33.60	75.90	75.90
Records Processing	64	4.26	3.53	5.14	<LOD	32.60	<LOD	<LOD	8.80	14.70	18.10
Material Recording, Scheduling,distributing clerks	32	9.71	5.25	17.97	<LOD	1470.00	<LOD	11.25	24.00	58.80	71.73
Miscellaneous administrative support	124	10.78	7.40	15.71	<LOD	5310.00	3.60	10.10	21.50	37.48	108.00
Private Household	18	9.51	8.75	10.34	<LOD	302.67	<LOD	5.70	14.70	79.80	302.67
Protective Service	33	8.89	7.84	10.08	<LOD	56.90	<LOD	8.30	22.15	43.50	43.50
Waiters and Waitresses	41	9.14	4.89	17.08	<LOD	641.00	<LOD	9.30	22.20	39.80	44.40
Cooks	52	8.98	6.18	13.04	<LOD	173.00	4.94	8.90	13.88	19.90	173.00
Miscellaneous food preparation and service	58	10.88	7.63	15.50	<LOD	542.00	4.20	12.86	26.80	32.65	52.18
Health Service Occupation	48	13.61	9.58	19.33	<LOD	564.00	5.80	11.10	42.40	81.40	107.00
Cleaning and Building Service	65	10.98	8.06	14.96	<LOD	953.00	5.00	8.64	21.20	41.60	405.00
Personal Service	51	8.06	4.91	13.23	<LOD	197.00	3.40	7.10	18.60	20.80	68.70
Farm Operators, Managers and Supervisors	7	13.16	.	.	<LOD	56.60	10.80	10.80	24.76	56.60	56.60
Farm and Nursery Workers	25	4.41	3.93	4.95	<LOD	366.93	<LOD	<LOD	4.99	13.30	29.07
Related Agricultural, Forestry and Fishing	42	11.14	6.02	20.62	<LOD	742.00	<LOD	13.38	21.26	73.60	76.20
Vehicle and Mobile Equipment Mechanics, Repairs	27	8.64	<LOD	30.75	<LOD	3040.00	<LOD	5.52	13.80	40.80	3040.00
Other Mechanics and repairers	34	12.50	9.24	16.91	<LOD	3668.55	4.40	15.60	25.02	34.30	52.60
Construction traders	122	7.91	6.14	10.18	<LOD	1424.00	<LOD	7.70	15.70	23.98	50.00
Extractive and Precision Production	42	8.14	4.87	13.59	<LOD	403.00	<LOD	5.90	15.21	36.90	74.30
Textile, apparel and furnishings machine operators	18	6.51	5.19	8.18	<LOD	76.90	<LOD	5.20	11.40	24.30	24.30
Machine Operators, Assorted Materials	61	10.48	7.24	15.19	<LOD	166.00	<LOD	10.20	25.62	74.16	74.40
Fabricators, Assemblers, Inspectors, and Samplers	47	7.28	5.19	10.21	<LOD	333.00	<LOD	5.96	19.60	41.62	51.90
Motor vehicle operators	65	7.51	6.04	9.34	<LOD	1030.00	<LOD	6.00	16.89	35.30	35.61
Other transportation and material moving	19	8.02	5.49	11.72	<LOD	26.10	4.30	7.74	18.33	23.28	26.10
Construction laborers	23	8.68	7.34	10.26	<LOD	39.60	5.90	9.80	20.60	22.70	30.20
Laborers, except construction	6	9.84	.	.	<LOD	22.83	<LOD	14.00	22.83	22.83	22.83
Frieght, Stock, and Material Movers, hand	38	6.43	5.06	8.18	<LOD	112.00	<LOD	7.70	10.40	26.70	42.80
Other helpers, equipment cleaners, hand packages and laborers	26	9.42	7.38	12.04	<LOD	41.20	7.90	9.40	12.60	27.10	35.94

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Table 3: Concentrations of Equol (μg/L) found in urine by Employment Status

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Working at a Job or Business	1073	9.31	7.81	11.09	<LOD	5310.00	<LOD	9.00	19.90	43.50	76.90
With a Job but not at Work	53	10.68	6.69	17.03	<LOD	3020.00	<LOD	10.80	24.30	86.00	107.00
Looking for Work	56	10.47	7.75	14.14	<LOD	199.00	3.40	12.50	24.80	50.60	53.90
Not working at a job or Business	829	7.78	6.52	9.28	<LOD	17200.00	<LOD	7.00	16.70	37.20	55.50

Table 4: Concentrations of Equol (μg/L) found in urine by Income

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
$0-$4 999	111	7.73	6.54	9.14	<LOD	416.00	<LOD	9.18	13.63	37.60	58.70
$ 5000-$9 999	295	10.68	6.69	17.03	<LOD	3020.00	<LOD	10.80	24.30	86.00	107.00
$10 000-$14 999	374	10.47	7.75	14.14	<LOD	199.00	3.40	12.50	24.80	50.60	53.90
$15 000-$19 999	378	7.78	6.52	9.28	<LOD	17200.00	<LOD	7.00	16.70	37.20	55.50
$20 000-$24 999	365	7.01	5.86	8.37	<LOD	1600.00	<LOD	6.62	14.60	32.20	55.10
$25 000-$34 999	571	7.02	5.87	8.39	<LOD	1470.00	<LOD	6.60	14.75	30.10	45.80
$35 000-$44 999	464	8.45	7.01	10.19	<LOD	912.00	<LOD	9.38	18.10	34.70	53.10
$45 000-$54 999	376	9.69	8.00	11.74	<LOD	3040.00	3.30	10.08	19.91	39.80	66.10
$55 000-$64 999	308	10.42	8.32	13.04	<LOD	3020.00	4.30	10.40	20.50	41.50	59.00
$65 000-$74 999	235	9.39	7.23	12.21	<LOD	5310.00	3.32	9.80	18.60	35.00	64.40
$75 000 and over	865	10.30	8.73	12.15	<LOD	17200.00	<LOD	9.40	22.80	48.20	81.40

Table 5: Concentrations of Equol (μg/L) found in urine by Race/Ethnicity

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Non-Hispanic White	1980	9.59	8.30	11.07	<LOD	17200.00	<LOD	9.49	20.51	41.50	69.10
Non-Hispanic Black	1220	6.94	6.10	7.89	<LOD	4970.00	<LOD	6.17	14.70	28.88	43.39
Mexican American	1405	6.16	5.65	6.72	<LOD	3700.00	<LOD	5.20	11.90	25.10	39.40
Other Race-Including MultiRacial	131	9.13	7.36	11.34	<LOD	3668.55	<LOD	7.80	14.50	66.90	220.00
Other Hispanic	240	7.86	6.92	8.93	<LOD	651.20	<LOD	7.67	14.90	35.40	56.90

Table 6: Concentrations of Equol (μg/L) found in urine by Gender

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Male	2417	9.26	8.17	10.48	<LOD	4970.00	<LOD	8.71	19.50	39.70	63.80
Female	2559	8.33	7.39	9.39	<LOD	17200.00	<LOD	7.89	17.19	37.60	60.20

Table 7: Concentrations of Equol (μg/L) found in urine by Education

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Less than High School	2851	8.84	7.75	10.08	<LOD	3700.00	<LOD	8.40	19.30	39.60	61.10
High School Diploma	772	7.98	7.20	8.85	<LOD	4970.00	<LOD	7.70	15.40	34.42	53.80
More than High School	1345	9.14	7.88	10.60	<LOD	17200.00	<LOD	8.64	19.00	40.80	69.10

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Table 8: Concentrations of Equol (µg/L) found in urine by Marital Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Married	1656	8.83	7.90	9.87	<LOD	17200.00	<LOD	7.94	18.74	41.30	73.50
Widowed	244	6.42	5.10	8.09	<LOD	651.20	<LOD	5.80	11.60	22.14	45.39
Divorced	264	6.76	5.38	8.48	<LOD	912.00	<LOD	6.70	12.80	28.49	34.10
Separated	112	6.61	5.02	8.69	<LOD	302.67	<LOD	5.90	13.28	18.88	49.30
Never Married	1388	9.31	8.07	10.73	<LOD	3700.00	<LOD	9.40	19.40	37.40	58.80
Living with Partner	153	8.81	6.70	11.59	<LOD	4970.00	<LOD	7.80	18.30	57.50	77.90

Table 9: Concentrations of Equol (µg/L) found in urine by Country of Birth

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Born in the US	4007	9.01	7.98	10.18	<LOD	17200.00	<LOD	8.80	19.08	39.40	63.30
Born in Mexico	593	5.80	5.12	6.56	<LOD	3700.00	<LOD	4.94	11.40	25.50	38.10
Born Elsewhere	351	8.12	6.96	9.47	<LOD	3668.55	<LOD	7.31	14.75	37.40	112.00

Table 10: Concentrations of Equol (µg/L) found in urine by Pregnancy Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Pregnant	209	8.81	6.07	12.80	<LOD	3360.00	<LOD	8.25	18.10	53.70	75.30
Not Pregnant	1299	8.40	7.14	9.89	<LOD	17200.00	<LOD	7.85	17.00	37.79	70.00

Table 11: Concentrations of Equol (µg/L) found in urine by Type of Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
A Mobile Home or Trailer	388	7.28	6.11	8.68	<LOD	3700.00	<LOD	6.70	16.40	29.20	43.20
A detached single family home	3026	8.98	7.89	10.21	<LOD	17200.00	<LOD	8.52	19.00	40.30	71.73
Attached Single Family Home	408	9.58	8.01	11.47	<LOD	5310.00	<LOD	9.40	20.50	48.00	71.30
An Apartment	1029	8.15	7.37	9.01	<LOD	4970.00	<LOD	8.00	16.90	32.20	46.20
Something Else	45	10.51	6.99	15.80	<LOD	590.00	3.70	8.80	35.56	55.50	164.00
Dormitory	22	9.04	.	.	<LOD	122.00	3.48	7.90	25.10	46.30	47.20

Table 12: Concentrations of Equol (µg/L) found in urine by Year Home Built

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
1990-present	665	9.56	7.89	11.59	<LOD	4260.00	<LOD	9.00	18.80	42.40	78.00
1978-1989	799	9.04	7.76	10.53	<LOD	17200.00	<LOD	8.30	19.40	41.30	71.80
1960-1977	877	8.54	7.42	9.83	<LOD	3700.00	<LOD	7.90	17.50	36.30	51.00
1950-1959	503	6.96	5.87	8.26	<LOD	888.00	<LOD	6.81	15.15	28.80	46.40
1940-1949	260	9.79	8.28	11.57	<LOD	1424.00	4.50	9.38	20.60	39.68	62.20
before 1940	552	11.29	9.17	13.91	<LOD	3360.00	4.36	11.45	25.00	53.10	81.40

Table 13: Concentrations of Equol (µg/L) found in urine by Water Source

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Private-Public Water Company	4433	8.57	7.58	9.68	<LOD	17200.00	<LOD	8.00	17.90	38.60	60.70
Private Public Well	422	9.91	8.61	11.41	<LOD	3040.00	<LOD	10.90	21.30	35.64	63.80
Some other Water Source	27	11.80	3.80	36.61	<LOD	176.00	4.30	12.60	18.90	176.00	176.00

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Table 14: Concentrations of Equol (µg/L) found in urine by Helpings of Protein per day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	14	9.16	<LOD	91.85	<LOD	118.93	4.13	5.52	7.32	118.93	118.93
1	164	8.44	6.54	10.90	<LOD	651.20	3.95	7.60	16.10	36.30	48.60
2	169	7.84	6.27	9.79	<LOD	239.83	<LOD	7.25	14.98	35.02	103.52
3+	86	7.30	5.25	10.15	<LOD	1740.00	<LOD	7.57	11.40	22.77	26.70

Table 15: Concentrations of Equol (µg/L) found in urine by Helpings of Milk/Dairy per day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	64	6.06	4.13	8.91	<LOD	651.20	<LOD	5.05	10.42	30.08	105.54
1	210	7.36	6.29	8.61	<LOD	239.83	<LOD	6.56	12.15	35.51	56.60
2	115	8.57	6.82	10.77	<LOD	164.00	4.63	8.63	17.05	33.10	36.27
3+	46	12.44	7.72	20.06	<LOD	1740.00	6.37	11.42	19.63	45.39	50.50

Table 16: Concentrations of Equol (µg/L) found in urine by Helpings of Fruit per day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	44	9.86	7.84	12.39	<LOD	144.00	<LOD	6.10	33.26	118.93	144.00
1	195	8.13	6.66	9.92	<LOD	651.20	<LOD	7.04	12.50	36.27	103.52
2	126	6.57	5.00	8.64	<LOD	61.60	<LOD	6.83	11.25	20.59	28.70
3+	69	9.39	6.12	14.42	<LOD	1740.00	3.72	9.28	17.05	27.35	47.55

Table 17: Concentrations of Equol (µg/L) found in urine by Helpings of Vegetables per day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	44	6.04	4.21	8.65	<LOD	61.60	<LOD	5.52	10.67	30.08	41.98
1	219	7.66	6.33	9.25	<LOD	651.20	<LOD	6.68	14.90	36.27	50.50
2	169	7.84	6.27	9.79	<LOD	239.83	<LOD	7.25	14.98	35.02	103.52
3+	54	9.01	5.78	14.02	<LOD	1740.00	<LOD	8.63	17.20	35.00	111.84

Table 18: Concentrations of Equol (µg/L) found in urine by Helpings of Bread/grain per day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	27	6.90	4.75	10.03	<LOD	118.93	<LOD	5.81	11.30	30.08	118.93
1	176	7.77	6.34	9.53	<LOD	651.20	3.30	7.11	11.84	36.27	56.60
2	137	7.48	5.64	9.92	<LOD	239.83	<LOD	7.60	12.30	25.32	47.55
3+	95	9.79	6.01	15.96	<LOD	1740.00	<LOD	9.03	20.59	48.60	144.00

Table 19: Concentrations of Equol (µg/L) found in urine by Servings of Beans per month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	279	11.19	8.32	15.06	<LOD	1470.00	3.90	10.90	20.50	56.60	77.90
1 to 5	1066	9.70	7.91	11.90	<LOD	5310.00	<LOD	9.90	20.10	41.80	73.50
6 to 10	548	7.79	6.63	9.17	<LOD	1120.00	<LOD	7.10	17.90	39.40	53.10
11 to 15	311	8.09	6.48	10.10	<LOD	888.00	<LOD	7.40	17.10	37.90	89.20
15+	499	9.02	6.99	11.63	<LOD	17200.00	<LOD	7.90	20.00	39.80	73.60

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Table 20: Concentrations of Equol (µg/L) found in urine by Fish Consumed in Past Month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	1302	7.95	6.70	9.42	<LOD	3700.00	<LOD	7.57	16.31	34.38	51.50
No	779	8.69	7.54	10.01	<LOD	3668.55	<LOD	8.49	18.41	33.60	54.00

Table 21:Concentrations of Equol (µg/L) found in urine by Shellfish Consumed in Past Month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	867	7.74	6.66	8.99	<LOD	3668.55	<LOD	7.04	16.02	33.10	45.20
No	1218	8.64	7.21	10.34	<LOD	3700.00	<LOD	8.38	17.50	35.80	54.00

Table 22: Concentrations of Equol (µg/L) found in urine by Body Mass Index Category

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Under Weight	85	11.24	9.13	13.85	<LOD	2248.00	<LOD	11.10	17.30	37.20	58.80
Healthy Weight	2048	9.23	7.99	10.66	<LOD	17200.00	<LOD	8.50	20.00	45.50	74.40
Over Weight	2711	8.37	7.44	9.41	<LOD	5310.00	<LOD	8.10	17.50	34.38	51.90

Table 23: Concentrations of Equol (µg/L) found in urine by Ever told you have Weak/Failing Kidneys

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	42	7.16	3.40	15.06	<LOD	74.16	<LOD	5.05	19.60	37.65	74.16
No	1208	7.71	6.76	8.80	<LOD	3668.55	<LOD	7.26	15.70	31.40	49.44

Table 24: Concentrations of Equol (µg/L) found in urine by total number of beers consumed per month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	812	7.34	6.34	8.50	<LOD	3668.55	<LOD	6.50	14.98	31.04	53.80
0-5	251	8.66	7.27	10.31	<LOD	2944.00	3.57	8.64	16.52	33.20	41.56
6 to 10	60	10.19	6.80	15.26	<LOD	742.00	5.06	8.16	18.15	35.00	166.00
11 to 15	39	6.81	4.24	10.96	<LOD	41.62	<LOD	6.29	12.29	39.70	41.62
16+	91	6.49	4.61	9.14	<LOD	181.84	<LOD	4.94	18.00	30.08	30.68

Table 25: Concentrations of Equol (µg/L) found in urine by Water (gm)/day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0 to 896	2145	9.17	8.20	10.26	<LOD	4970.00	<LOD	9.30	20.28	39.00	57.50
897-1792g	1201	8.74	7.34	10.40	<LOD	17200.00	<LOD	7.90	17.90	37.60	81.40
>1792g	823	7.74	6.64	9.01	<LOD	2944.00	<LOD	7.33	16.20	35.50	53.80

Table 26: Concentrations of Equol (µg/L) found in urine by Alcohol (gm)/day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	3818	8.62	7.78	9.56	<LOD	17200.00	<LOD	8.20	18.33	37.60	59.00
0-28	611	8.98	7.37	10.95	<LOD	5310.00	<LOD	8.49	17.10	37.60	58.70
>28	321	9.38	7.55	11.66	<LOD	2944.00	<LOD	9.10	22.30	39.80	71.80

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Table 27:Concentrations of Equol (µg/L) found in urine by Caffeine(gm)/day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	920	8.60	7.22	10.25	<LOD	2248.00	<LOD	7.60	17.60	38.50	74.30
0-400	3580	8.99	8.00	10.10	<LOD	17200.00	<LOD	8.64	19.08	39.00	62.89
400+	250	7.25	5.94	8.86	<LOD	1424.00	<LOD	6.44	15.22	30.67	42.10

Table 28: Concentrations of Equol (µg/L) found in urine by Fiber (gm) /day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0g	9	5.19	<LOD	######	<LOD	112.00	<LOD	<LOD	16.40	16.40	112.00
1 to 10	1635	8.80	7.70	10.06	<LOD	5310.00	<LOD	8.49	18.20	38.60	68.01
11 to 24	2513	8.48	7.36	9.77	<LOD	4970.00	<LOD	8.10	18.30	35.61	56.10
25+	593	10.04	8.38	12.02	<LOD	17200.00	<LOD	8.70	19.84	48.69	102.00

Table 29: Concentrations of Equol (µg/L) found in urine by Breastfeeding Status

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Currently Breastfeeding	38	9.97	5.99	16.57	<LOD	3020.00	3.57	12.00	14.00	46.20	58.10
Not currently Breastfeeding	91	6.28	4.47	8.83	<LOD	130.01	<LOD	6.20	11.25	19.89	35.40

Table 30: Concentrations of Equol (µg/L) found in urine by Liver Conditions

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Ever had a liver condition	85	7.19	5.47	9.45	<LOD	273.00	<LOD	7.20	17.05	30.89	43.70
Never had a liver condition	2815	8.29	7.39	9.30	<LOD	17200.00	<LOD	7.70	17.20	37.10	60.70

Table 31: Concentrations of Equol (µg/L) found in urine by Anyone Smoke in the Home

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	1062	8.06	6.93	9.37	<LOD	5310.00	<LOD	8.15	16.21	35.94	59.00
No	3858	8.95	8.03	9.97	<LOD	17200.00	<LOD	8.33	19.00	38.60	62.89

Table 32: Concentrations of Equol (µg/L) found in urine and Ever told that you have Diabetes?

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	266	6.88	5.86	8.08	<LOD	558.00	<LOD	7.00	12.30	24.90	43.70
No	3858	8.95	8.03	9.97	<LOD	17200.00	<LOD	8.33	19.00	38.60	62.89

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Table 33: Concentrations of Equol (µg/L) found in urine by by Currently Taking Birth Control Pills?

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	139	11.31	9.09	14.06	<LOD	140.00	4.92	11.23	26.40	53.50	69.10
No	405	8.49	6.87	10.50	<LOD	17200.00	<LOD	7.31	16.89	41.62	83.60

Table 34: Concentrations of Equol (µg/L) found in urine by and Now Use Depo-Provera Injectables

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	40	8.45	7.16	9.96	<LOD	1470.00	<LOD	6.10	18.90	50.60	50.60
No	141	8.54	5.49	13.27	<LOD	140.00	<LOD	8.25	18.88	41.40	81.40

Table 35: Concentrations of Equol (µg/L) found in urine by and Currently Taking Estrogen Only Pills

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	118	8.18	5.47	12.23	<LOD	2248.00	<LOD	7.30	14.30	41.62	108.00
No	125	7.39	6.35	8.59	<LOD	53.60	<LOD	8.45	14.20	22.15	37.65

Table 36: Concentrations of Equol (µg/L) found in urine by and Currently Taking Projestin Only Pills

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	28	6.00	5.32	6.76	<LOD	56.60	<LOD	4.70	12.29	36.27	41.62
No	49	6.57	4.34	9.94	<LOD	252.00	<LOD	6.60	12.50	23.50	37.60

Table 37: Concentrations of Equol (µg/L) found in urine by and Currently Taking Estrogen-Projestin Pills

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	45	8.67	5.86	12.82	<LOD	108.00	<LOD	9.50	20.02	44.60	93.90
No	28	8.76	<LOD	25.57	<LOD	390.00	<LOD	5.81	19.80	41.62	132.00

Table 38: Concentrations of Equol (µg/L) found in urine by Number of Prescription Medications Taken

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	3008	9.24	8.17	10.46	<LOD	5310.00	<LOD	8.99	19.40	40.80	66.90
1	778	8.49	7.08	10.19	<LOD	4970.00	<LOD	7.60	18.00	37.11	52.60
2	420	8.54	7.03	10.38	<LOD	17200.00	<LOD	7.80	17.20	38.60	68.01
3	315	8.95	7.31	10.97	<LOD	2248.00	<LOD	7.50	20.70	57.50	89.00
4	148	6.89	5.87	8.08	<LOD	60.70	<LOD	8.04	15.20	22.20	36.15
5	106	6.43	5.38	7.69	<LOD	105.54	<LOD	5.80	13.93	21.91	40.40
6+	201	7.88	6.53	9.52	<LOD	290.00	<LOD	7.70	16.71	32.02	46.50

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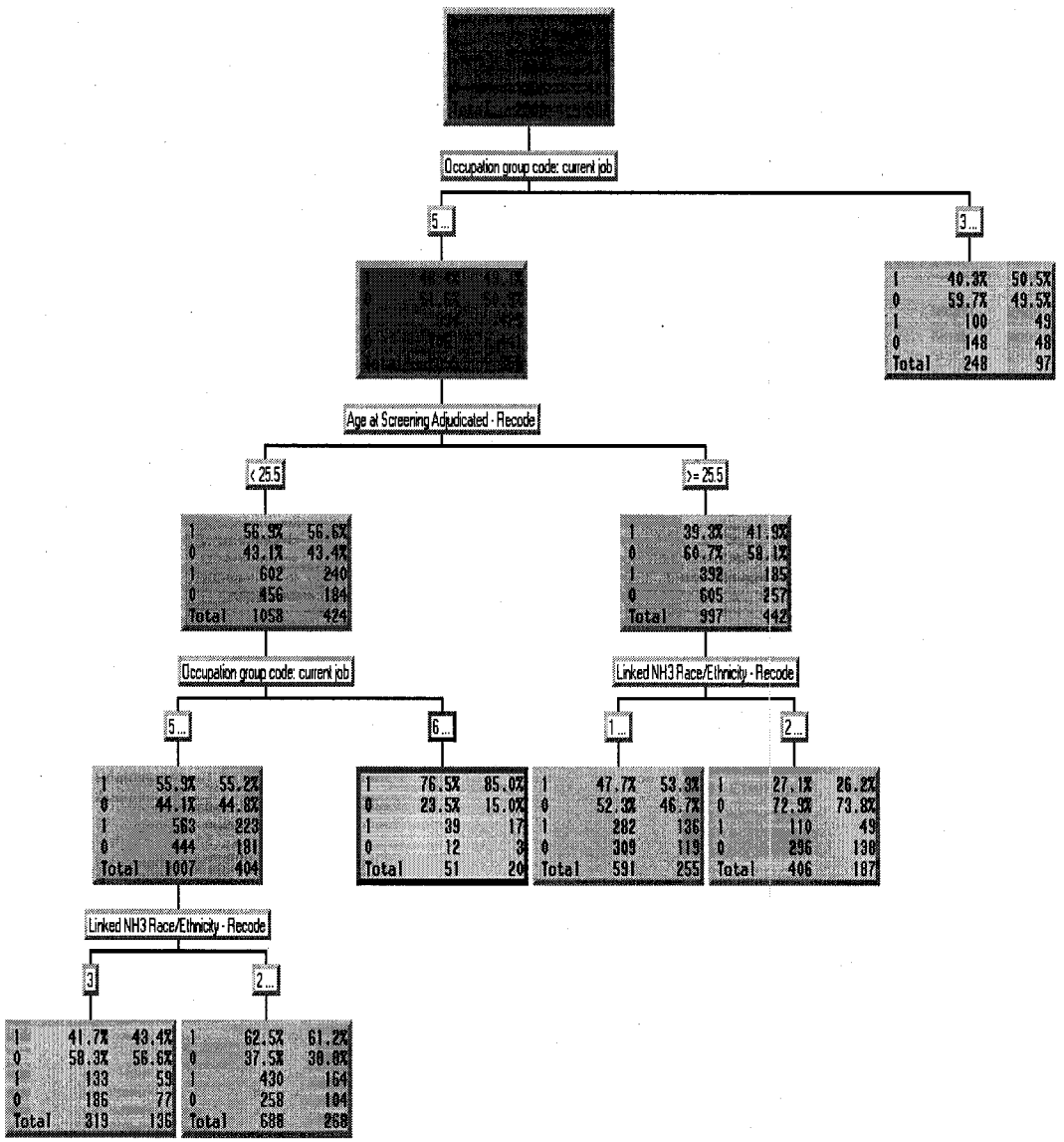
Figure 1: Classification and Regression Tree for Equol*



*Occupations Truncated

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APPENDIX 7: O-DESMETHYANGOLENSIN

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Table 1: Concentrations of O-desmethylangolensin (µg/L) found in urine by age category

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Age 5-11	683	5.97	4.69	7.59	<LOD	2240.00	1.00	6.50	30.50	105.00	234.00
Age 12-19	1411	5.87	4.59	7.50	<LOD	3664.00	1.00	6.50	34.40	122.00	206.00
Age 20-40	1156	3.72	3.05	4.54	<LOD	8500.00	<LOD	3.20	19.41	128.00	281.49
Age 41-55	716	4.91	3.81	6.31	<LOD	9890.00	0.80	4.50	22.10	115.00	303.00
Age 56+	1099	2.93	2.43	3.53	<LOD	5850.00	<LOD	3.04	14.19	61.09	111.24

Table 2: Concentrations of O-desmethylangolensin (µg/L) found in urine by Occupation

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Executive, Administrators, & Managers	133	5.02	3.01	8.36	<LOD	5840.00	1.30	3.56	25.20	99.38	774.00
Management Related	47	3.18	2.08	4.88	<LOD	128.00	<LOD	4.65	16.16	51.51	115.00
Engineers, Architects, and Scientists	49	5.68	2.03	15.88	<LOD	1890.00	<LOD	6.69	37.76	259.00	700.00
Health Diagnosing, Assessing & Treating	41	5.45	3.62	8.22	<LOD	526.00	1.00	5.20	33.20	88.29	417.00
Teachers	79	4.92	2.20	11.02	<LOD	810.00	1.00	4.10	24.70	181.98	240.80
Writers, Artists, Entertainers & Athletes	33	4.51	2.34	8.70	<LOD	461.37	0.50	4.30	28.50	233.00	356.00
Other Professional Speciality	48	3.85	3.08	4.81	<LOD	825.00	0.74	3.40	9.90	67.20	746.00
Technicians and Related Supported	53	4.30	2.51	7.37	<LOD	560.00	0.50	2.60	27.60	229.51	288.00
Supervisors and Proprietors, Sales	41	2.66	1.55	4.55	<LOD	710.00	<LOD	2.10	20.40	57.20	205.58
Sales Representatives,finance,business,commodities	58	7.31	4.04	13.24	<LOD	616.00	1.88	5.28	29.06	137.00	443.00
Sales Workers, retail & personal services	135	4.39	2.83	6.80	<LOD	4650.00	0.50	4.40	24.64	143.00	322.08
Secretaries, Stenographers, and typists	31	11.42	5.95	21.92	<LOD	1010.00	7.80	12.90	16.70	33.97	155.19
Information Clerks	30	3.90	1.37	11.08	<LOD	86.00	<LOD	4.00	37.80	45.80	70.46
Records Processing	64	3.77	1.70	8.37	<LOD	1478.00	<LOD	3.46	28.72	175.00	208.00
Material Recording, Scheduling,distributing clerks	35	6.04	2.46	14.85	<LOD	693.00	1.45	10.60	26.80	42.70	57.15
Miscellaneous administrative support	127	5.14	3.15	8.40	<LOD	3920.00	0.60	3.92	39.50	141.00	358.00
Private Household	14	2.86	2.13	3.84	<LOD	128.00	0.50	5.20	9.50	109.38	128.00
Protective Service	33	1.90	0.76	4.71	<LOD	128.00	<LOD	2.10	13.20	17.10	24.60
Waiters and Waitresses	38	2.79	1.72	4.54	<LOD	300.88	<LOD	3.10	13.20	43.70	57.20
Cooks	55	3.84	2.02	7.29	<LOD	9890.00	<LOD	2.03	43.60	309.00	618.00
Miscellaneous food preparation and service	59	4.29	2.32	7.92	<LOD	5850.00	0.80	3.30	17.20	60.55	137.56
Health Service Occupation	50	5.16	3.30	8.06	<LOD	1060.00	1.10	6.50	19.70	113.00	160.04
Cleaning and Building Service	67	4.80	2.94	7.82	<LOD	409.00	<LOD	5.43	34.80	153.00	191.00
Personal Service	50	8.14	4.29	15.46	<LOD	2460.00	1.10	6.40	25.90	138.58	394.00
Farm Operators, Managers and Supervisors	8	4.29	.	.	<LOD	281.49	<LOD	5.15	11.33	281.49	281.49
Farm and Nursery Workers	29	2.29	0.45	11.67	<LOD	130.27	<LOD	2.83	7.13	112.00	112.00
Related Agricultural, Forestry and Fishing	42	3.07	1.60	5.87	<LOD	582.00	<LOD	2.10	10.00	139.93	234.00
Vehicle and Mobile Equipment Mechanics, Repairs	26	2.48	1.23	5.00	<LOD	453.00	<LOD	4.71	9.11	26.93	42.90
Other Mechanics and repairers	37	3.42	2.26	5.19	<LOD	490.00	<LOD	4.84	18.74	96.00	190.00
Construction traders	120	2.59	1.53	4.40	<LOD	4110.00	<LOD	1.80	15.90	69.10	260.00
Extractive and Precision Production	47	1.78	0.94	3.38	<LOD	324.00	<LOD	0.91	8.99	87.80	280.00
Textile, apparel and furnishings machine operators	19	2.91	1.84	4.60	<LOD	31.00	<LOD	4.50	9.20	16.60	16.60
Machine Operators, Assorted Materials	64	3.29	1.81	5.99	<LOD	227.52	0.51	4.10	11.36	96.78	227.52
Fabricators, Assemblers, Inspectors, and Samplers	49	5.12	2.82	9.28	<LOD	1050.00	0.80	3.90	19.81	98.73	224.29
Motor vehicle operators	67	3.65	1.80	7.42	<LOD	464.80	<LOD	6.80	19.40	70.20	151.87
Other transportation and material moving	20	5.36	3.91	7.35	<LOD	41.80	2.70	8.10	18.30	31.00	41.80
Construction laborers	29	3.04	0.91	10.18	<LOD	308.00	<LOD	3.70	15.10	81.70	129.00
Laborers, except construction	5	19.75	.	.	4.50	189.00	7.40	19.35	19.35	189.00	189.00
Frieght, Stock, and Material Movers, hand	44	2.90	1.58	5.33	<LOD	551.20	<LOD	1.70	26.50	179.21	551.20
Other helpers, equipment cleaners, hand packages and laborers	24	3.26	1.61	6.60	<LOD	546.00	1.42	2.50	13.10	27.40	76.60

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Table 3: Concentrations of O-desmethylangolensin (µg/L) found in urine by Employment Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Working at a Job or Business	1073	3.98	3.21	4.95	<LOD	9890.00	<LOD	3.30	20.40	86.90	259.00
With a Job but not at Work	53	5.59	3.02	10.33	<LOD	3760.00	0.50	3.60	24.10	178.00	810.00
Looking for Work	56	2.00	0.89	4.49	<LOD	370.00	<LOD	1.40	8.10	48.40	183.00
Not working at a job or Business	829	3.40	2.83	4.09	<LOD	3970.00	<LOD	2.60	14.70	72.80	303.00

Table 4: Concentrations of O-desmethylangolensin (µg/L) found in urine by Income

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
$0-$4 999	111	4.76	1.79	12.66	<LOD	666.00	<LOD	3.22	49.10	141.00	344.00
$ 5000-$9 999	304	5.59	3.02	10.33	<LOD	3760.00	0.50	3.60	24.10	178.00	810.00
$10 000-$14 999	390	2.00	0.89	4.49	<LOD	370.00	<LOD	1.40	8.10	48.40	183.00
$15 000-$19 999	399	3.40	2.83	4.09	<LOD	3970.00	<LOD	2.60	14.70	72.80	303.00
$20 000-$24 999	368	3.64	1.96	6.75	<LOD	1736.00	<LOD	4.71	21.52	102.00	250.30
$25 000-$34 999	598	2.80	2.02	3.89	<LOD	2912.29	<LOD	2.50	17.57	72.20	181.98
$35 000-$44 999	459	4.57	3.41	6.14	<LOD	4650.00	0.77	3.70	23.33	136.00	281.00
$45 000-$54 999	387	4.04	2.73	5.98	<LOD	9890.00	0.60	3.70	19.40	93.12	217.44
$55 000-$64 999	305	4.68	3.56	6.16	<LOD	8500.00	0.80	4.50	18.89	102.00	255.00
$65 000-$74 999	228	4.11	2.32	7.30	<LOD	3920.00	0.47	3.70	22.16	178.00	272.43
$75 000 and over	850	5.03	3.90	6.50	<LOD	5840.00	0.75	4.60	22.68	111.00	303.00

Table 5: Concentrations of O-desmethylangolensin (µg/L) found in urine by Race/Ethnicity

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Non-Hispanic White	2048	4.24	3.60	5.00	<LOD	4650.00	0.59	4.00	20.40	98.73	240.80
Non-Hispanic Black	1244	5.51	4.61	6.60	<LOD	9890.00	0.60	6.30	33.40	116.00	249.00
Mexican American	1400	2.43	1.82	3.25	<LOD	8500.00	<LOD	1.81	16.90	86.00	168.00
Other Race-Including MultiRacial	127	5.50	2.87	10.56	<LOD	5840.00	<LOD	4.01	36.10	179.21	303.00
Other Hispanic	246	3.63	2.73	4.84	<LOD	2150.00	0.71	4.14	13.20	40.70	91.12

Table 6: Concentrations of O-desmethylangolensin (µg/L) found in urine by Gender

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Male	2462	4.24	3.58	5.01	<LOD	5850.00	0.46	4.24	22.40	102.73	215.00
Female	2603	4.12	3.55	4.79	<LOD	9890.00	0.50	3.90	20.20	93.70	250.30

Table 7: Concentrations of O-desmethylangolensin (µg/L) found in urine by Education

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Less than High School	2912	4.34	3.69	5.10	<LOD	9890.00	0.50	4.39	24.03	99.29	201.00
High School Diploma	794	3.15	2.44	4.07	<LOD	8500.00	<LOD	3.01	14.00	68.40	176.81
More than High School	1350	4.65	3.96	5.45	<LOD	5840.00	0.50	4.40	23.05	115.00	303.00

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Table 8: Concentrations of O-desmethylangolensin (µg/L) found in urine by Marital Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Married	1677	4.16	3.45	5.01	<LOD	9890.00	0.50	4.10	18.89	93.12	233.00
Widowed	256	2.64	1.87	3.74	<LOD	2860.00	<LOD	2.03	13.68	86.00	159.10
Divorced	260	3.11	2.18	4.44	<LOD	3970.00	<LOD	2.53	13.80	72.40	202.02
Separated	105	3.23	1.99	5.25	<LOD	502.00	0.49	2.89	13.15	83.12	205.58
Never Married	1396	4.51	3.68	5.53	<LOD	4170.00	0.44	4.14	24.64	128.00	281.49
Living with Partner	157	3.16	1.96	5.10	<LOD	1050.00	<LOD	4.30	10.80	63.00	135.00

Table 9: Concentrations of O-desmethylangolensin (µg/L) found in urine by Country of Birth

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Born in the US	4072	4.65	4.04	5.36	<LOD	9890.00	0.60	4.50	22.68	107.05	250.30
Born in Mexico	609	1.51	1.06	2.13	<LOD	4110.00	<LOD	0.60	8.38	61.60	136.67
Born Elsewhere	350	2.38	1.77	3.20	<LOD	1140.00	<LOD	2.08	12.10	54.10	135.00

Table 10:Concentrations of O-desmethylangolensin (µg/L) found in urine by Pregnancy Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Pregnant	215	3.17	1.61	6.25	<LOD	810.00	<LOD	3.46	11.70	74.10	150.00
Not Pregnant	1299	4.48	3.77	5.32	<LOD	9890.00	0.51	4.10	22.10	135.00	310.00

Table 11: Concentrations of O-desmethylangolensin (µg/L) found in urine by Type of Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
A Mobile Home or Trailer	413	3.12	2.11	4.60	<LOD	8500.00	<LOD	3.37	17.12	66.40	153.00
A detached single family home	3045	4.52	3.87	5.27	<LOD	5850.00	0.60	4.47	21.97	99.08	250.30
Attached Single Family Home	390	4.81	3.50	6.61	<LOD	9890.00	0.54	4.00	33.50	114.00	252.11
An Apartment	1088	3.41	2.73	4.27	<LOD	5850.00	<LOD	3.12	17.67	95.50	230.00
Something Else	51	2.60	1.02	6.68	<LOD	260.00	<LOD	1.50	21.30	148.00	260.00
Dormitory	22	5.75	.	.	<LOD	475.00	0.45	7.60	23.05	39.50	55.30

Table 12: Concentrations of O-desmethylangolensin (µg/L) found in urine by Water Source

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Private-Public Water Company	4480	4.14	3.62	4.74	<LOD	9890.00	0.47	3.98	21.67	98.73	249.00
Private Public Well	465	4.35	3.26	5.82	<LOD	5850.00	0.68	4.30	19.80	106.00	178.00
Some other Water Source	24	4.80	<LOD	92.59	<LOD	320.00	<LOD	5.60	27.20	121.81	284.00

Table 13: Concentrations of O-desmethylangolensin (µg/L) found in urine by Helpings of Protein per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	13	1.76	0.73	4.26	<LOD	12.26	<LOD	1.37	7.65	7.65	12.26
1	176	2.87	1.81	4.56	<LOD	505.00	<LOD	3.73	16.60	59.94	104.00
2	187	4.43	3.00	6.55	<LOD	5850.00	1.14	5.31	17.65	68.47	114.00
3+	91	5.64	3.30	9.66	<LOD	410.23	1.89	7.36	17.67	80.81	148.00

Table 14: Concentrations of O-desmethylangolensin (µg/L) found in urine by Helpings of Milk/Dairy per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	72	4.57	2.30	9.08	<LOD	5850.00	<LOD	8.32	22.69	91.12	157.55
1	212	3.68	2.14	6.33	<LOD	453.00	0.54	5.29	15.51	68.47	113.28
2	139	3.46	1.93	6.18	<LOD	774.00	0.97	3.29	14.16	59.94	85.17
3+	46	5.03	2.71	9.32	<LOD	343.00	1.80	5.15	16.60	68.00	98.40

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Table 15: Concentrations of O-desmethylangolensin (µg/L) found in urine by Helpings of Fruit per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	49	6.45	2.67	15.58	<LOD	505.00	1.90	9.72	36.64	68.47	98.94
1	199	3.19	1.85	5.50	<LOD	453.00	0.54	3.65	15.51	51.88	85.10
2	150	4.50	2.98	6.80	<LOD	5850.00	0.94	7.36	21.60	78.03	150.00
3+	70	3.20	1.63	6.25	<LOD	343.00	<LOD	4.21	12.40	69.14	107.05

Table 16: Concentrations of O-desmethylangolensin (µg/L) found in urine by Helpings of Vegetables per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	42	4.34	1.78	10.58	<LOD	505.00	1.39	4.77	16.14	59.94	150.00
1	236	3.38	2.07	5.51	<LOD	453.00	0.47	4.86	17.50	65.10	91.12
2	187	4.43	3.00	6.55	<LOD	5850.00	1.14	5.31	17.65	68.47	114.00
3+	60	4.74	1.92	11.72	<LOD	322.67	1.71	4.32	58.23	111.24	113.28

Table 17: Concentrations of O-desmethylangolensin (µg/L) found in urine by Helpings of Bread/grain per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	31	1.19	0.55	2.59	<LOD	505.00	<LOD	1.14	4.21	12.26	56.40
1	173	4.22	2.62	6.79	<LOD	453.00	0.90	5.64	17.67	85.10	113.28
2	160	3.92	2.13	7.21	<LOD	774.00	0.88	4.77	17.63	56.94	114.00
3+	104	4.23	2.31	7.72	<LOD	5850.00	0.94	6.09	14.24	68.47	107.05

Table 18: Concentrations of O-desmethylangolensin (µg/L) found in urine by Servings of Beans per month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	279	4.58	2.77	7.57	<LOD	2750.00	<LOD	4.30	29.40	105.00	235.00
1 to 5	1066	4.07	3.18	5.20	<LOD	4650.00	0.50	3.30	16.50	106.00	310.00
6 to 10	548	4.32	3.25	5.73	<LOD	9890.00	<LOD	5.10	23.80	74.10	230.00
11 to 15	311	3.36	2.56	4.41	<LOD	4170.00	<LOD	2.70	17.20	72.80	178.00
15+	499	4.19	2.69	6.53	<LOD	5840.00	<LOD	2.80	22.90	143.00	502.00

Table 19: Concentrations of O-desmethylangolensin (µg/L) found in urine by Fish Consumed in Past Month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	1363	3.97	2.87	5.49	<LOD	8500.00	0.63	4.46	21.10	98.94	222.00
No	823	4.91	3.87	6.23	<LOD	3664.00	0.87	5.57	28.72	113.28	205.58

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Table 20: Concentrations of O-desmethylangolensin (µg/L) found in urine by Shellfish Consumed in Past Month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	889	3.44	2.65	4.45	<LOD	2390.00	0.40	3.63	19.09	85.10	193.76
No	1301	5.02	3.73	6.77	<LOD	8500.00	0.88	5.55	24.80	115.00	209.29

Table 21: Concentrations of O-desmethylangolensin (µg/L) found in urine by Body Mass Index Category

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Under Weight	88	4.70	2.57	8.60	<LOD	534.00	0.80	3.37	31.10	227.52	230.00
Healthy Weight	2068	4.61	3.76	5.65	<LOD	5850.00	0.60	4.40	23.33	133.00	281.49
Over Weight	2773	3.84	3.30	4.48	<LOD	9890.00	0.40	3.70	18.54	79.60	190.00

Table 22: Concentrations of O-desmethylangolensin (µg/L) found in urine by Ever told you have Weak/Failing Kidneys

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	43	5.50	1.89	15.99	<LOD	410.23	<LOD	11.00	59.94	96.78	154.39
No	1270	3.91	3.11	4.92	<LOD	8500.00	0.71	4.22	19.00	98.94	227.52

Table 23: Concentrations of O-desmethylangolensin (µg/L) found in urine by total number of beers consumed per month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	857	4.45	3.58	5.53	<LOD	8500.00	0.82	4.99	21.60	96.78	190.00
0-5	260	4.08	2.72	6.11	<LOD	1220.00	0.44	4.14	21.50	137.00	276.00
6 to 10	75	2.48	1.20	5.15	<LOD	2390.00	<LOD	2.79	10.93	39.50	240.80
11 to 15	32	3.70	1.73	7.92	<LOD	177.00	2.48	4.71	12.40	34.60	35.20
16+	93	2.50	1.50	4.15	<LOD	332.24	<LOD	2.08	12.10	87.00	202.02

Table 24: Concentrations of O-desmethylangolensin (µg/L) found in urine by Water (gm)/day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0 to 096	2202	4.26	3.61	5.02	<LOD	9890.00	0.60	4.44	20.80	90.09	193.64
897-1792g	1211	3.91	3.14	4.87	<LOD	5850.00	0.40	3.60	18.20	96.62	198.00
>1792g	833	4.34	3.50	5.39	<LOD	4650.00	<LOD	3.56	22.47	179.21	411.00

Table 25:Concentrations of O-desmethylangolensin (µg/L) found in urine by Alcohol (gm)/day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	3895	4.43	3.89	5.05	<LOD	9890.00	0.50	4.40	22.10	112.00	260.00
0-28	627	4.17	3.38	5.14	<LOD	8500.00	0.70	4.21	20.70	68.47	155.19
>28	333	2.55	1.81	3.59	<LOD	700.00	<LOD	2.20	12.01	70.20	161.00

Table 26: Concentrations of O-desmethylangolensin (µg/L) found in urine by Caffeine(gm)/day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	943	3.78	2.90	4.92	<LOD	5850.00	<LOD	3.61	20.63	128.00	325.00
0-400	3651	4.42	3.85	5.07	<LOD	9890.00	0.54	4.21	22.30	104.00	233.00
400+	261	2.99	2.20	4.04	<LOD	2060.00	<LOD	3.20	13.02	59.60	115.00

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Table 27:Concentrations of O-desmethylangolensin (µg/L) found in urine by Fiber (gm) /day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0g	9	0.57	<LOD	22.91	<LOD	188.00	<LOD	<LOD	1.20	4.97	188.00
1 to 10	1688	4.50	3.53	5.74	<LOD	9890.00	0.50	4.14	27.90	125.00	276.00
11 to 24	2553	4.06	3.46	4.77	<LOD	5850.00	0.50	4.20	18.40	84.30	202.02
25+	605	3.83	2.87	5.11	<LOD	5850.00	<LOD	3.30	18.80	95.20	322.08

Table 28: Concentrations of O-desmethylangolensin (µg/L) found in urine by Breastfeeding Status

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Currently Breastfeeding	41	7.29	4.91	10.83	<LOD	963.00	0.50	2.83	88.29	963.00	963.00
Not currently Breastfeeding	94	5.14	1.04	25.33	<LOD	8500.00	<LOD	3.59	23.40	310.00	872.00

Table 29: Concentrations of O-desmethylangolensin (µg/L) found in urine by Liver Conditions

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Ever had a liver condition	84	2.19	1.19	4.03	<LOD	829.00	<LOD	1.20	6.77	82.80	141.00
Never had a liver condition	2881	3.84	3.32	4.45	<LOD	9890.00	<LOD	3.56	18.60	93.12	240.80

Table 30: Concentrations of O-desmethylangolensin (µg/L) found in urine by Anyone Smoke in the Home

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	1081	3.25	2.43	4.36	<LOD	3325.00	<LOD	2.98	18.66	96.78	227.52
No	3930	4.48	3.92	5.11	<LOD	9890.00	0.59	4.40	22.10	100.48	240.80

Table 31: Concentrations of O-desmethylangolensin (µg/L) found in urine by Ever told that you have Diabetes?

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	272	3.88	2.69	5.60	<LOD	5850.00	<LOD	3.65	17.10	70.86	191.00
No	4750	4.21	3.68	4.82	<LOD	9890.00	0.50	4.10	21.60	99.40	234.00

Table 32: Concentrations of O-desmethylangolensin (µg/L) found in urine by Currently Taking Birth Control Pills?

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	137	5.21	2.45	11.11	<LOD	872.00	0.60	5.31	25.90	230.00	339.42
No	411	4.26	3.16	5.74	<LOD	8500.00	0.50	3.43	19.90	128.00	310.00

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Table 33: Concentrations of O-desmethylangolensin (µg/L) found in urine by Now Use Depo-Provera Injectables

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	42	3.28	2.39	4.51	<LOD	693.00	<LOD	3.11	23.30	116.00	153.00
No	147	4.14	2.00	8.54	<LOD	666.00	<LOD	4.14	20.90	227.52	250.30

Table 34: Concentrations of O-desmethylangolensin (µg/L) found in urine by Currently Taking Estrogen Only Pills

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	114	2.28	1.52	3.43	<LOD	426.00	<LOD	1.62	9.16	46.10	57.45
No	121	4.58	2.88	7.27	<LOD	3920.00	0.83	3.43	17.70	125.00	230.00

Table 35: Concentrations of O-desmethylangolensin (µg/L) found in urine by Currently Taking Projestin Only Pills

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	24	1.97	0.61	6.31	<LOD	98.70	0.60	1.62	5.64	53.40	57.45
No	50	6.64	3.02	14.60	<LOD	3920.00	0.90	4.00	35.10	154.39	810.00

Table 36: Concentrations of O-desmethylangolensin (µg/L) found in urine by Currently Taking Estrogen-Projestin Pills

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	44	5.28	3.37	8.26	<LOD	4170.00	0.83	3.43	26.10	260.00	3920.00
No	29	3.11	1.30	7.42	<LOD	306.00	<LOD	4.10	14.60	53.80	89.10

Table 37: Concentrations of O-desmethylangolensin (µg/L) found in urine by Number of Prescription Medications Taken

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	3058	4.49	3.87	5.22	<LOD	5850.00	0.59	4.30	22.76	113.00	242.37
1	791	3.75	3.10	4.55	<LOD	9890.00	0.40	4.40	19.00	65.70	151.87
2	429	4.52	3.24	6.31	<LOD	5840.00	0.60	4.00	22.40	141.00	317.20
3	319	4.72	3.50	6.38	<LOD	8500.00	0.49	3.70	28.35	159.10	260.00
4	154	2.27	1.70	3.04	<LOD	883.00	<LOD	2.00	12.21	27.38	61.76
5	113	3.94	2.03	7.62	<LOD	4170.00	<LOD	3.11	20.63	84.40	208.00
6+	201	3.29	2.39	4.51	<LOD	2880.00	<LOD	3.50	14.60	61.09	85.17

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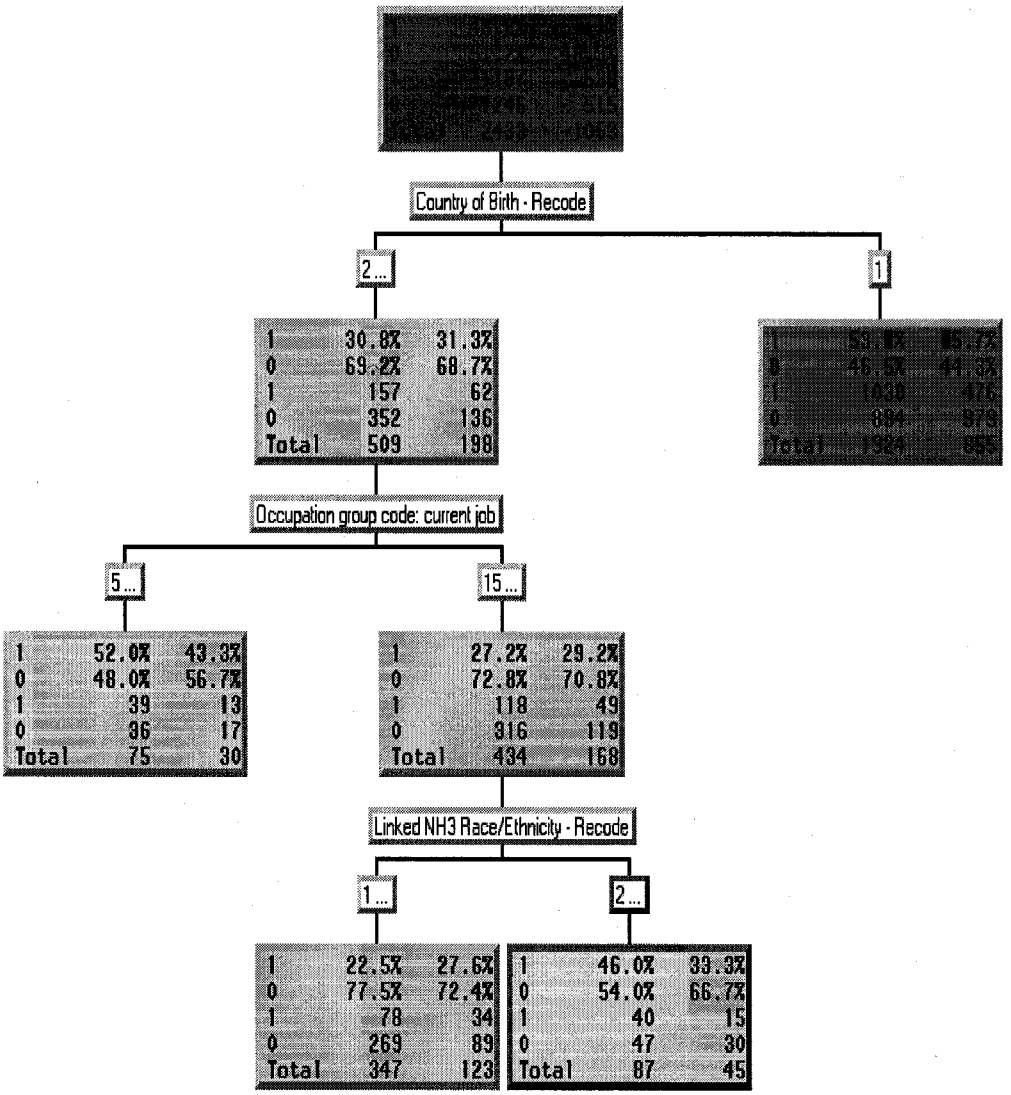
Figure 1: Classification and Regression Tree for o-desmethylangolensin*



*occupations truncated

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APPENDIX 8: ENTERODIOL

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Table 1: Concentrations of Enterodiol (µg/L) found in urine by age category

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Age 5-11	723	30.24	25.05	36.49	<LOD	2336.00	14.83	33.40	78.74	154.00	266.00
Age 12-19	1488	32.55	28.81	36.77	<LOD	4120.00	15.38	36.80	84.60	165.67	247.00
Age 20-40	1211	31.66	27.64	36.26	<LOD	9350.00	14.80	37.63	89.20	178.00	248.00
Age 41-55	759	31.20	26.31	37.00	<LOD	11300.00	13.80	37.10	85.20	182.00	280.00
Age 56+	1140	29.59	25.93	33.78	<LOD	18000.00	12.90	35.20	82.50	176.00	260.57

Table 2: Concentrations of Enterodiol (µg/L) found in urine by Occupation

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Executive, Administrators, & Managers	143	35.46	28.93	43.47	<LOD	4320.00	16.00	36.40	93.30	225.00	326.00
Management Related	51	43.68	28.51	66.91	<LOD	2000.00	16.30	42.60	97.00	218.40	565.00
Engineers, Architects, and Scientists	54	49.66	30.43	81.06	<LOD	2780.00	27.50	47.70	135.00	226.00	466.00
Health Diagnosing, Assessing & Treating	43	31.77	20.23	49.91	<LOD	521.00	20.98	44.10	67.90	175.00	176.00
Teachers	81	35.34	24.08	51.88	<LOD	337.00	24.00	42.40	90.20	167.00	211.00
Writers, Artists, Entertainers & Athletes	39	34.48	24.48	48.56	1.80	167.00	11.28	49.20	93.50	131.00	146.00
Other Professional Speciality	54	42.14	27.78	63.94	<LOD	18000.00	19.40	41.60	88.60	244.00	396.00
Technicians and Related Supported	55	44.43	27.72	71.21	<LOD	1640.00	27.13	64.70	131.00	263.00	413.00
Supervisors and Proprietors, Sales	41	27.24	13.31	55.75	<LOD	732.59	9.20	29.70	114.00	269.00	270.00
Sales Representatives,finance,business,commodities	60	35.91	23.99	53.75	<LOD	409.00	18.66	54.90	110.00	135.47	223.00
Sales Workers, retail & personal services	147	28.98	22.41	37.47	<LOD	698.00	12.80	34.90	72.40	197.00	228.00
Secretaries, Stenographers, and typists	33	34.09	6.99	166.18	<LOD	3550.00	24.80	46.10	91.60	311.00	397.63
Information Clerks	31	37.08	26.02	52.83	<LOD	286.00	16.10	60.40	84.70	169.00	286.00
Records Processing	66	33.57	23.04	48.90	<LOD	3190.00	16.50	35.30	66.50	163.00	260.00
Material Recording, Scheduling,distributing clerks	35	34.76	19.62	61.58	<LOD	308.00	24.20	55.10	79.30	178.00	308.00
Miscellaneous administrative support	132	42.24	34.98	51.00	<LOD	586.00	21.30	44.10	97.01	195.00	220.00
Private Household	17	21.50	11.86	38.98	<LOD	844.00	7.60	32.10	51.10	183.00	183.00
Protective Service	34	37.19	17.40	79.49	<LOD	6580.00	15.50	39.00	96.70	254.00	375.00
Waiters and Waitresses	43	32.24	22.81	45.56	<LOD	489.00	16.00	40.50	111.30	174.00	253.00
Cooks	58	12.20	5.86	25.41	<LOD	244.00	6.94	14.00	51.00	97.92	103.66
Miscellaneous food preparation and service	59	35.86	25.34	50.76	<LOD	916.61	11.70	42.40	69.94	212.00	435.00
Health Service Occupation	52	46.77	29.72	73.59	<LOD	289.00	29.00	47.80	114.00	223.00	223.00
Cleaning and Building Service	71	31.60	26.87	37.17	<LOD	392.00	18.70	31.60	61.90	240.00	284.67
Personal Service	54	29.28	16.19	52.96	<LOD	897.00	16.00	29.70	127.00	186.00	236.00
Farm Operators, Managers and Supervisors	8	19.64	.	.	<LOD	2420.00	2.72	13.50	89.40	2420.00	2420.00
Farm and Nursery Workers	30	17.54	13.06	23.55	<LOD	285.00	11.78	20.80	32.97	126.00	214.00
Related Agricultural, Forestry and Fishing	47	42.12	30.21	58.74	<LOD	345.00	18.85	41.50	86.70	254.00	256.00
Vehicle and Mobile Equipment Mechanics, Repairs	28	34.12	28.51	40.85	<LOD	167.00	13.97	40.10	93.10	118.00	167.00
Other Mechanics and repairers	37	46.31	28.97	74.02	<LOD	485.61	14.00	50.70	109.45	280.41	312.00
Construction traders	127	22.31	14.08	35.34	<LOD	9350.00	6.15	35.00	87.40	215.48	286.00
Extractive and Precision Production	48	38.37	29.46	49.99	<LOD	244.00	27.80	43.80	78.40	95.50	124.00
Textile, apparel and furnishings machine operators	19	17.28	11.80	25.31	<LOD	105.28	6.82	36.60	45.60	84.60	84.70
Machine Operators, Assorted Materials	67	25.96	15.34	43.92	<LOD	681.00	9.20	36.12	75.90	138.00	274.00
Fabricators, Assemblers, Inspectors, and Samplers	51	20.17	13.56	30.00	<LOD	814.33	7.76	27.20	73.65	137.00	335.00
Motor vehicle operators	70	36.03	25.61	50.70	<LOD	407.00	15.17	34.20	76.20	184.00	272.53
Other transportation and material moving	21	22.84	12.22	42.67	<LOD	169.00	12.40	21.40	68.32	160.00	160.00
Construction laborers	29	40.41	15.49	105.44	<LOD	654.00	10.55	45.40	90.40	415.00	654.00
Laborers, except constuction	6	68.63	.	.	8.34	105.00	73.10	80.35	80.35	105.00	105.00
Frieght, Stock, and Material Movers, hand	44	21.05	14.98	29.56	<LOD	214.00	6.95	26.50	40.71	111.00	213.00
Other helpers, equipment cleaners, hand packages and laborers	26	15.08	5.99	37.93	<LOD	336.00	1.80	30.70	67.18	114.00	133.00

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Table 3: Concentrations of Enterodiol (µg/L) found in urine by Employment Status

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Working at a Job or Business	1073	37.06	32.69	42.00	<LOD	9350.00	17.00	41.90	91.20	193.00	280.00
With a Job but not at Work	53	62.56	47.63	82.17	<LOD	211.00	38.20	55.10	88.10	189.00	198.00
Looking for Work	56	15.29	10.31	22.66	<LOD	592.00	5.90	25.60	42.50	89.60	137.00
Not working at a job or Business	829	33.87	28.84	39.78	<LOD	11300.00	15.80	36.90	92.60	182.00	243.00

Table 4: Concentrations of Enterodiol (µg/L) found in urine by Income

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
$0-$4 999	118	37.17	29.87	46.25	<LOD	732.59	21.50	43.69	110.00	170.00	193.00
$ 5000-$9 999	313	62.56	47.63	82.17	<LOD	211.00	38.20	55.10	88.10	189.00	198.00
$10 000-$14 999	403	15.29	10.31	22.66	<LOD	592.00	5.90	25.60	42.50	89.60	137.00
$15 000-$19 999	415	33.87	28.84	39.78	<LOD	11300.00	15.80	36.90	92.60	182.00	243.00
$20 000-$24 999	384	23.41	16.93	32.38	<LOD	4630.00	9.65	34.01	74.10	140.32	226.00
$25 000-$34 999	621	24.02	19.73	29.25	<LOD	3680.00	11.40	31.49	64.90	156.00	214.00
$35 000-$44 999	491	29.67	23.84	36.92	<LOD	1480.00	13.80	36.67	78.20	141.00	253.00
$45 000-$54 999	407	30.93	24.47	39.11	<LOD	18000.00	14.00	33.77	76.20	160.00	279.00
$55 000-$64 999	327	31.49	24.86	39.89	<LOD	9350.00	13.90	38.20	82.60	182.00	263.00
$65 000-$74 999	243	35.82	27.97	45.88	<LOD	3550.00	18.66	41.90	103.00	220.00	259.00
$75 000 and over	895	40.36	35.25	46.22	<LOD	2760.00	18.50	44.20	103.00	211.00	305.00

Table 5: Concentrations of Enterodiol (µg/L) found in urine by Race/Ethnicity

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Non-Hispanic White	2137	32.41	29.27	35.89	<LOD	18000.00	15.17	38.66	88.00	174.00	263.00
Non-Hispanic Black	1314	30.42	26.78	34.54	<LOD	6320.00	14.10	35.30	77.00	168.00	250.00
Mexican American	1470	25.76	23.40	28.35	<LOD	9350.00	11.70	30.90	73.80	147.00	232.00
Other Race-Including MultiRacial	136	39.55	29.67	52.72	<LOD	3190.00	17.00	39.00	111.00	261.46	337.26
Other Hispanic	264	23.41	15.32	35.78	<LOD	1950.00	11.40	29.12	68.20	166.00	223.00

Table 6: Concentrations of Enterodiol (µg/L) found in urine by Gender

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Male	2581	30.28	26.80	34.22	<LOD	18000.00	13.60	36.70	84.10	168.00	260.57
Female	2740	31.83	28.87	35.10	<LOD	4630.00	15.00	37.00	84.60	176.00	259.00

Table 7: Concentrations of Enterodiol (µg/L) found in urine by Education

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Less than High School	3058	27.41	23.95	31.37	<LOD	4630.00	12.32	32.30	72.60	152.00	226.00
High School Diploma	825	29.66	27.61	31.85	<LOD	6580.00	13.40	36.80	81.00	178.00	268.00
More than High School	1429	35.49	31.29	40.25	<LOD	18000.00	17.40	41.40	91.20	193.00	280.00

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Table 8: Concentrations of Enterodiol (µg/L) found in urine by Marital Status

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Married	1739	31.9767	27.974	36.55	0.57	18000	14.46	37.3	87.4	178	254
Widowed	264	28.2567	22.04	36.23	0.57	3680	13.4	32.41	68.9	175	209
Divorced	273	27.1928	20.303	36.42	0.57	11300	10.2	34.45	86.6	154	278.41
Separated	112	23.3037	16.073	33.79	0.57	6320	8.59	33.6	66.8	183	326
Never Married	1477	31.6078	27.895	35.81	0.57	4120	15	37.4	87.7	170	263
Living with Partner	161	34.9662	26.755	45.7	0.57	3190	19.25	43.4	65.7	207	232

Table 9: Concentrations of Enterodiol (µg/L) found in urine by Country of Birth

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Born in the US	4271	31.65	28.75	34.85	<LOD	18000.00	14.83	37.48	84.72	169.00	256.00
Born in Mexico	632	25.15	20.72	30.52	<LOD	9350.00	11.50	28.99	71.73	144.04	244.00
Born Elsewhere	384	29.19	20.09	42.42	<LOD	11300.00	11.70	34.17	86.60	190.00	309.99

Table 10: Concentrations of Enterodiol (µg/L) found in urine by Pregnancy Status

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Pregnant	223	46.45	37.04	58.26	<LOD	4630.00	23.10	46.60	114.00	193.00	239.00
Not Pregnant	1354	31.63	28.10	35.61	<LOD	4120.00	16.00	37.40	84.00	175.00	253.00

Table 11: Concentrations of Enterodiol (µg/L) found in urine by Type of Home

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
A Mobile Home or Trailer	425	23.86	20.08	28.36	<LOD	6320.00	10.20	31.00	66.30	131.00	211.00
A detached single family home	3213	32.13	28.61	36.07	<LOD	18000.00	15.10	36.20	87.90	181.00	266.00
Attached Single Family Home	423	35.25	29.51	42.11	<LOD	4120.00	15.90	41.50	87.70	170.00	311.00
An Apartment	1128	29.76	25.18	35.18	<LOD	11300.00	12.30	37.30	79.70	178.00	261.46
Something Else	51	29.50	21.69	40.14	<LOD	268.00	12.09	43.40	87.40	109.00	250.00
Dormitory	22	38.61	.	.	<LOD	394.00	22.31	66.32	168.00	190.00	346.00

Table 12: Concentrations of Enterodiol (µg/L) found in urine by Year Home Built

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
1990-present	713	33.68	29.08	39.02	<LOD	6580.00	15.00	37.50	90.50	171.00	309.99
1978-1989	870	35.07	29.20	42.12	<LOD	4630.00	15.20	41.40	97.80	198.00	280.00
1960-1977	938	29.32	25.66	33.51	<LOD	1120.00	13.90	35.80	77.80	161.00	244.00
1950-1959	511	31.72	25.67	39.19	<LOD	4320.00	14.40	37.16	93.40	181.00	407.00
1940-1949	280	37.70	30.43	46.72	<LOD	2420.00	17.07	46.50	97.85	176.00	259.00
before 1940	600	30.75	24.49	38.61	<LOD	18000.00	15.70	35.16	76.20	169.00	240.00

Table 13: Concentrations of Enterodiol (µg/L) found in urine by Water Source

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Private-Public Water Company	4709	31.70	28.64	35.09	<LOD	18000.00	14.46	37.20	84.61	175.00	266.00
Private Public Well	486	27.33	23.96	31.19	<LOD	2420.00	13.00	36.00	79.30	159.89	236.00
Some other Water Source	27	37.53	21.38	65.87	<LOD	187.00	25.97	64.70	93.40	166.00	166.00

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Table 14: Concentrations of Enterodiol (µg/L) found in urine by Helpings of Protein per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25.00	50.00	75.00	90.00	95.00
0	15	14.01	6.16	31.88	0.57	168.00	4.00	4.35	141.71	168.00	168.00
1	189	23.45	16.31	33.70	0.57	18000.00	8.35	32.10	76.40	169.19	307.00
2	201	25.97	18.28	36.91	0.57	897.00	10.52	30.73	64.85	154.74	268.00
3+	98	19.64	13.92	27.72	0.57	3680.00	6.57	20.39	63.73	122.00	142.00

Table 15:Concentrations of Enterodiol (µg/L) found in urine by Helpings of Milk/Dairy per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25.00	50.00	75.00	90.00	95.00
0	76	18.47	10.09	33.81	<LOD	897.00	9.64	17.48	49.99	107.32	169.19
1	233	23.74	17.86	31.54	<LOD	18000.00	7.20	32.41	78.24	159.89	376.29
2	145	26.08	18.51	36.76	<LOD	706.85	13.40	28.29	64.85	142.00	269.33
3+	51	22.64	11.85	43.25	<LOD	228.00	7.42	17.46	83.50	139.00	155.00

Table 16: Concentrations of Enterodiol (µg/L) found in urine by Helpings of Fruit per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25.00	50.00	75.00	90.00	95.00
0	52	14.34	7.76	26.51	<LOD	897.00	8.35	10.52	49.79	86.70	307.00
1	210	22.98	18.38	28.73	<LOD	18000.00	7.53	27.72	78.24	159.19	305.00
2	160	26.46	20.66	33.90	<LOD	3680.00	10.69	32.10	71.17	168.00	261.46
3+	82	25.88	16.52	40.54	<LOD	253.91	14.30	36.00	76.40	116.00	154.74

Table 17: Concentrations of Enterodiol (µg/L) found in urine by Helpings of Vegetables per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25.00	50.00	75.00	90.00	95.00
0	47	20.61	12.67	33.52	<LOD	185.11	12.70	32.57	43.03	61.70	109.00
1	253	18.35	13.74	24.52	<LOD	18000.00	7.14	25.14	52.69	119.00	169.19
2	201	25.97	18.28	36.91	<LOD	897.00	10.52	30.73	64.85	154.74	268.00
3+	66	27.25	16.05	46.24	<LOD	3680.00	13.80	32.70	108.47	146.00	219.15

Table 18: Concentrations of Enterodiol (µg/L) found in urine by Helpings of Bread/grain per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25.00	50.00	75.00	90.00	95.00
0	36	30.59	13.44	69.61	<LOD	272.00	15.33	32.69	105.00	159.19	219.00
1	189	22.16	17.41	28.21	<LOD	18000.00	7.17	25.50	82.90	154.74	305.00
2	172	25.39	20.65	31.22	<LOD	738.00	12.90	29.76	60.00	128.00	261.46
3+	107	18.79	10.86	32.52	<LOD	3680.00	7.42	31.50	68.10	130.00	168.00

Table 19: Concentrations of Enterodiol (µg/L) found in urine by Servings of Beans per month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25.00	50.00	75.00	90.00	95.00
0	279	31.40	24.15	40.83	<LOD	6580.00	15.60	36.60	80.60	178.00	226.00
1 to 5	1066	36.22	32.20	40.75	<LOD	4320.00	18.30	39.00	88.10	174.00	252.00
6 to 10	548	35.45	28.65	43.85	<LOD	4120.00	16.30	40.20	86.50	185.00	308.00
11 to 15	311	39.33	31.46	49.15	<LOD	2420.00	17.30	41.90	110.00	224.00	327.00
15+	499	36.28	30.43	43.27	<LOD	11300.00	16.70	39.70	90.00	180.00	244.00

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Table 20: Concentrations of Enterodiol (µg/L) found in urine by Fish Consumed in Past Month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Yes	1516	27.05	22.94	31.88	<LOD	18000.00	11.27	35.41	83.00	166.40	263.00
No	904	24.34	18.77	31.56	<LOD	2780.00	11.80	31.98	68.32	149.78	284.67

Table 21: Concentrations of Enterodiol (µg/L) found in urine by Shellfish Consumed in Past Month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Yes	999	29.84	25.33	35.16	<LOD	18000.00	13.22	38.70	86.64	186.00	272.00
No	1425	23.59	18.97	29.33	<LOD	6320.00	10.36	30.48	68.32	142.41	253.85

Table 22: Concentrations of Enterodiol (µg/L) found in urine by Body Mass Index Category

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Under Weight	94	40.96	30.32	55.33	<LOD	11300.00	18.30	37.33	91.06	228.76	503.00
Healthy Weight	2190	34.41	30.95	38.25	<LOD	4320.00	16.30	39.10	87.00	180.60	270.00
Over Weight	2901	29.09	25.74	32.88	<LOD	18000.00	13.10	36.00	84.20	168.00	254.00

Table 23: Concentrations of Enterodiol (µg/L) found in urine by Ever told you have Weak/Failing Kidneys

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Yes	48	12.54	2.80	56.15	<LOD	209.50	<LOD	32.10	71.06	97.86	106.11
No	1404	26.60	22.49	31.46	<LOD	18000.00	11.40	34.30	78.27	163.00	268.00

Table 24: Concentrations of Enterodiol (µg/L) found in urine by total number of beers consumed per month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
0	940	24.42	20.70	28.82	<LOD	4630.00	11.05	32.70	69.16	148.00	228.76
0-5	291	27.26	20.16	36.86	<LOD	6320.00	9.65	37.30	83.60	167.00	284.67
6 to 10	78	30.06	20.05	45.06	<LOD	18000.00	13.40	33.77	72.92	246.92	421.57
11 to 15	42	26.09	14.44	47.15	<LOD	270.00	12.30	41.20	65.60	97.00	154.74
16+	105	30.84	19.06	49.88	<LOD	520.00	16.37	36.40	95.50	186.94	263.00

Table 25: Concentrations of Enterodiol (µg/L) found in urine by Water (gm)/day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
0 to 896	2308	30.45	26.45	35.05	0.57	4630.00	14.23	37.40	84.20	162.33	272.53
897-1792g	1269	30.01	26.06	34.55	0.57	4320.00	14.10	35.95	79.20	191.00	259.00
>1792g	881	30.73	26.04	36.25	0.57	11300.00	13.80	34.70	80.70	176.00	258.00

Table 26: Concentrations of Enterodiol (µg/L) found in urine by Alcohol (gm)/day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
0	4076	29.39	26.42	32.71	<LOD	11300.00	13.90	35.80	79.83	169.00	253.00
0-28	669	30.94	25.30	37.82	<LOD	4630.00	13.50	37.48	89.00	153.23	247.35
>28	344	40.73	30.30	54.74	<LOD	18000.00	19.70	43.70	97.20	226.00	376.29

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Table 27: Concentrations of Enterodiol (µg/L) found in urine by Caffeine(gm)/day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
0	995	33.36	28.49	39.05	<LOD	1640.00	17.13	37.80	87.70	188.41	254.00
0-400	3820	31.27	28.35	34.48	<LOD	18000.00	14.20	36.70	84.20	169.00	258.00
400+	274	22.99	18.62	28.38	<LOD	920.62	9.20	29.70	65.70	167.00	280.00

Table 28: Concentrations of Enterodiol (µg/L) found in urine by Fiber (gm) /day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
0g	10	12.58	4.25	37.25	<LOD	325.47	6.66	23.10	40.90	51.10	51.10
1 to 10	1776	27.28	23.74	31.36	<LOD	18000.00	13.00	31.50	71.80	147.65	219.15
11 to 24	2669	30.64	27.15	34.58	<LOD	6580.00	13.90	37.60	85.70	173.00	263.00
25+	634	42.51	35.62	50.73	<LOD	11300.00	20.70	46.10	114.59	240.00	407.00

Table 29: Concentrations of Enterodiol (µg/L) found in urine by Breastfeeding Status

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Currently Breastfeeding	41	63.70	46.90	86.51	4.10	460.00	26.50	49.40	212.00	247.35	460.00
Not currently Breastfeeding	99	32.74	25.12	42.68	<LOD	1640.00	23.82	40.40	60.40	108.00	174.00

Table 30: Concentrations of Enterodiol (µg/L) found in urine by Liver Conditions

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Ever had a liver condition	86	20.31	12.69	32.50	<LOD	11300.00	9.80	25.66	60.40	135.00	231.00
Never had a liver condition	3017	31.28	28.24	34.66	<LOD	18000.00	14.00	37.40	87.30	180.00	260.57

Table 31: Concentrations of Enterodiol (µg/L) found in urine by Anyone Smoke in the Home

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Yes	1136	25.52	21.93	29.69	<LOD	11300.00	11.80	30.70	73.65	146.00	223.00
No	4128	32.98	29.52	36.84	<LOD	18000.00	15.30	38.20	88.00	182.00	269.00

Table 32: Concentrations of Enterodiol (µg/L) found in urine by Ever told that you have Diabetes?

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Yes	277	27.44	21.13	35.64	<LOD	3680.00	12.30	35.46	66.80	126.00	178.00
No	4998	31.33	28.38	34.58	<LOD	18000.00	14.40	36.80	86.60	176.00	260.57

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Table 33: Concentrations of Enterodiol (µg/L) found in urine by Currently Taking Birth Control Pills?

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Yes	150	36.66	27.93	48.12	<LOD	3190.00	16.50	45.70	94.44	223.00	280.00
No	429	29.21	23.53	36.26	<LOD	4630.00	17.70	37.40	79.30	167.00	246.92

Table 34: Concentrations of Enterodiol (µg/L) found in urine by Now Use Depo-Provera Injectables

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Yes	44	34.89	23.21	52.44	<LOD	421.57	7.87	40.00	111.30	321.00	421.57
No	154	25.79	15.44	43.08	<LOD	1640.00	13.20	39.40	98.00	209.50	223.00

Table 35: Concentrations of Enterodiol (µg/L) found in urine by Currently Taking Estrogen Only Pills

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Yes	126	30.39	20.44	45.18	<LOD	520.00	10.69	40.02	96.41	170.79	245.00
No	131	27.18	20.30	36.41	<LOD	738.00	12.50	29.20	73.80	159.89	287.60

Table 36: Concentrations of Enterodiol (µg/L) found in urine by Currently Taking Projestin Only Pills

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Yes	28	19.53	11.45	33.34	<LOD	311.00	9.74	25.10	77.80	106.00	136.00
No	52	31.74	21.88	46.05	<LOD	434.00	20.59	36.00	98.77	167.00	287.60

Table 37: Concentrations of Enterodiol (µg/L) found in urine by Currently Taking Estrogen-Projestin Pills

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Yes	46	43.98	32.25	59.98	<LOD	1250.00	22.50	60.40	97.00	144.00	287.60
No	29	26.59	17.51	40.37	<LOD	168.00	12.10	27.90	60.50	98.77	145.00

Table 38: Concentrations of Enterodiol (µg/L) found in urine by Number of Prescription Medications Taken

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
0	3225	31.53	27.72	35.85	<LOD	18000.00	14.10	36.60	84.61	180.60	269.00
1	830	30.37	25.18	36.64	<LOD	1350.00	15.90	37.40	83.50	174.00	260.57
2	442	32.73	27.23	39.35	<LOD	6320.00	16.00	37.60	86.60	161.00	280.00
3	334	33.77	26.54	42.96	<LOD	2780.00	13.90	42.10	94.68	176.00	228.76
4	161	25.94	20.86	32.24	<LOD	442.61	10.90	27.78	58.60	106.00	167.00
5	115	25.96	15.37	43.83	<LOD	790.00	6.20	34.79	92.10	220.00	421.57
6+	214	28.74	22.35	36.95	<LOD	3680.00	12.37	37.70	87.93	141.00	175.00

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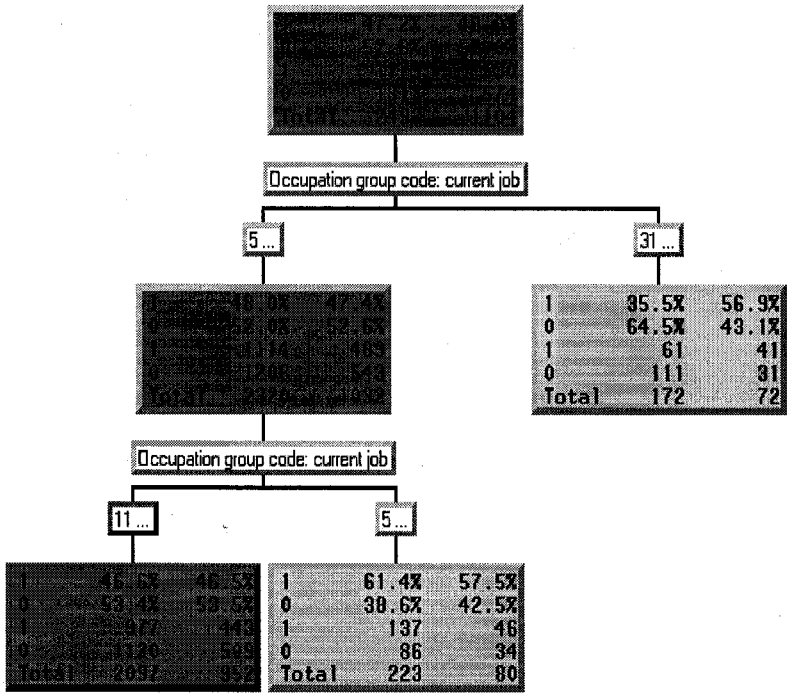

* Occupations Truncated

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APPENDIX 9: ENTEROLACTONE

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Table 1: Concentrations of Enterolactone (µg/L) found in urine by age category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25.00	50.00	75.00	90.00	95.00
Age 5-11	727	297.13	250.88	351.90	<LOD	8550.00	152.00	341.00	689.00	1440.00	2320.00
Age 12-19	1490	256.07	222.98	294.07	<LOD	20200.00	120.00	316.63	711.00	1560.00	2620.00
Age 20-40	1212	241.65	207.02	282.06	<LOD	20300.00	99.20	320.25	760.00	1880.00	2848.00
Age 41-55	762	227.63	186.20	278.28	<LOD	85300.00	80.60	347.17	804.00	1710.00	2800.00
Age 55+	1151	262.38	235.17	292.73	<LOD	15500.00	121.00	348.00	821.00	1690.00	2688.00

Table 2: Concentrations of Enterolactone (µg/L) found in urine by Occupation

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25.00	50.00	75.00	90.00	95.00
Executive, Administrators, & Managers	143	304.17	234.06	395.29	<LOD	6350.00	137.69	453.00	952.25	2052.00	2752.00
Management Related	51	425.69	253.72	714.20	<LOD	14300.00	227.00	424.00	998.00	2400.00	9170.00
Engineers, Architects, and Scientists	54	386.81	212.14	705.31	<LOD	20300.00	94.90	469.00	1540.00	5110.00	7030.00
Health Diagnosing, Assessing & Treating	43	241.15	140.87	412.80	<LOD	3370.00	141.17	388.00	999.00	1820.00	2432.00
Teachers	81	291.13	187.69	451.59	4.50	5500.00	143.29	323.31	700.00	1090.00	3170.00
Writers, Artists, Entertainers & Athletes	39	207.86	109.95	392.97	<LOD	4670.00	75.50	345.00	530.00	1400.00	3050.00
Other Professional Speciality	54	277.36	215.19	357.48	<LOD	8160.00	62.40	433.00	979.83	1990.00	3775.00
Technicians and Related Supported	55	261.88	153.95	445.48	<LOD	5660.00	77.10	229.00	1299.20	2890.00	3740.00
Supervisors and Proprietors, Sales	41	157.52	104.20	238.14	<LOD	8850.00	50.00	244.91	834.00	2848.00	7240.00
Sales Representatives,finance,business,commodities	60	288.24	164.85	503.99	<LOD	3720.00	99.90	317.00	821.00	1680.00	3090.00
Sales Workers, retail & personal services	147	231.23	183.15	291.94	<LOD	6380.00	71.90	287.30	873.00	2040.00	2416.00
Secretaries, Stenographers, and typists	33	561.17	195.74	1608.89	45.80	12325.00	266.29	587.81	923.00	4280.00	4280.00
Information Clerks	31	176.43	124.57	249.89	4.10	2832.00	88.40	207.55	546.00	893.00	1460.00
Records Processing	66	189.57	130.30	275.78	<LOD	3792.00	113.00	171.51	542.00	924.04	1360.00
Material Recording, Scheduling,distributing clerks	35	116.95	73.13	187.02	<LOD	3760.00	30.60	163.00	470.00	978.93	2180.00
Miscellaneous administrative support	133	244.61	178.14	335.87	<LOD	2960.00	90.80	358.26	908.00	1570.00	1836.00
Private Household	18	298.62	219.00	407.20	32.88	1872.00	162.00	359.00	530.00	590.58	826.00
Protective Service	34	223.23	89.63	555.98	2.27	2525.00	99.60	310.95	693.64	1590.00	2150.00
Waiters and Waitresses	43	184.20	116.37	291.57	<LOD	3310.00	76.00	212.00	739.00	955.21	2860.00
Cooks	58	101.13	33.74	303.09	<LOD	2020.00	26.30	200.00	459.64	749.23	1270.00
Miscellaneous food preparation and service	61	161.70	67.69	386.29	<LOD	3800.00	107.00	271.00	465.87	980.00	1460.00
Health Service Occupation	52	216.37	100.10	467.66	<LOD	9800.00	76.60	379.00	833.08	1290.00	1488.00
Cleaning and Building Service	71	430.44	366.70	505.27	4.41	5440.00	231.00	672.00	989.00	1800.00	5440.00
Personal Service	54	171.17	83.43	351.17	<LOD	2310.00	59.10	198.70	643.00	1208.00	1810.00
Farm Operators, Managers and Supervisors	8	242.28	.	.	<LOD	5080.00	134.10	360.00	589.00	5080.00	5080.00
Farm and Nursery Workers	31	201.45	63.60	638.12	<LOD	4150.00	80.60	239.57	628.00	786.00	1680.00
Related Agricultural, Forestry and Fishing	47	522.87	380.90	717.77	21.69	15900.00	230.19	394.00	992.00	2875.00	15900.00
Vehicle and Mobile Equipment Mechanics, Repairs	28	205.75	70.00	604.76	<LOD	4750.00	25.53	417.59	1220.00	2900.00	4750.00
Other Mechanics and repairers	38	370.04	213.70	640.76	6.80	3560.00	173.00	430.00	1081.60	1504.00	3560.00
Construction traders	127	196.83	129.73	298.63	<LOD	12400.00	95.30	300.10	659.12	1870.00	2544.00
Extractive and Precision Production	48	327.50	229.67	467.01	<LOD	2740.00	211.00	422.00	769.00	1420.00	2190.00
Textile, apparel and furnishings machine operators	19	406.28	327.27	504.38	29.52	4280.00	95.60	533.00	1280.00	4280.00	4280.00
Machine Operators, Assorted Materials	67	211.57	169.58	263.96	<LOD	7776.00	97.89	219.00	493.00	731.00	2200.00
Fabricators, Assemblers, Inspectors, and Samplers	51	156.94	60.97	403.98	<LOD	3860.00	85.40	200.00	635.00	1196.80	1968.00
Motor vehicle operators	70	301.00	190.48	475.62	<LOD	3890.00	127.40	512.00	690.00	1284.80	2620.00
Other transportation and material moving	21	169.32	116.33	246.46	<LOD	2630.00	132.00	264.00	624.00	910.00	1290.00
Construction laborers	29	209.89	100.99	436.20	7.70	4210.00	55.20	196.17	778.00	1130.00	1900.00
Laborers, except construction	6	1363.96	.	.	55.09	2990.00	1210.00	1776.68	1776.68	2990.00	2990.00
Frieght, Stock, and Material Movers, hand	44	143.79	61.36	336.95	<LOD	4200.00	34.33	245.20	416.82	1440.00	2080.00
Other helpers, equipment cleaners, hand packages and laborers	27	258.57	85.88	778.53	13.00	3024.00	77.70	471.52	790.00	1580.00	3024.00

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Table 3: Concentrations of Enterolactone (µg/L) found in urine by Employment Status

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Working at a Job or Business	1073	247.97	216.18	284.44	<LOD	15900.00	99.90	350.00	834.00	1570.00	2540.00
With a Job but not at Work	53	418.55	273.22	641.18	10.30	3810.00	216.00	470.00	807.00	1660.00	2720.00
Looking for Work	56	89.77	63.49	126.91	3.30	6480.00	22.80	117.00	411.00	746.00	1140.00
Not working at a job or Business	829	261.13	217.85	313.01	<LOD	85300.00	108.00	360.00	835.00	1850.00	3280.00

Table 4: Concentrations of Enterolactone (µg/L) found in urine by Income

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
$0-$4 999	118	212.66	150.65	300.20	<LOD	8850.00	75.10	361.00	739.65	2240.00	2780.00
$ 5000-$9 999	315	418.55	273.22	641.18	10.30	3810.00	216.00	470.00	807.00	1660.00	2720.00
$10 000-$14 999	408	89.77	63.49	126.91	3.30	6480.00	22.80	117.00	411.00	746.00	1140.00
$15 000-$19 999	418	261.13	217.85	313.01	<LOD	85300.00	108.00	360.00	835.00	1850.00	3280.00
$20 000-$24 999	384	238.48	177.69	320.06	<LOD	9550.00	120.00	300.10	672.00	1870.00	2650.00
$25 000-$34 999	624	193.26	158.47	235.69	<LOD	7240.00	78.80	274.00	606.00	1390.00	2480.00
$35 000-$44 999	492	208.28	162.42	267.09	<LOD	12400.00	101.77	300.09	595.74	1110.00	1762.00
$45 000-$54 999	408	233.27	186.96	291.04	<LOD	15900.00	88.80	303.00	693.64	1790.00	2540.00
$55 000-$64 999	327	278.93	221.36	351.46	<LOD	9250.00	126.00	354.80	799.33	1680.00	3050.00
$65 000-$74 999	244	229.54	167.11	315.28	<LOD	5475.00	88.40	314.00	811.00	1400.00	2400.00
$75 000 and over	898	331.02	284.54	385.10	<LOD	85300.00	135.00	425.00	1000.00	2340.00	3370.00

Table 5: Concentrations of Enterolactone (µg/L) found in urine by Race/Ethnicity

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Non-Hispanic White	2139	257.85	229.37	289.87	<LOD	85300.00	109.00	344.00	799.00	1808.00	2900.00
Non-Hispanic Black	1311	271.54	234.70	314.16	<LOD	8550.00	135.00	391.00	763.65	1510.00	2340.00
Mexican American	1492	235.58	200.57	276.71	<LOD	15600.00	107.08	316.12	711.00	1545.60	2620.00
Other Race-Including MultiRacial	136	136.90	93.26	200.97	<LOD	5090.00	38.90	200.37	522.00	1340.00	2540.00
Other Hispanic	264	224.47	190.05	265.12	<LOD	15500.00	91.60	291.00	588.00	1570.00	2688.00

Table 6: Concentrations of Enterolactone (µg/L) found in urine by Gender

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Male	2594	258.39	234.14	285.15	<LOD	22640.00	107.00	350.00	823.00	1890.00	2900.00
Female	2748	240.82	214.97	269.79	<LOD	85300.00	110.89	321.00	729.00	1500.00	2592.00

Table 7: Concentrations of Enterolactone (µg/L) found in urine by Education

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Less than High School	3072	245.64	223.34	270.18	<LOD	20300.00	120.00	316.63	680.00	1440.00	2412.50
High School Diploma	828	194.33	160.19	235.74	<LOD	22640.00	75.80	287.00	668.00	1400.00	2077.50
More than High School	1433	285.09	252.29	322.16	<LOD	85300.00	117.00	386.00	926.00	2240.00	3350.00

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Table 8: Concentrations of Enterolactone (µg/L) found in urine by Marital Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25.00	50.00	75.00	90.00	95.00
Married	1750	255.20	223.47	291.45	<LOD	85300.00	102.00	357.00	861.33	1890.00	3240.00
Widowed	268	285.76	227.92	358.26	<LOD	5440.00	140.00	385.00	824.00	1658.00	2620.00
Divorced	272	202.69	148.51	276.65	<LOD	8850.00	92.80	266.29	733.89	1440.00	2140.00
Separated	112	236.56	164.79	339.58	4.40	6120.00	85.40	334.00	700.00	1120.00	2288.00
Never Married	1483	233.41	199.22	273.46	<LOD	20200.00	104.00	314.00	731.00	1660.00	2720.00
Living with Partner	162	205.06	167.14	251.58	<LOD	9800.00	77.20	308.00	697.00	1240.00	2900.00

Table 9: Concentrations of Enterolactone (µg/L) found in urine by Country of Birth

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25.00	50.00	75.00	90.00	95.00
Born in the US	4280	248.92	226.24	273.87	<LOD	85300.00	105.64	334.00	764.44	1680.00	2720.00
Born in Mexico	644	275.66	228.53	332.51	<LOD	7776.00	132.00	338.00	734.00	1710.00	2780.00
Born Elsewhere	384	246.45	202.56	299.86	<LOD	7880.00	114.00	323.00	719.00	2064.00	2924.00

Table 10: Concentrations of Enterolactone (µg/L) found in urine by Pregnancy Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25.00	50.00	75.00	90.00	95.00
Pregnant	223	312.22	219.20	444.72	<LOD	7880.00	149.00	460.00	731.00	2416.00	3170.00
Not Pregnant	1358	223.15	190.49	261.41	<LOD	85300.00	98.88	308.00	726.00	1470.00	2592.00

Table 11: Concentrations of Enterolactone (µg/L) found in urine by Type of Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25.00	50.00	75.00	90.00	95.00
A Mobile Home or Trailer	427	210.17	177.25	249.20	<LOD	7240.00	92.80	293.90	660.00	1240.00	2080.00
A detached single family home	3229	251.70	224.18	282.60	<LOD	85300.00	110.00	323.00	773.00	1680.00	2752.00
Attached Single Family Home	424	288.58	229.46	362.94	<LOD	20200.00	107.07	415.00	848.00	1960.00	3000.00
An Apartment	1130	254.67	223.33	290.41	<LOD	12400.00	113.00	337.73	778.16	2052.00	2780.00
Something Else	51	167.53	127.38	220.34	2.20	4805.00	52.40	259.55	742.00	1326.00	2832.00
Dormitory	22	363.04	.	.	<LOD	7030.00	150.00	340.00	2380.00	7030.00	7030.00

Table 12:Concentrations of Enterolactone (µg/L) found in urine by Year Home Built

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25.00	50.00	75.00	90.00	95.00
1990-present	717	297.25	257.11	343.64	<LOD	12325.00	142.03	390.00	881.71	2012.50	3190.00
1978-1989	872	262.80	219.08	315.24	<LOD	85300.00	108.00	325.00	888.32	1940.00	2848.00
1960-1977	944	222.58	183.20	270.44	<LOD	8850.00	96.60	306.80	731.00	1500.00	2052.00
1950-1959	519	265.82	215.76	327.49	<LOD	20300.00	97.89	375.00	755.00	1904.00	2840.00
1940-1949	280	271.89	179.68	411.43	<LOD	7030.00	129.00	313.00	850.00	1880.00	2840.00
before 1940	599	245.92	192.99	313.38	<LOD	15900.00	123.00	340.40	725.91	1710.00	2840.00

Table 13: Concentrations of Enterolactone (µg/L) found in urine by Water Source

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25.00	50.00	75.00	90.00	95.00
Private-Public Water Company	4731	257.54	232.50	285.29	<LOD	85300.00	112.44	337.00	774.00	1730.00	2752.00
Private Public Well	485	207.12	176.59	242.92	<LOD	15900.00	91.70	296.48	700.00	1590.00	2900.00
Some other Water Source	27	237.20	100.85	557.89	<LOD	4840.00	90.70	404.00	859.31	1180.00	1240.00

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Table 14: Concentrations of Enterolactone (µg/L) found in urine by Helpings of Protein per day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
0	15	396.38	343.80	457.00	4.10	4750.00	258.87	304.00	2700.00	2725.00	2725.00
1	191	263.18	163.20	424.42	<LOD	9250.00	134.29	323.27	878.84	2400.00	3877.79
2	203	254.96	195.97	331.71	<LOD	6976.00	118.00	315.41	650.54	1584.00	2432.00
3+	103	261.56	196.51	348.14	<LOD	3636.00	120.03	332.55	608.00	938.79	2140.00

Table 15: Concentrations of Enterolactone (µg/L) found in urine by Helpings of Milk/Dairy per day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
0	77	214.95	140.34	329.23	<LOD	6300.00	125.94	232.34	763.53	900.19	1536.00
1	237	251.96	150.79	421.02	<LOD	9250.00	109.29	314.77	751.10	2432.00	3876.00
2	148	282.68	208.00	384.17	<LOD	4496.00	120.03	357.97	726.00	1856.00	2242.50
3+	52	311.68	203.96	476.29	<LOD	3636.00	196.17	398.00	616.00	1244.00	1904.00

Table 16: Concentrations of Enterolactone (µg/L) found in urine by Helpings of Fruit per day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
0	52	266.32	157.74	449.62	6.22	9250.00	129.48	304.00	669.79	1244.00	1244.00
1	216	188.06	127.36	277.71	<LOD	8160.00	90.60	232.34	588.64	1000.00	1497.60
2	162	327.32	255.95	418.58	<LOD	6300.00	189.00	355.47	825.00	2140.00	2848.00
3+	83	356.51	228.39	556.49	<LOD	6976.00	111.95	472.00	1980.00	2470.00	3636.00

Table 17: Concentrations of Enterolactone (µg/L) found in urine by Helpings of Vegetables per day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
0	47	220.38	130.65	371.72	<LOD	4750.00	142.33	291.84	550.42	674.00	2688.00
1	259	258.04	190.99	348.63	<LOD	9250.00	119.76	353.00	706.69	1285.00	2432.00
2	203	254.96	195.97	331.71	<LOD	6976.00	118.00	315.41	650.54	1584.00	2432.00
3+	67	299.68	177.13	507.01	<LOD	3877.79	92.20	373.34	1023.85	2620.00	2924.00

Table 18:Concentrations of Enterolactone (µg/L) found in urine by Helpings of Bread/grain per day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
0	36	353.78	149.97	834.57	6.22	5170.00	129.48	624.00	907.00	2242.50	2242.50
1	191	242.63	166.48	353.59	<LOD	8160.00	102.32	315.41	726.00	1904.00	2620.00
2	174	280.69	224.74	350.58	<LOD	9250.00	125.94	340.61	656.57	2012.50	2432.00
3+	112	233.83	142.90	382.63	<LOD	6976.00	152.91	287.00	669.79	2470.00	2924.00

Table 19: Concentrations of Enterolactone (µg/L) found in urine by and Servings of Beans per month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
0	279	199.99	155.67	256.93	<LOD	7030.00	68.10	278.00	658.00	1420.00	2620.00
1 to 5	1066	278.91	247.21	314.69	<LOD	15900.00	125.00	383.00	819.00	1590.00	2590.00
6 to 10	548	264.48	198.12	353.06	<LOD	20200.00	91.20	399.00	921.00	1790.00	2820.00
11 to 15	311	255.96	195.81	334.60	<LOD	9170.00	109.00	361.00	823.00	1410.00	2750.00
15+	499	248.31	209.75	293.95	<LOD	85300.00	132.00	304.00	747.00	1710.00	3170.00

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Table 20: Concentrations of Enterolactone (µg/L) found in urine by Fish Consumed in Past Month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Yes	1526	235.90	199.82	278.49	<LOD	22640.00	102.00	309.00	733.89	1966.00	2800.00
No	916	231.45	183.75	291.52	<LOD	20300.00	110.80	314.05	673.00	1776.68	2620.00

Table 21: Concentrations of Enterolactone (µg/L) found in urine by Shellfish Consumed in Past Month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Yes	1009	245.27	205.83	292.27	<LOD	22640.00	115.25	329.60	799.33	2012.50	2720.00
No	1437	226.38	187.00	274.06	<LOD	20300.00	98.70	287.49	641.00	1776.68	2800.00

Table 22: Concentrations of Enterolactone (µg/L) found in urine by Body Mass Index Category

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Under Weight	94	378.62	278.31	515.09	<LOD	7880.00	166.00	543.00	951.88	2480.00	3100.00
Healthy Weight	2202	309.73	274.13	349.94	<LOD	85300.00	138.00	386.72	854.00	2100.00	3040.00
Over Weight	2909	211.99	192.67	233.25	<LOD	22640.00	91.40	285.00	687.00	1480.00	2464.00

Table 23: Concentrations of Enterolactone (µg/L) found in urine by Weak/Failing Kidneys

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
Yes	49	100.42	43.46	232.01	<LOD	3768.00	64.56	189.00	423.67	1048.00	2700.00
No	1418	236.34	199.12	280.53	<LOD	22640.00	101.26	315.41	741.00	2000.00	2760.00

Table 24: Concentrations of Enterolactone (µg/L) found in urine by total number of beers consumed per month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
0	952	225.32	187.46	270.84	<LOD	22640.00	104.00	315.41	693.64	1488.00	2620.00
0-5	293	228.47	155.38	335.94	<LOD	12325.00	87.96	300.10	773.00	2400.00	3560.00
6 to 10	78	266.53	156.81	453.04	<LOD	8160.00	115.00	320.25	633.00	2525.00	3044.82
11 to 15	42	355.24	255.55	493.81	<LOD	3950.00	137.69	471.52	1219.20	2800.00	3040.00
16+	106	213.35	123.43	368.79	<LOD	4496.00	98.88	225.00	813.00	1610.00	2140.00

Table 25: Concentrations of Enterolactone (µg/L) found in urine by Water (gm)/day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
0 to 896	2312	265.19	239.67	293.44	<LOD	15600.00	117.45	361.00	755.08	1620.00	2432.00
897-1792g	1276	230.59	200.25	265.52	<LOD	85300.00	88.80	287.49	749.23	1680.00	2730.00
>1792g	888	227.73	185.95	278.90	<LOD	22640.00	95.60	305.00	799.33	1840.00	2800.00

Table 26: Concentrations of Enterolactone (µg/L) found in urine by Alcohol (gm)/day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25.00	50.00	75.00	90.00	95.00
0	4095	237.86	219.42	257.85	<LOD	85300.00	107.00	312.00	727.59	1616.00	2620.00
0-28	670	282.48	236.97	336.74	<LOD	15900.00	114.00	380.00	783.00	1960.00	2950.00
>28	346	257.00	188.98	349.51	<LOD	8160.00	98.88	418.11	967.00	2000.00	3090.00

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Table 27: Concentrations of Enterolactone (µg/L) found in urine by Caffeine(gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25.00	50.00	75.00	90.00	95.00
0	1002	236.99	194.59	288.61	<LOD	6480.00	99.20	310.16	758.00	1530.00	2840.00
0-400	3835	257.20	233.01	283.90	<LOD	85300.00	113.94	343.34	773.00	1776.68	2780.00
400+	274	187.51	152.77	230.14	<LOD	5190.00	76.10	239.48	601.00	1216.00	2140.00

Table 28: Concentrations of Enterolactone (µg/L) found in urine by Fiber (gm) /day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25.00	50.00	75.00	90.00	95.00
0g	10	44.15	2.67	729.29	<LOD	3440.00	21.10	34.40	389.00	639.00	639.00
1 to 10	1783	201.88	173.22	235.29	<LOD	20300.00	101.00	277.99	595.74	1240.00	1888.00
11 to 24	2680	262.74	236.85	291.45	<LOD	15900.00	105.00	354.00	812.08	1904.00	2990.00
25+	638	327.70	276.37	388.57	<LOD	85300.00	135.00	417.14	991.00	2150.00	3240.00

Table 29: Concentrations of Enterolactone (µg/L) found in urine by Breastfeeding Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25.00	50.00	75.00	90.00	95.00
Currently Breastfeeding	42	902.82	698.52	1166.87	11.20	4840.00	390.00	854.00	3430.00	4470.00	4500.00
Not currently Breastfeeding	99	180.79	104.40	313.09	4.10	5660.00	78.40	185.00	587.81	1202.00	1300.00

Table 30: Concentrations of Enterolactone (µg/L) found in urine by Liver Conditions

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25.00	50.00	75.00	90.00	95.00
Ever had a liver condition	88	157.89	108.37	230.04	<LOD	22640.00	51.00	161.00	564.00	943.00	2760.00
Never had a liver condition	3030	245.61	222.76	270.81	<LOD	85300.00	103.00	337.00	793.60	1810.00	2800.00

Table 31: Concentrations of Enterolactone (µg/L) found in urine by Anyone Smoke in the Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25.00	50.00	75.00	90.00	95.00
Yes	1141	170.855	144.61	201.862	0.42	12400	73	226	566	1370	2190
No	4144	279.59	254.89	306.681	0.42	85300	125	373	824	1840	2890

Table 32: Concentrations of Enterolactone (µg/L) found in urine by Diabetes

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25.00	50.00	75.00	90.00	95.00
Yes	281	206.91	156.90	272.85	<LOD	6976.00	89.20	284.00	693.64	1340.00	2077.50
No	5015	251.77	229.00	276.81	<LOD	85300.00	109.00	334.00	769.00	1750.00	2790.00

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Table 33: Concentrations of Enterolactone (µg/L) found in urine by Currently Taking Birth Control Pills?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25.00	50.00	75.00	90.00	95.00
Yes	151	210.85	152.85	290.87	2.90	12325.00	77.70	215.37	601.00	1460.00	2890.00
No	429	207.81	156.10	276.64	<LOD	85300.00	81.20	290.00	708.00	1616.00	2800.00

Table 34: Concentrations of Enterolactone (µg/L) found in urine by Now Use Depo-Provera Injectables

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25.00	50.00	75.00	90.00	95.00
Yes	44	128.95	83.88	198.24	<LOD	1850.00	16.86	302.00	826.00	955.21	989.00
No	153	149.69	88.13	254.24	<LOD	5660.00	64.56	212.00	545.81	965.00	2790.00

Table 35: Concentrations of Enterolactone (µg/L) found in urine by Currently Taking Estrogen Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25.00	50.00	75.00	90.00	95.00
Yes	126	224.55	151.11	333.68	<LOD	5440.00	104.00	399.47	752.00	1140.00	2390.00
No	131	185.09	130.53	262.45	<LOD	3760.00	104.46	239.25	491.00	925.00	1250.00

Table 36: Concentrations of Enterolactone (µg/L) found in urine by Currently Taking Projestin Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25.00	50.00	75.00	90.00	95.00
Yes	28	207.24	90.21	476.08	4.95	3340.00	52.20	414.00	752.00	971.00	1700.00
No	52	347.06	232.40	518.29	3.98	5600.00	148.00	329.60	870.00	2040.00	3170.00

Table 37: Concentrations of Enterolactone (µg/L) found in urine by Currently Taking Estrogen-Projestin Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25.00	50.00	75.00	90.00	95.00
Yes	46	277.26	225.88	340.34	<LOD	5600.00	126.00	394.00	967.00	2140.00	5440.00
No	29	271.09	135.30	543.16	<LOD	2012.50	121.00	350.00	864.00	1340.00	1960.00

Table 38: Concentrations of Enterolactone (µg/L) found in urine by Number of Prescription Medications Taken

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25.00	50.00	75.00	90.00	95.00
0	3234	277.23	242.56	316.84	0.42	22640.00	130.72	359.00	794.00	1896.00	2848.00
1	834	239.87	198.87	289.33	0.42	15500.00	102.00	328.00	769.00	1678.00	3000.00
2	448	253.07	213.51	299.96	0.42	85300.00	104.46	313.59	761.00	1500.00	2620.00
3	335	221.02	176.49	276.79	0.42	20300.00	94.90	287.30	682.00	1420.00	2512.00
4	161	163.89	115.74	232.08	0.42	9250.00	52.20	197.33	565.00	1260.00	2288.00
5	116	223.88	148.46	337.61	0.42	6040.00	92.20	335.00	835.00	2012.50	2924.00
6+	214	153.62	114.03	206.97	0.42	6976.00	76.49	242.00	617.66	991.00	1340.00

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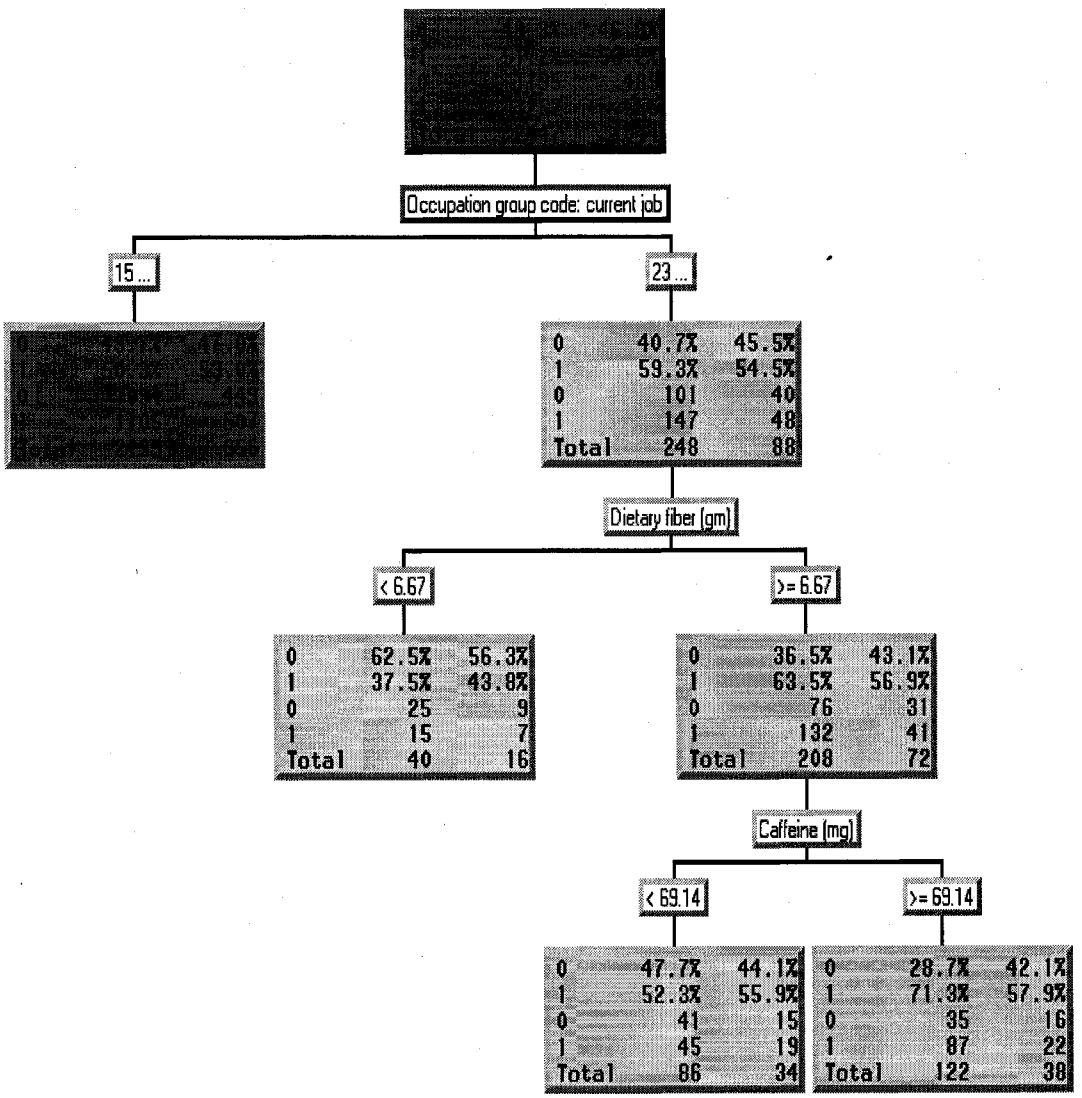
Figure 1: Classification and Regression Tree for Enterolactone



*Occupations Truncated

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APPENDIX 10: GENISTEIN

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Table 1: Concentrations of Genistein (µg/L) found in urine by age category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Age 5-11	727	33.84	29.30	39.08	<LOD	4980.00	12.50	31.80	98.60	256.00	432.00
Age 12-19	1498	37.98	32.24	44.75	<LOD	24800.00	13.46	34.75	105.00	315.00	504.72
Age 20-40	1213	31.33	26.50	37.05	<LOD	15100.00	10.60	29.00	110.00	352.66	708.86
Age 41-55	762	23.54	19.10	29.01	<LOD	7020.00	8.30	23.93	82.40	306.00	627.00
Age 56+	1151	23.51	20.08	27.53	<LOD	10100.00	8.00	24.35	76.10	213.00	365.00

Table 2: Concentrations of Genistein (µg/L) found in urine by Occupation

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Executive, Administrators, & Managers	143	28.98	20.49	41.01	<LOD	7020.00	11.70	28.60	111.70	302.73	744.42
Management Related	51	18.26	12.53	26.60	<LOD	366.00	8.79	19.00	39.80	133.00	242.00
Engineers, Architects, and Scientists	54	45.66	24.83	83.97	<LOD	4550.00	16.10	40.50	144.00	385.00	815.00
Health Diagnosing, Assessing & Treating	43	29.39	15.91	54.31	<LOD	4730.00	9.70	47.56	110.00	198.00	238.00
Teachers	81	17.08	10.56	27.63	<LOD	1950.00	5.60	22.10	60.80	244.33	355.75
Writers, Artists, Entertainers & Athletes	39	33.82	20.11	56.86	<LOD	1240.00	16.57	32.42	100.00	117.00	339.20
Other Professional Speciality	54	14.92	8.74	25.47	<LOD	613.00	5.73	16.80	41.80	105.24	352.66
Technicians and Related Supported	55	31.49	15.57	63.70	<LOD	3000.00	8.80	23.90	156.00	1460.00	1712.00
Supervisors and Proprietors, Sales	41	19.95	15.61	25.50	0.96	8080.00	4.80	13.70	49.50	1200.00	1390.00
Sales Representatives,finance,business,commodities	60	40.95	28.66	58.50	<LOD	9690.00	13.90	31.92	117.53	296.00	980.80
Sales Workers, retail & personal services	148	34.82	21.42	56.62	<LOD	12400.00	12.70	36.10	124.00	389.00	719.00
Secretaries, Stenographers, and typists	33	37.07	19.01	72.28	<LOD	2230.00	18.70	28.60	119.36	119.36	146.00
Information Clerks	31	29.69	15.85	55.60	<LOD	777.03	11.40	19.50	88.90	309.00	394.79
Records Processing	66	23.05	11.22	47.35	<LOD	1440.00	6.31	27.30	89.60	387.00	627.00
Material Recording, Scheduling,distributing clerks	35	43.28	25.81	72.56	<LOD	965.00	12.90	47.60	102.00	494.00	965.00
Miscellaneous administrative support	133	23.89	15.49	36.86	<LOD	2170.00	8.55	26.90	79.90	355.00	788.00
Private Household	18	28.65	22.63	36.27	<LOD	253.00	7.45	57.88	78.50	253.00	253.00
Protective Service	34	26.42	23.92	29.19	<LOD	1360.00	9.30	40.00	58.60	102.00	232.25
Waiters and Waitresses	43	47.65	23.74	95.66	<LOD	24800.00	14.30	55.80	159.18	312.00	742.00
Cooks	58	45.56	32.32	64.22	<LOD	2650.00	11.60	20.73	202.40	797.00	797.00
Miscellaneous food preparation and service	61	36.73	22.40	60.23	<LOD	6410.00	13.60	33.52	64.30	470.00	1120.00
Health Service Occupation	52	34.61	27.01	44.35	2.90	507.00	13.34	36.00	70.90	111.00	382.00
Cleaning and Building Service	71	31.98	23.78	43.01	<LOD	1810.00	12.51	33.60	125.61	233.00	258.00
Personal Service	54	38.50	18.19	81.49	<LOD	2090.00	8.80	23.80	118.00	633.00	814.00
Farm Operators, Managers and Supervisors	8	19.75	.	.	3.40	150.70	10.17	10.80	35.10	150.70	150.70
Farm and Nursery Workers	31	18.74	6.86	51.21	2.48	349.50	3.73	32.10	41.24	96.00	116.00
Related Agricultural, Forestry and Fishing	47	15.54	8.07	29.90	<LOD	936.00	6.90	13.67	40.69	187.00	445.00
Vehicle and Mobile Equipment Mechanics, Repairs	28	19.21	4.88	75.60	<LOD	1410.00	5.39	20.30	39.30	604.53	1300.00
Other Mechanics and repairers	38	23.79	9.07	62.36	<LOD	1440.00	12.07	30.33	49.50	300.00	1010.00
Construction traders	127	21.58	12.76	36.50	<LOD	2950.00	8.78	26.34	66.90	232.48	491.78
Extractive and Precision Production	48	30.26	12.24	74.77	<LOD	15100.00	7.50	30.90	64.40	296.00	709.00
Textile, apparel and furnishings machine operators	19	30.56	26.43	35.33	<LOD	383.00	15.80	33.40	46.10	383.00	383.00
Machine Operators, Assorted Materials	67	22.56	15.55	32.73	<LOD	2375.00	6.40	16.90	79.70	439.73	679.21
Fabricators, Assemblers, Inspectors, and Samplers	51	30.11	17.59	51.54	1.30	1332.80	11.00	26.30	90.70	443.04	577.12
Motor vehicle operators	70	40.03	26.02	61.56	<LOD	6504.00	7.40	48.80	192.99	437.00	474.00
Other transportation and material moving	21	41.46	16.51	104.12	<LOD	636.56	14.40	47.40	120.00	281.00	281.00
Construction laborers	29	32.40	22.25	47.19	2.00	514.00	16.90	27.10	78.27	202.00	494.00
Laborers, except construction	6	25.23	.	.	11.10	323.00	14.27	14.27	16.10	323.00	323.00
Frieght, Stock, and Material Movers, hand	44	34.67	18.19	66.05	1.10	882.91	8.63	35.70	114.00	226.00	565.56
Other helpers, equipment cleaners, hand packages and laborers	27	21.30	13.81	32.85	<LOD	427.00	19.80	41.20	67.64	349.00	406.00

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Table 3: Concentrations of Genistein (µg/L) found in urine by Employment Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Working at a Job or Business	1073	31.31	27.39	35.78	<LOD	15100.00	10.20	28.60	89.90	281.00	627.00
With a Job but not at Work	53	40.53	27.75	59.20	2.70	2260.00	12.10	33.00	190.00	447.00	530.00
Looking for Work	56	29.94	15.36	58.36	0.90	1300.00	9.90	26.40	75.30	387.00	583.00
Not working at a job or Business	829	33.29	28.44	38.97	<LOD	9460.00	10.50	30.10	96.00	332.00	641.00

Table 4: Concentrations of Genistein (µg/L) found in urine by Income

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
$0-$4 999	118	40.25	19.64	82.48	<LOD	24800.00	11.40	28.40	217.70	626.00	907.00
$ 5000-$9 999	315	40.53	27.75	59.20	2.70	2260.00	12.10	33.00	190.00	447.00	530.00
$10 000-$14 999	408	29.94	15.36	58.36	0.90	1300.00	9.90	26.40	75.30	387.00	583.00
$15 000-$19 999	419	33.29	28.44	38.97	<LOD	9460.00	10.50	30.10	96.00	332.00	641.00
$20 000-$24 999	386	27.12	20.43	35.99	<LOD	3022.75	9.93	28.40	97.00	214.00	427.00
$25 000-$34 999	626	25.72	20.44	32.37	<LOD	15100.00	8.50	26.10	84.10	339.20	553.00
$35 000-$44 999	492	30.55	22.74	41.04	<LOD	6820.00	8.67	30.40	115.00	312.00	491.78
$45 000-$54 999	408	27.89	21.49	36.18	<LOD	6410.00	9.50	29.20	98.20	293.13	500.00
$55 000-$64 999	327	24.51	19.59	30.66	<LOD	4980.00	8.70	21.05	77.90	233.00	383.00
$65 000-$74 999	244	25.26	16.76	38.06	<LOD	4550.00	9.90	24.90	75.30	235.00	683.00
$75 000 and over	898	28.95	23.72	35.33	<LOD	9690.00	10.70	29.50	96.90	319.00	693.73

Table 5:Concentrations of Genistein (µg/L) found in urine by Race/Ethnicity

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Non-Hispanic White	2139	27.13	24.23	30.37	<LOD	9690.00	9.50	26.70	89.90	281.00	613.00
Non-Hispanic Black	1314	31.46	25.65	38.59	<LOD	24800.00	11.60	33.00	96.40	334.00	577.12
Mexican American	1498	29.74	25.51	34.65	<LOD	6504.00	9.70	27.40	95.80	296.00	522.00
Other Race-Including MultiRacial	136	51.95	31.77	84.95	<LOD	10100.00	16.20	49.30	208.74	722.00	3110.00
Other Hispanic	264	26.94	17.08	42.50	<LOD	12400.00	10.20	30.50	79.10	210.00	436.00

Table 6: Concentrations of Genistein (µg/L) found in urine by Gender

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Male	2597	31.13	26.81	36.15	<LOD	24800.00	10.80	30.29	96.90	298.00	583.00
Female	2754	26.14	23.71	28.83	<LOD	15100.00	9.00	25.60	88.80	286.00	598.00

Table 7: Concentrations of Genistein (µg/L) found in urine by Education

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Less than High School	3081	31.96	28.10	36.35	<LOD	24800.00	11.50	30.50	97.49	268.98	492.00
High School Diploma	828	26.82	21.59	33.30	<LOD	6820.00	9.30	27.90	89.90	288.00	518.00
More than High School	1433	26.42	23.12	30.18	<LOD	15100.00	8.98	25.72	88.30	306.00	719.00

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Table 8: Concentrations of Genistein (µg/L) found in urine by Marital Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Married	1750	24.50	21.01	28.56	<LOD	10100.00	8.28	24.70	84.10	263.00	597.00
Widowed	268	20.18	14.53	28.03	<LOD	2176.00	6.90	21.90	79.90	210.00	335.00
Divorced	273	24.02	18.24	31.63	<LOD	5830.00	9.10	23.16	67.40	298.00	683.00
Separated	112	33.80	20.54	55.60	<LOD	8080.00	11.50	35.13	106.00	459.00	1339.39
Never Married	1487	37.47	32.38	43.36	<LOD	24800.00	13.50	34.00	124.00	339.20	708.86
Living with Partner	162	31.62	25.32	39.48	<LOD	3201.40	9.80	33.70	89.60	296.00	387.00

Table 11: Concentrations of Genistein (µg/L) found in urine by Country of Birth

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Born in the US	4286	29.27	26.32	32.56	<LOD	24800.00	10.11	28.80	95.20	300.30	613.00
Born in Mexico	647	26.35	20.31	34.19	<LOD	6504.00	9.20	24.20	85.65	225.00	427.00
Born Elsewhere	384	23.24	16.66	32.42	<LOD	12400.00	8.05	23.52	78.40	235.00	525.00

Table 12: Concentrations of Genistein (µg/L) found in urine by Pregnancy Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Pregnant	224	31.23	18.79	51.93	<LOD	9690.00	11.10	28.40	128.00	330.00	466.00
Not Pregnant	1360	25.91	23.12	29.05	<LOD	12400.00	8.90	25.45	89.60	337.00	645.00

Table 13: Concentrations of Genistein (µg/L) found in urine by Type of Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
A Mobile Home or Trailer	427	24.47	19.56	30.62	<LOD	2450.00	9.53	22.54	80.97	226.00	485.00
A detached single family home	3236	27.57	24.19	31.43	<LOD	15100.00	9.40	27.80	93.50	284.45	551.00
Attached Single Family Home	424	30.78	22.78	41.60	<LOD	3022.75	11.70	31.40	88.60	312.00	627.00
An Apartment	1132	33.22	27.15	40.65	<LOD	24800.00	10.76	30.50	101.00	399.69	788.00
Something Else	51	32.88	23.44	46.12	<LOD	1270.00	15.40	31.70	75.40	266.00	387.00
Dormitory	22	40.25	.	.	4.80	1180.00	15.30	27.46	140.00	144.00	278.00

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Table 14: Concentrations of Genistein (µg/L) found in urine by Year Home Built

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
1990-present	717	27.12	20.95	35.12	<LOD	15100.00	9.50	26.00	91.86	371.26	722.00
1978-1989	876	33.04	25.60	42.64	<LOD	24800.00	10.55	33.10	119.36	353.00	719.00
1960-1977	945	25.42	20.78	31.09	<LOD	10100.00	8.82	27.30	82.40	272.00	602.00
1950-1959	519	23.61	18.73	29.75	<LOD	6504.00	8.28	21.40	65.20	244.33	437.00
1940-1949	281	38.21	27.93	52.26	<LOD	6960.00	13.80	38.52	119.00	229.00	394.79
before 1940	600	26.84	22.41	32.15	<LOD	12400.00	10.17	26.10	80.12	225.00	353.52

Table 15: Concentrations of Genistein (µg/L) found in urine by Water Source

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Private-Public Water Company	4739	29.07	26.01	32.49	<LOD	24800.00	9.97	29.03	94.10	296.00	591.00
Private Public Well	486	25.30	20.61	31.04	<LOD	6820.00	9.50	22.50	89.34	284.45	687.00
Some other Water Source	27	23.27	10.43	51.92	<LOD	1320.00	11.52	20.70	32.00	228.69	562.00

Table 16: Concentrations of Genistein (µg/L) found in urine by Helpings of Protein per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	15	51.06	2.99	872.01	<LOD	2082.50	8.56	49.70	979.00	2082.50	2082.50
1	191	21.60	15.32	30.46	<LOD	2995.00	7.10	21.31	82.48	293.64	353.00
2	203	23.31	17.38	31.25	<LOD	6960.00	9.30	25.23	79.68	179.53	282.08
3+	103	16.91	9.66	29.60	<LOD	2176.00	6.57	20.32	42.90	343.00	379.59

Table 17: Concentrations of Genistein (µg/L) found in urine by Helpings of Milk/Dairy per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	77	23.21	12.77	42.19	<LOD	6960.00	9.77	22.77	70.10	227.06	939.00
1	237	21.58	15.03	30.99	<LOD	2082.50	7.84	22.50	66.62	259.00	353.00
2	148	21.71	13.97	33.72	<LOD	1536.00	6.88	24.20	100.22	187.70	343.00
3+	52	18.98	9.65	37.36	<LOD	2176.00	6.57	22.17	64.60	167.00	354.00

Table 18: Concentrations of Genistein (µg/L) found in urine by Helpings of Fruit per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	52	29.13	16.75	50.68	<LOD	2995.00	9.50	28.89	69.45	351.95	436.22
1	216	22.37	15.37	32.57	<LOD	2176.00	7.39	22.50	70.10	243.00	353.00
2	162	23.50	16.96	32.56	<LOD	6960.00	7.42	27.85	104.97	181.86	302.73
3+	83	13.83	7.14	26.77	<LOD	928.00	5.11	16.50	43.07	168.34	379.59

Table 19: Concentrations of Genistein (µg/L) found in urine by Helpings of Vegetables per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	47	23.69	11.13	50.39	<LOD	2995.00	13.40	22.80	50.71	129.00	307.83
1	259	19.03	13.47	26.87	<LOD	1536.00	6.09	21.67	69.45	282.08	362.17
2	203	23.31	17.38	31.25	<LOD	6960.00	9.30	25.23	79.68	179.53	282.08
3+	67	24.15	13.21	44.15	<LOD	2176.00	8.97	29.30	118.28	302.73	563.00

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Table 20: Concentrations of Genistein (µg/L) found in urine by Helpings of Bread/grain per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	36	27.72	8.91	86.21	<LOD	2995.00	6.88	29.80	167.00	259.00	2082.50
1	191	21.71	17.18	27.44	<LOD	1500.80	8.11	19.40	68.61	228.80	353.00
2	174	21.63	13.38	34.95	<LOD	6960.00	5.67	22.50	100.81	255.89	364.07
3+	112	19.65	15.32	25.20	<LOD	2955.00	8.86	24.10	64.60	166.45	302.73

Table 21: Concentrations of Genistein (µg/L) found in urine by Servings of Beans per month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	279	40.76	29.77	55.79	<LOD	2320.00	14.40	38.30	128.00	383.00	626.00
1 to 5	1066	31.88	27.71	36.66	<LOD	9690.00	10.80	28.60	87.20	258.00	530.00
6 to 10	548	32.81	26.37	40.82	<LOD	6410.00	9.90	29.00	101.00	259.00	633.00
11 to 15	311	27.56	22.64	33.56	<LOD	7020.00	9.90	20.50	65.40	209.00	683.00
15+	499	34.86	26.19	46.40	<LOD	15100.00	10.60	34.20	99.00	334.00	687.00

Table 22: Concentrations of Genistein (µg/L) found in urine by Fish Consumed in Past Month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	1529	21.59	16.78	27.78	<LOD	6960.00	8.12	23.93	82.80	243.00	443.04
No	921	30.56	23.09	40.44	<LOD	24800.00	9.64	30.80	118.28	353.92	829.30

Table 23: Concentrations of Genistein (µg/L) found in urine by Shellfish Consumed in Past Month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	1010	20.04	14.66	27.40	<LOD	24800.00	7.24	23.16	83.40	247.00	463.78
No	1444	28.08	22.23	35.46	<LOD	8080.00	9.53	29.03	101.00	300.30	618.82

Table 24: Concentrations of Genistein (µg/L) found in urine by Body Mass Index Category

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Under Weight	94	46.37	28.36	75.81	<LOD	3410.00	11.30	45.40	231.00	683.00	1339.39
Healthy Weight	2206	29.07	25.15	33.59	<LOD	10100.00	9.70	27.36	96.40	318.00	640.00
Over Weight	2914	27.07	23.58	31.08	<LOD	24800.00	9.70	27.85	87.38	269.00	518.00

Table 25: Concentrations of Genistein (µg/L) found in urine by Ever told you have Weak/Failing Kidneys

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	49	30.53	13.93	66.89	<LOD	1332.80	12.30	26.40	119.36	355.75	394.79
No	1419	21.24	17.05	26.47	<LOD	8080.00	7.81	23.90	80.22	274.00	565.56

Table 26: Concentrations of Genistein (µg/L) found in urine by total number of beers consumed per month

L Genistein	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	953	21.37	16.46	27.75	<LOD	8080.00	7.24	25.23	79.90	274.00	673.64
0-5	293	20.07	13.42	30.00	<LOD	3512.00	7.07	20.75	106.00	353.00	624.00
6 to 10	78	30.90	17.99	53.09	<LOD	2090.00	12.39	33.99	115.05	257.06	296.00
11 to 15	42	17.23	11.30	26.26	<LOD	514.00	8.26	22.22	39.29	133.00	244.00
16+	106	22.66	15.15	33.89	<LOD	2320.00	8.94	22.20	76.40	257.00	466.00

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Table 27: Concentrations of Genistein (µg/L) found in urine by Water (gm)/day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0 to 896	2317	30.05	26.47	34.12	<LOD	24800.00	11.10	27.40	89.30	266.00	530.00
897-1792g	1277	25.27	21.31	29.97	<LOD	15100.00	8.10	25.60	88.50	298.00	633.00
>1792g	888	25.29	20.63	31.00	<LOD	9690.00	8.50	28.80	81.80	330.00	624.00

Table 28: Concentrations of Genistein (µg/L) found in urine by Alcohol (gm)/day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	4102	28.86	25.88	32.18	<LOD	24800.00	9.93	28.40	94.10	296.00	619.00
0-28	671	26.67	22.26	31.95	<LOD	4730.00	10.30	26.90	77.30	253.00	494.00
>28	346	26.30	19.37	35.70	<LOD	9460.00	8.68	22.29	80.22	296.00	788.00

Table 29: Concentrations of Genistein (µg/L) found in urine by Caffeine(gm)/day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	1002	29.49	23.90	36.40	<LOD	15100.00	10.60	31.10	92.20	261.70	573.00
0-400	3843	29.10	25.87	32.74	<LOD	24800.00	10.00	27.85	96.40	315.43	626.87
400+	274	21.13	16.54	27.01	<LOD	3512.00	9.10	23.93	66.10	188.22	300.30

Table 30: Concentrations of Genistein (µg/L) found in urine by Fiber (gm) /day

L_Genistein	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0g	10	14.18	<LOD	#####	1.35	424.00	1.90	11.30	171.74	389.00	389.00
1 to 10	1786	32.11	27.12	38.03	<LOD	15100.00	11.74	32.01	102.52	334.71	598.00
11 to 24	2682	26.95	23.92	30.36	<LOD	24800.00	9.50	26.00	85.07	259.00	566.00
25+	641	24.93	19.54	31.79	<LOD	9690.00	8.05	26.15	80.22	274.00	645.00

Table 31: Concentrations of Genistein (µg/L) found in urine by Breastfeeding Status

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Currently Breastfeeding	42	54.09	39.75	73.59	2.56	2260.00	14.80	39.80	240.00	551.00	551.00
Not currently Breastfeeding	100	49.62	27.83	88.49	<LOD	3620.00	12.80	63.50	203.71	626.00	679.21

Table 32: Concentrations of Genistein (µg/L) found in urine by Liver Conditions

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Ever had a liver condition	88	20.00	11.05	36.18	<LOD	2176.00	4.83	22.29	73.40	187.00	817.00
Never had a liver condition	3031	26.79	23.78	30.19	<LOD	15100.00	9.16	26.48	89.34	298.00	618.75

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Table 33: Concentrations of Genistein (µg/L) found in urine by Anyone Smoke in the Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	1142	29.54	24.11	36.19	<LOD	24800.00	9.50	29.88	99.00	328.20	623.00
No	4152	28.32	25.30	31.69	<LOD	12400.00	9.93	28.30	90.50	281.00	566.00

Table 34: Concentrations of Genistein (µg/L) found in urine by Ever told that you have Diabetes?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	281	23.69	17.41	32.23	<LOD	6960.00	8.00	23.30	82.50	255.89	458.80
No	5024	28.78	25.78	32.14	<LOD	24800.00	10.00	28.40	93.40	296.00	599.00
Borderline Diabetic	44	23.23	17.27	31.24	<LOD	10100.00	6.27	20.34	53.00	282.08	348.00

Table 35: Concentrations of Genistein (µg/L) found in urine by Currently Taking Birth Control Pills?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	151	37.75	27.60	51.64	<LOD	2230.00	11.70	34.40	121.00	337.00	633.00
No	430	28.60	23.67	34.54	<LOD	15100.00	9.10	30.60	105.00	389.00	744.42

Table 36: Concentrations of Genistein (µg/L) found in urine by Now Use Depo-Provera Injectables

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	44	38.96	31.12	48.78	<LOD	3620.00	16.70	59.90	159.18	315.00	640.00
No	154	39.55	25.30	61.84	<LOD	2415.00	11.70	40.60	131.84	395.00	683.00

Table 37: Concentrations of Genistein (µg/L) found in urine by Currently Taking Estrogen Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	126	16.29	10.67	24.89	<LOD	4730.00	4.80	20.20	58.30	131.00	343.00
No	131	23.73	16.62	33.88	<LOD	2176.00	7.20	20.30	79.90	293.64	518.00

Table 38: Concentrations of Genistein (µg/L) found in urine by Currently Taking Projestin Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	28	15.17	5.94	38.73	<LOD	302.73	7.70	16.50	46.10	155.00	161.00
No	52	18.86	10.15	35.06	<LOD	2170.00	5.30	10.63	69.40	355.75	1339.39

Table 39: Concentrations of Genistein (µg/L) found in urine by Currently Taking Estrogen-Projestin Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	46	35.91	24.98	51.62	<LOD	7020.00	7.24	25.23	136.00	965.00	4730.00
No	29	12.52	6.49	24.17	<LOD	1950.00	6.90	10.80	31.63	124.00	167.00

Table 41: Concentrations of Genistein (µg/L) found in urine by Number of Prescription Medications Taken

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	3242	30.21	26.03	35.06	<LOD	24800.00	10.76	28.60	93.80	301.00	623.00
1	834	25.10	21.49	29.32	<LOD	8080.00	8.15	24.60	86.05	253.00	530.00
2	448	30.76	23.76	39.82	<LOD	6960.00	10.50	31.60	114.00	300.30	634.61
3	336	25.00	19.55	31.95	<LOD	2995.00	6.70	28.80	98.87	302.73	633.00
4	161	29.60	17.91	48.91	<LOD	10100.00	9.20	31.30	82.40	298.00	563.00
5	116	23.83	13.71	41.42	<LOD	7020.00	7.00	21.30	92.47	282.08	910.00
6+	214	26.29	20.40	33.87	<LOD	5830.00	11.61	31.40	66.00	174.00	353.52

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*NOTE: Classification and Regression Tree for Genistein presented in the text

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APPENDIX 11: PCB138

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Table 1: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by age category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Age 5-11	-	-	-	-	-	-	-	-	-	-	-
Age 12-19	1417	<LOD	<LOD	<LOD	<LOD	348.00	<LOD	<LOD	<LOD	<LOD	<LOD
Age 20-40	1098	<LOD	<LOD	<LOD	<LOD	187.00	<LOD	<LOD	<LOD	<LOD	<LOD
Age 41-55	650	<LOD	<LOD	<LOD	<LOD	381.00	<LOD	<LOD	<LOD	60.60	80.50
Age 55+	1058	42.92	<LOD	45.74	<LOD	487.00	<LOD	43.40	68.70	101.00	130.00

Table 2: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Occupation

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Executive, Administrators, & Managers	129	<LOD	<LOD	<LOD	<LOD	164.00	<LOD	<LOD	<LOD	48.50	64.30
Management Related Occupations	50	<LOD	<LOD	<LOD	<LOD	306.00	<LOD	<LOD	<LOD	48.00	71.20
Engineers, Architects, and Scientists	62	<LOD	<LOD	<LOD	<LOD	162.00	<LOD	<LOD	<LOD	55.70	80.50
Health Diagnosing, Assessing & Treating Occupatic	39	<LOD	<LOD	<LOD	<LOD	52.70	<LOD	<LOD	<LOD	<LOD	45.20
Teachers	56	<LOD	<LOD	<LOD	<LOD	200.00	<LOD	<LOD	45.90	72.20	113.00
Writers, Artists, Entertainers & Athletes	28	<LOD	<LOD	<LOD	<LOD	55.90	<LOD	<LOD	<LOD	49.70	50.60
Other Professional Speciality Occupations	46	<LOD	<LOD	<LOD	<LOD	132.00	<LOD	<LOD	<LOD	60.30	71.70
Technicians and Related Supported Occupations	56	<LOD	<LOD	<LOD	<LOD	119.00	<LOD	<LOD	<LOD	<LOD	44.30
Supervisors and Proprietors, Sales Occupations	34	<LOD	<LOD	<LOD	<LOD	104.00	<LOD	<LOD	<LOD	57.30	69.20
Sales Representatives, finance, business & commodi	36	<LOD	<LOD	<LOD	<LOD	77.30	<LOD	<LOD	50.20	63.60	69.40
Sales Workers, retail & personal services	157	<LOD	<LOD	<LOD	<LOD	210.00	<LOD	<LOD	<LOD	57.00	71.80
Secretaries, Stenographers, and typists	31	<LOD	<LOD	<LOD	<LOD	64.80	<LOD	<LOD	<LOD	47.50	60.60
Information Clerks	32	<LOD	<LOD	<LOD	<LOD	71.70	<LOD	<LOD	<LOD	53.50	54.50
Records Processing Occupations	42	<LOD	<LOD	<LOD	<LOD	96.10	<LOD	<LOD	<LOD	50.80	50.80
Material Recording, Scheduling, and distributing cler	32	<LOD	<LOD	<LOD	<LOD	120.00	<LOD	<LOD	<LOD	58.80	58.80
Miscellaneous administrative support occupations	112	<LOD	<LOD	<LOD	<LOD	138.00	<LOD	<LOD	<LOD	49.70	72.10
Private Household Occupations	19	<LOD	<LOD	43.63	<LOD	85.20	<LOD	<LOD	<LOD	55.70	85.20
Protective Service Occupations	37	<LOD	<LOD	<LOD	<LOD	152.00	<LOD	<LOD	<LOD	85.80	91.70
Waiters and Waitresses	39	<LOD	<LOD	<LOD	<LOD	226.00	<LOD	<LOD	<LOD	<LOD	<LOD
Cooks	44	<LOD	<LOD	<LOD	<LOD	177.00	<LOD	<LOD	42.00	48.00	63.40
Miscellaneous food preparation and service occupat	70	<LOD	<LOD	<LOD	<LOD	112.00	<LOD	<LOD	<LOD	<LOD	69.60
Health Service Occupation	56	<LOD	<LOD	<LOD	<LOD	279.00	<LOD	<LOD	46.90	89.20	110.00
Cleaning and Building Service Occupations	68	<LOD	<LOD	<LOD	<LOD	246.00	<LOD	<LOD	44.10	58.00	62.20
Personal Service Occupations	45	<LOD	<LOD	<LOD	<LOD	119.00	<LOD	<LOD	<LOD	62.30	103.00
Farm Operators, Managers and Supervisors	11	<LOD	<LOD	<LOD	<LOD	114.00	<LOD	49.00	62.20	62.20	114.00
Farm and Nursery Workers	26	<LOD	<LOD	54.04	<LOD	275.00	<LOD	<LOD	<LOD	<LOD	275.00
Related Agricultural, Forestry and Fishing Occupatic	36	<LOD	<LOD	<LOD	<LOD	61.50	<LOD	<LOD	<LOD	<LOD	56.60
Vehicle, and Mobile Equipment Mechanics & Repai	29	<LOD	<LOD	<LOD	<LOD	92.50	<LOD	<LOD	<LOD	50.40	60.10
Other Mechanics and repairers	31	<LOD	<LOD	<LOD	<LOD	97.90	<LOD	<LOD	<LOD	47.70	51.40
Construction traders	94	<LOD	<LOD	<LOD	<LOD	165.00	<LOD	<LOD	<LOD	<LOD	90.50
Extractive and Precision Production Occupations	47	<LOD	<LOD	<LOD	<LOD	78.90	<LOD	<LOD	<LOD	70.80	75.70
Textile, apparel and furnishings machine operators	13	<LOD	<LOD	<LOD	<LOD	123.00	<LOD	<LOD	<LOD	<LOD	<LOD
Machine Operators, Assorted Materials	49	<LOD	<LOD	<LOD	<LOD	114.00	<LOD	<LOD	<LOD	52.40	69.40
Fabricators, Assemblers, Inspectors, and Samplers	32	<LOD	<LOD	<LOD	<LOD	167.00	<LOD	<LOD	<LOD	65.90	116.00
Motor vehicle operators	53	<LOD	<LOD	<LOD	<LOD	250.00	<LOD	<LOD	<LOD	44.80	55.40
Other transportation and material moving occupati	19	<LOD	<LOD	<LOD	<LOD	155.00	<LOD	<LOD	<LOD	<LOD	<LOD
Construction laborers	22	<LOD	<LOD	<LOD	<LOD	113.00	<LOD	<LOD	<LOD	61.40	61.40
Laborers, except constuction	17	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
Frieght, Stock, and Material Movers, hand	40	<LOD	<LOD	<LOD	<LOD	158.00	<LOD	<LOD	<LOD	<LOD	49.20
Other helpers, equipment cleaners, hand packages a	28	<LOD	<LOD	<LOD	<LOD	105.00	<LOD	<LOD	<LOD	<LOD	67.50

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Table 3: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Employment Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Working at a Job or Business	989	<LOD	<LOD	<LOD	<LOD	306.00	<LOD	<LOD	<LOD	55.90	78.90
With a Job but not at Work	48	<LOD	<LOD	47.71	<LOD	130.00	<LOD	<LOD	60.30	95.60	110.00
Looking for Work	48	<LOD	<LOD	<LOD	<LOD	87.00	<LOD	<LOD	<LOD	47.40	51.50
Not working at a job or Business	814	<LOD	<LOD	<LOD	<LOD	487.00	<LOD	<LOD	60.90	92.40	122.00

Table 4: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Income

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
$0-$4 999	99	<LOD	<LOD	<LOD	<LOD	142.00	<LOD	<LOD	<LOD	<LOD	86.70
$ 5000-$9 999	219	<LOD	<LOD	47.71	<LOD	130.00	<LOD	<LOD	60.30	95.60	110.00
$10 000-$14 999	359	<LOD	<LOD	<LOD	<LOD	87.00	<LOD	<LOD	<LOD	47.40	51.50
$15 000-$19 999	313	<LOD	<LOD	<LOD	<LOD	487.00	<LOD	<LOD	60.90	92.40	122.00
$20 000-$24 999	349	<LOD	<LOD	<LOD	<LOD	204.00	<LOD	<LOD	<LOD	64.40	82.60
$25 000-$34 999	490	<LOD	<LOD	<LOD	<LOD	310.00	<LOD	<LOD	<LOD	68.60	97.90
$35 000-$44 999	376	<LOD	<LOD	<LOD	<LOD	348.00	<LOD	<LOD	<LOD	60.40	96.10
$45 000-$54 999	323	<LOD	<LOD	<LOD	<LOD	214.00	<LOD	<LOD	<LOD	49.70	67.90
$55 000-$64 999	266	<LOD	<LOD	<LOD	<LOD	147.00	<LOD	<LOD	<LOD	59.90	91.00
$65 000-$74 999	176	<LOD	<LOD	<LOD	<LOD	204.00	<LOD	<LOD	<LOD	58.80	87.00
$75 000 and over	680	<LOD	<LOD	<LOD	<LOD	238.00	<LOD	<LOD	<LOD	51.90	65.90

Table 5: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Race/Ethnicity

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Non-Hispanic White	1784	<LOD	<LOD	<LOD	<LOD	487.00	<LOD	<LOD	<LOD	63.60	88.70
Non-Hispanic Black	925	<LOD	<LOD	<LOD	<LOD	381.00	<LOD	<LOD	45.60	86.50	124.00
Mexican American	1195	<LOD	<LOD	<LOD	<LOD	348.00	<LOD	<LOD	<LOD	<LOD	44.80
Other Race-Including MultiRacial	123	<LOD	<LOD	<LOD	<LOD	138.00	<LOD	<LOD	<LOD	56.10	78.80
Other Hispanic	196	<LOD	<LOD	<LOD	<LOD	132.00	<LOD	<LOD	<LOD	45.00	72.20

Table 6: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Gender

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Male	1984	<LOD	<LOD	<LOD	<LOD	487.00	<LOD	<LOD	<LOD	59.90	87.10
Female	2239	<LOD	<LOD	<LOD	<LOD	381.00	<LOD	<LOD	<LOD	64.50	87.00

Table 7: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Education

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Less than High School	2197	<LOD	<LOD	<LOD	<LOD	487.00	<LOD	<LOD	<LOD	67.70	90.50
High School Diploma	719	<LOD	<LOD	<LOD	<LOD	275.00	<LOD	<LOD	<LOD	63.40	92.60
More than High School	1302	<LOD	<LOD	<LOD	<LOD	306.00	<LOD	<LOD	<LOD	61.20	81.50

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Table 8: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Marital Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Married	1551	<LOD	<LOD	<LOD	<LOD	338.00	<LOD	<LOD	<LOD	69.40	93.90
Widowed	259	45.98	41.76	50.64	<LOD	487.00	<LOD	48.60	76.20	109.00	147.00
Divorced	204	<LOD	<LOD	<LOD	<LOD	279.00	<LOD	<LOD	<LOD	63.60	81.50
Separated	95	<LOD	<LOD	<LOD	<LOD	205.00	<LOD	<LOD	<LOD	67.00	103.00
Never Married	1429	<LOD	<LOD	<LOD	<LOD	348.00	<LOD	<LOD	<LOD	<LOD	53.30
Living with Partner	158	<LOD	<LOD	<LOD	<LOD	275.00	<LOD	<LOD	<LOD	43.40	54.90

Table 9: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Military Service

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Served in Military	422	<LOD	<LOD	<LOD	<LOD	487.00	<LOD	<LOD	52.40	84.00	108.00
Did Not Serve in Military	2890	<LOD	<LOD	<LOD	<LOD	381.00	<LOD	<LOD	<LOD	62.30	87.70

Table 10: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Country of Birth

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Born in the US	3347	<LOD	<LOD	<LOD	<LOD	487.00	<LOD	<LOD	<LOD	63.60	88.80
Born in Mexico	550	<LOD	<LOD	<LOD	<LOD	348.00	<LOD	<LOD	<LOD	<LOD	<LOD
Born Elsewhere	316	<LOD	<LOD	<LOD	<LOD	338.00	<LOD	<LOD	<LOD	70.80	92.00

Table 11: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Pregnancy Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Pregnant	190	<LOD	<LOD	<LOD	<LOD	136.00	<LOD	<LOD	<LOD	<LOD	<LOD
Not Pregnant	1236	<LOD	<LOD	<LOD	<LOD	381.00	<LOD	<LOD	<LOD	49.30	64.40

Table 12: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Type of Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
A Mobile Home or Trailer	368	<LOD	<LOD	<LOD	<LOD	275.00	<LOD	<LOD	<LOD	46.90	74.20
A detached single family home	2577	<LOD	<LOD	<LOD	<LOD	487.00	<LOD	<LOD	<LOD	63.70	87.10
Attached Single Family Home	317	<LOD	<LOD	<LOD	<LOD	338.00	<LOD	<LOD	41.80	75.90	104.00
An Apartment	849	<LOD	<LOD	<LOD	<LOD	381.00	<LOD	<LOD	<LOD	60.10	92.60
Something Else	40	<LOD	<LOD	<LOD	<LOD	207.00	<LOD	<LOD	52.80	104.00	119.00
Dormitory	24	<LOD	.	.	<LOD	46.20	<LOD	<LOD	<LOD	<LOD	<LOD

Table 13: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Year Home Built

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
1990-present	552	<LOD	<LOD	<LOD	<LOD	238.00	<LOD	<LOD	<LOD	56.30	82.20
1978-1989	734	<LOD	<LOD	<LOD	<LOD	246.00	<LOD	<LOD	<LOD	55.70	83.70
1960-1977	756	<LOD	<LOD	<LOD	<LOD	381.00	<LOD	<LOD	<LOD	63.70	83.70
1950-1959	441	<LOD	<LOD	<LOD	<LOD	487.00	<LOD	<LOD	46.90	76.20	117.00
1940-1949	217	<LOD	<LOD	<LOD	<LOD	259.00	<LOD	<LOD	<LOD	70.50	99.60
before 1940	467	<LOD	<LOD	<LOD	<LOD	338.00	<LOD	<LOD	<LOD	70.10	106.00

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Table 14: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Water Source

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Private-Public Water Company	3761	<LOD	<LOD	<LOD	<LOD	487.00	<LOD	<LOD	<LOD	61.80	88.80
Private Public Well	392	<LOD	<LOD	<LOD	<LOD	275.00	<LOD	<LOD	<LOD	64.40	82.50
Some other Water Source	6	<LOD	.	.	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD

Table 15: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Helpings of Protein per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	16	56.35	<LOD	76.53	<LOD	107.00	42.90	60.90	86.50	107.00	107.00
1	164	<LOD	<LOD	44.37	<LOD	279.00	<LOD	<LOD	57.30	85.20	120.00
2	191	<LOD	<LOD	44.50	<LOD	310.00	<LOD	<LOD	60.70	85.80	109.00
3+	84	<LOD	<LOD	48.96	<LOD	238.00	<LOD	<LOD	54.70	108.00	158.00

Table 16: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Helpings of Milk/Dairy per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	89	<LOD	<LOD	<LOD	<LOD	250.00	<LOD	<LOD	55.10	83.60	120.00
1	193	<LOD	<LOD	46.57	<LOD	310.00	<LOD	<LOD	61.70	89.30	117.00
2	123	<LOD	<LOD	42.00	<LOD	158.00	<LOD	<LOD	53.60	95.50	108.00
3+	50	<LOD	<LOD	49.81	<LOD	162.00	<LOD	<LOD	68.70	130.00	141.00

Table 17: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Helpings of Fruit per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	53	<LOD	<LOD	46.10	<LOD	250.00	<LOD	<LOD	53.50	108.00	130.00
1	205	<LOD	<LOD	43.25	<LOD	310.00	<LOD	<LOD	57.30	85.80	108.00
2	128	<LOD	<LOD	45.52	<LOD	207.00	<LOD	<LOD	56.00	95.60	120.00
3+	70	<LOD	<LOD	49.98	<LOD	159.00	<LOD	<LOD	69.40	95.50	149.00

Table 18: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Helpings of Vegetables per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	56	<LOD	<LOD	49.87	<LOD	250.00	<LOD	<LOD	49.20	120.00	138.00
1	197	<LOD	<LOD	43.79	<LOD	279.00	<LOD	<LOD	57.30	85.80	108.00
2	191	<LOD	<LOD	44.50	<LOD	310.00	<LOD	<LOD	60.70	85.80	109.00
3+	55	<LOD	<LOD	49.77	<LOD	162.00	<LOD	<LOD	65.70	109.00	158.00

Table 19: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Helpings of Bread/grain per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	28	41.69	<LOD	71.65	<LOD	310.00	<LOD	46.50	70.20	138.00	146.00
1	164	43.79	<LOD	48.37	<LOD	279.00	<LOD	41.90	66.40	95.50	151.00
2	165	<LOD	<LOD	<LOD	<LOD	238.00	<LOD	<LOD	55.80	77.30	95.60
3+	99	<LOD	<LOD	42.32	<LOD	162.00	<LOD	<LOD	53.50	95.90	108.00

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Table 20: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Servings of Beans per month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	452	<LOD	<LOD	<LOD	<LOD	194.00	<LOD	<LOD	<LOD	64.90	82.60
1 to 5	1786	<LOD	<LOD	<LOD	<LOD	306.00	<LOD	<LOD	43.60	69.60	94.60
6 to 10	842	<LOD	<LOD	<LOD	<LOD	487.00	<LOD	<LOD	45.50	83.90	114.00
11 to 15	556	<LOD	<LOD	<LOD	<LOD	214.00	<LOD	<LOD	<LOD	60.00	86.10
15+	784	<LOD	<LOD	<LOD	<LOD	226.00	<LOD	<LOD	<LOD	56.10	83.00

Table 21: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Fish Consumed in Past Month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	1132	<LOD	<LOD	<LOD	<LOD	381.00	<LOD	<LOD	<LOD	59.00	82.60
No	735	<LOD	<LOD	<LOD	<LOD	348.00	<LOD	<LOD	<LOD	<LOD	55.70

Table 22: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Shellfish Consumed in Past Month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	836	<LOD	<LOD	<LOD	<LOD	279.00	<LOD	<LOD	<LOD	47.10	66.80
No	1031	<LOD	<LOD	<LOD	<LOD	381.00	<LOD	<LOD	<LOD	59.30	89.30

Table 23: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Body Mass Index Category

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Under Weight	122	<LOD	<LOD	<LOD	<LOD	204.00	<LOD	<LOD	46.90	83.00	115.00
Healthy Weight	2565	<LOD	<LOD	<LOD	<LOD	487.00	<LOD	<LOD	<LOD	60.10	83.70
Over Weight	3605	<LOD	<LOD	<LOD	<LOD	381.00	<LOD	<LOD	<LOD	67.70	91.70

Table 24: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Ever told you have Weak/Failing Kidneys

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	40	<LOD	<LOD	<LOD	<LOD	205.00	<LOD	<LOD	42.90	72.60	86.70
No	1220	<LOD	<LOD	<LOD	<LOD	381.00	<LOD	<LOD	<LOD	55.70	80.50

Table 25: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by total number of beers consumed per month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	800	<LOD	<LOD	<LOD	<LOD	310.00	<LOD	<LOD	<LOD	62.30	89.40
0-5	269	<LOD	<LOD	<LOD	<LOD	185.00	<LOD	<LOD	<LOD	44.30	61.10
6 to 10	61	<LOD	<LOD	<LOD	<LOD	381.00	<LOD	<LOD	<LOD	71.70	85.80
11 to 15	40	<LOD	<LOD	<LOD	<LOD	95.50	<LOD	<LOD	<LOD	42.90	53.70
16+	91	<LOD	<LOD	<LOD	<LOD	172.00	<LOD	<LOD	<LOD	<LOD	55.70

Table 26: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Water (gm)/day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0 to 896	2567	<LOD	<LOD	<LOD	<LOD	338.00	<LOD	<LOD	<LOD	71.70	91.50
897-1792g	1789	<LOD	<LOD	<LOD	<LOD	487.00	<LOD	<LOD	<LOD	67.00	89.40
>1792g	1217	<LOD	<LOD	<LOD	<LOD	381.00	<LOD	<LOD	<LOD	64.30	93.50

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Table 27: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Alcohol (gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	5103	<LOD	<LOD	<LOD	<LOD	487.00	<LOD	<LOD	<LOD	64.40	91.70
0-28	703	<LOD	<LOD	<LOD	<LOD	381.00	<LOD	<LOD	<LOD	72.60	94.40
>28	460	<LOD	<LOD	<LOD	<LOD	226.00	<LOD	<LOD	<LOD	63.50	78.90

Table 28: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Caffeine(gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	1185	<LOD	<LOD	<LOD	<LOD	259.00	<LOD	<LOD	<LOD	56.00	83.00
0-400	4680	<LOD	<LOD	<LOD	<LOD	487.00	<LOD	<LOD	<LOD	68.00	90.50
400+	401	<LOD	<LOD	<LOD	<LOD	338.00	<LOD	<LOD	<LOD	63.70	91.70

Table 29: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Fiber (gm) /day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0g	14	<LOD	<LOD	<LOD	<LOD	60.10	<LOD	<LOD	<LOD	<LOD	60.10
1 to 10	2075	<LOD	<LOD	<LOD	<LOD	310.00	<LOD	<LOD	<LOD	67.00	92.60
11 to 24	3341	<LOD	<LOD	<LOD	<LOD	381.00	<LOD	<LOD	<LOD	64.80	89.30
25+	836	<LOD	<LOD	<LOD	<LOD	487.00	<LOD	<LOD	<LOD	65.70	95.60

Table 30: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Breastfeeding Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Currently Breastfeeding	40	<LOD	<LOD	<LOD	<LOD	59.30	<LOD	<LOD	<LOD	<LOD	<LOD
Not currently Breastfeeding	118	<LOD	<LOD	<LOD	<LOD	88.70	<LOD	<LOD	<LOD	<LOD	<LOD

Table 31: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Liver Conditions

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Ever had a liver condition	85	<LOD	<LOD	<LOD	<LOD	381.00	<LOD	<LOD	<LOD	56.60	97.80
Never had a liver condition	2716	<LOD	<LOD	<LOD	<LOD	487.00	<LOD	<LOD	<LOD	68.60	93.50

Table 32: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Anyone Smoke in the Home

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	870	<LOD	<LOD	<LOD	<LOD	310.00	<LOD	<LOD	<LOD	56.50	78.80
No	3306	<LOD	<LOD	<LOD	<LOD	487.00	<LOD	<LOD	<LOD	64.30	90.50

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Table 33: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Ever told that you have Diabetes?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	262	<LOD	<LOD	46.13	<LOD	381.00	<LOD	<LOD	65.00	102.00	147.00
No	3928	<LOD	<LOD	<LOD	<LOD	487.00	<LOD	<LOD	<LOD	59.80	82.50

Table 34: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Currently Taking Birth Control Pills?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	126	<LOD	<LOD	<LOD	<LOD	105.00	<LOD	<LOD	<LOD	<LOD	51.10
No	369	<LOD	<LOD	<LOD	<LOD	119.00	<LOD	<LOD	<LOD	42.00	56.50

Table 35: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Now Use Depo-Provera Injectables

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	54	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
No	131	<LOD	<LOD	<LOD	<LOD	108.00	<LOD	<LOD	<LOD	42.40	77.90

Table 36: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Currently Taking Estrogen Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	136	<LOD	<LOD	<LOD	<LOD	158.00	<LOD	<LOD	55.00	94.40	113.00
No	108	<LOD	<LOD	<LOD	<LOD	279.00	<LOD	<LOD	64.40	92.60	125.00

Table 37: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Currently Taking Projestin Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	30	<LOD	<LOD	<LOD	<LOD	73.90	<LOD	<LOD	<LOD	56.50	70.70
No	53	<LOD	<LOD	<LOD	<LOD	130.00	<LOD	<LOD	50.80	88.80	119.00

Table 38: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Currently Taking Estrogen-Projestin Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	38	<LOD	<LOD	<LOD	<LOD	138.00	<LOD	<LOD	50.20	68.70	120.00
No	25	<LOD	<LOD	46.93	<LOD	147.00	<LOD	<LOD	53.00	130.00	130.00

Table 39: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Taken Prescription Medication in Past Month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	2837	<LOD	<LOD	<LOD	<LOD	348.00	<LOD	<LOD	<LOD	49.00	72.20
No	3678	<LOD	<LOD	<LOD	<LOD	487.00	<LOD	<LOD	<LOD	60.20	71.70

Table 40: Concentrations of 2,2',3,4,4',5-hexachlorobiphenyl (PCB138) in ng/g of lipid found in blood serum by Number of Prescription Medications Taken

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	3679	<LOD	<LOD	<LOD	<LOD	348.00	<LOD	<LOD	<LOD	49.00	72.20
1	1068	<LOD	<LOD	<LOD	<LOD	487.00	<LOD	<LOD	<LOD	60.20	71.70
2	575	<LOD	<LOD	<LOD	<LOD	238.00	<LOD	<LOD	46.10	82.50	97.60
3	377	<LOD	<LOD	<LOD	<LOD	338.00	<LOD	<LOD	55.70	87.00	114.00
4	260	<LOD	<LOD	<LOD	<LOD	381.00	<LOD	<LOD	57.70	83.00	107.00
5	208	<LOD	<LOD	42.96	<LOD	246.00	<LOD	<LOD	57.40	102.00	120.00
6+	349	<LOD	<LOD	<LOD	<LOD	219.00	<LOD	<LOD	57.10	94.40	130.00

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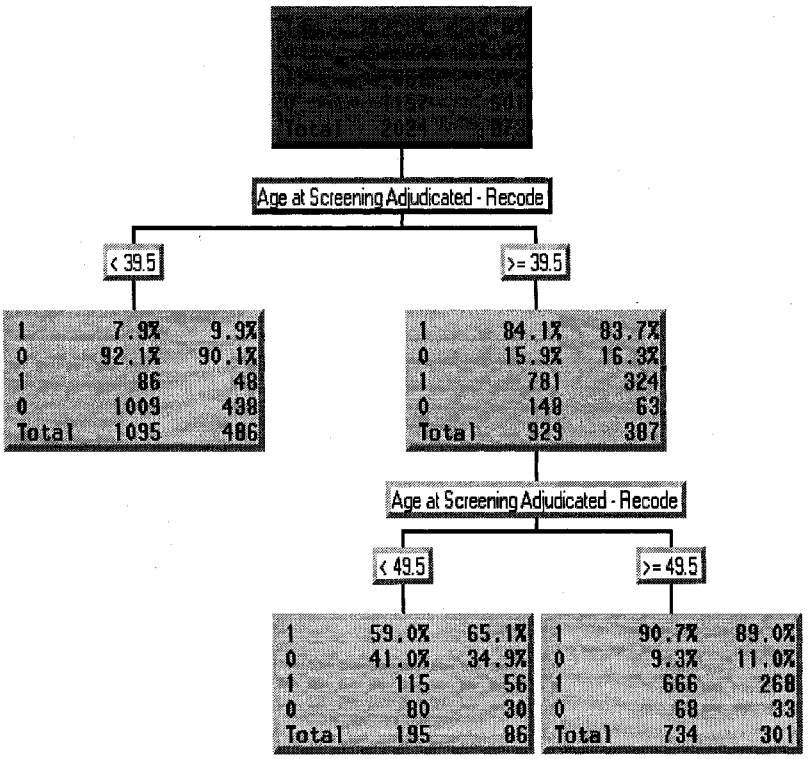
Figure 1: Classification and Regression Tree for PCB138



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APPENDIX 12: PCB153

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Table 1: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g by age category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Age 5-11	-	-	-	-	-	-	-	-	-	-	-
Age 12-19	1425	<LOD	<LOD	<LOD	<LOD	371.00	<LOD	<LOD	<LOD	<LOD	<LOD
Age 20-40	1098	<LOD	<LOD	<LOD	<LOD	209.00	<LOD	<LOD	<LOD	<LOD	<LOD
Age 41-55	650	<LOD	<LOD	<LOD	<LOD	524.00	<LOD	<LOD	60.20	87.80	118.00
Age 55+	1059	65.90	62.49	69.49	<LOD	708.00	<LOD	65.10	96.70	139.00	177.00

Table 2: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Occupation

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Executive, Administrators, & Managers	129	<LOD	<LOD	<LOD	<LOD	195.00	<LOD	<LOD	<LOD	73.80	87.30
Management Related Occupations	50	<LOD	<LOD	<LOD	<LOD	316.00	<LOD	<LOD	58.00	70.00	80.00
Engineers, Architects, and Scientists	63	<LOD	<LOD	<LOD	<LOD	205.00	<LOD	<LOD	<LOD	82.60	102.00
Health Diagnosing, Assessing & Treating Occupations	39	<LOD	<LOD	<LOD	<LOD	76.60	<LOD	<LOD	<LOD	<LOD	69.60
Teachers	56	<LOD	<LOD	<LOD	<LOD	352.00	<LOD	<LOD	59.00	102.00	192.00
Writers, Artists, Entertainers & Athletes	28	<LOD	<LOD	<LOD	<LOD	105.00	<LOD	<LOD	<LOD	61.50	70.30
Other Professional Speciality Occupations	45	<LOD	<LOD	<LOD	<LOD	167.00	<LOD	<LOD	57.50	104.00	122.00
Technicians and Related Supported Occupations	56	<LOD	<LOD	<LOD	<LOD	180.00	<LOD	<LOD	<LOD	62.00	75.50
Supervisors and Proprietors, Sales Occupations	34	<LOD	<LOD	<LOD	<LOD	98.00	<LOD	<LOD	<LOD	87.90	95.10
Sales Representatives, finance, business & commodities	37	<LOD	<LOD	<LOD	<LOD	121.00	<LOD	<LOD	65.00	86.20	96.10
Sales Workers, retail & personal services	157	<LOD	<LOD	<LOD	<LOD	245.00	<LOD	<LOD	<LOD	73.70	108.00
Secretaries, Stenographers, and typists	31	<LOD	<LOD	<LOD	<LOD	99.40	<LOD	<LOD	<LOD	59.90	99.40
Information Clerks	33	<LOD	<LOD	<LOD	<LOD	173.00	<LOD	<LOD	<LOD	69.00	69.00
Records Processing Occupations	41	<LOD	<LOD	<LOD	<LOD	104.00	<LOD	<LOD	<LOD	64.60	66.70
Material Recording, Scheduling, and distributing clerks	32	<LOD	<LOD	<LOD	<LOD	129.00	<LOD	<LOD	<LOD	87.80	87.80
Miscellaneous administrative support occupations	112	<LOD	<LOD	<LOD	<LOD	196.00	<LOD	<LOD	<LOD	74.50	109.00
Private Household Occupations	19	<LOD	<LOD	59.39	<LOD	122.00	<LOD	<LOD	<LOD	77.90	122.00
Protective Service Occupations	37	<LOD	<LOD	<LOD	<LOD	174.00	<LOD	<LOD	<LOD	111.00	115.00
Waiters and Waitresses	39	<LOD	<LOD	<LOD	<LOD	268.00	<LOD	<LOD	<LOD	<LOD	59.40
Cooks	44	<LOD	<LOD	<LOD	<LOD	208.00	<LOD	<LOD	57.50	91.80	94.20
Miscellaneous food preparation and service occupations	70	<LOD	<LOD	<LOD	<LOD	307.00	<LOD	<LOD	<LOD	<LOD	84.30
Health Service Occupation	56	<LOD	<LOD	<LOD	<LOD	453.00	<LOD	<LOD	57.20	152.00	221.00
Cleaning and Building Service Occupations	68	<LOD	<LOD	<LOD	<LOD	321.00	<LOD	<LOD	58.90	83.90	105.00
Personal Service Occupations	45	<LOD	<LOD	<LOD	<LOD	187.00	<LOD	<LOD	<LOD	94.30	145.00
Farm Operators, Managers and Supervisors	11	<LOD	<LOD	<LOD	<LOD	150.00	<LOD	66.80	128.00	128.00	150.00
Farm and Nursery Workers	26	<LOD	<LOD	65.47	<LOD	255.00	<LOD	<LOD	<LOD	<LOD	255.00
Related Agricultural, Forestry and Fishing Occupations	36	<LOD	<LOD	<LOD	<LOD	98.30	<LOD	<LOD	<LOD	<LOD	<LOD
Vehicle, and Mobile Equipment Mechanics & Repairs	29	<LOD	<LOD	<LOD	<LOD	126.00	<LOD	<LOD	62.70	72.10	98.00
Other Mechanics and repairers	31	<LOD	<LOD	<LOD	<LOD	146.00	<LOD	<LOD	57.70	68.40	111.00
Construction traders	95	<LOD	<LOD	<LOD	<LOD	222.00	<LOD	<LOD	<LOD	64.20	137.00
Extractive and Precision Production Occupations	47	<LOD	<LOD	<LOD	<LOD	143.00	<LOD	<LOD	<LOD	85.30	88.30
Textile, apparel and furnishings machine operators	13	<LOD	<LOD	<LOD	<LOD	202.00	<LOD	<LOD	<LOD	60.40	60.40
Machine Operators, Assorted Materials	49	<LOD	<LOD	<LOD	<LOD	139.00	<LOD	<LOD	<LOD	63.50	91.60
Fabricators, Assemblers, Inspectors, and Samplers	32	<LOD	<LOD	<LOD	<LOD	246.00	<LOD	<LOD	<LOD	84.70	208.00
Motor vehicle operators	53	<LOD	<LOD	<LOD	<LOD	299.00	<LOD	<LOD	<LOD	62.90	87.10
Other transportation and material moving occupations	19	<LOD	<LOD	<LOD	<LOD	226.00	<LOD	<LOD	<LOD	66.40	66.40
Construction laborers	22	<LOD	<LOD	<LOD	<LOD	202.00	<LOD	<LOD	57.10	83.00	83.00
Laborers, except constuction	17	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
Frieght, Stock, and Material Movers, hand	41	<LOD	<LOD	<LOD	<LOD	248.00	<LOD	<LOD	<LOD	<LOD	62.30
Other helpers, equipment cleaners, hand packages and laborers	28	<LOD	<LOD	<LOD	<LOD	150.00	<LOD	<LOD	<LOD	<LOD	81.30

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Table 3: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Employment Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Working at a Job or Business	995	<LOD	<LOD	<LOD	<LOD	316.00	<LOD	<LOD	<LOD	75.50	104.00
With a Job but not at Work	48	<LOD	<LOD	70.24	<LOD	221.00	<LOD	58.10	76.50	122.00	192.00
Looking for Work	49	<LOD	<LOD	<LOD	<LOD	161.00	<LOD	<LOD	<LOD	62.10	67.10
Not working at a job or Business	817	<LOD	<LOD	<LOD	<LOD	708.00	<LOD	<LOD	85.50	126.00	158.00

Table 4: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Income

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
$0-$4 999	99	<LOD	<LOD	<LOD	<LOD	200.00	<LOD	<LOD	<LOD	<LOD	111.00
$ 5000-$9 999	219	<LOD	<LOD	70.24	<LOD	221.00	<LOD	58.10	76.50	122.00	192.00
$10 000-$14 999	359	<LOD	<LOD	<LOD	<LOD	161.00	<LOD	<LOD	<LOD	62.10	67.10
$15 000-$19 999	314	<LOD	<LOD	<LOD	<LOD	708.00	<LOD	<LOD	85.50	126.00	158.00
$20 000-$24 999	350	<LOD	<LOD	<LOD	<LOD	296.00	<LOD	<LOD	55.70	87.70	110.00
$25 000-$34 999	492	<LOD	<LOD	<LOD	<LOD	453.00	<LOD	<LOD	55.80	100.00	138.00
$35 000-$44 999	376	<LOD	<LOD	<LOD	<LOD	371.00	<LOD	<LOD	<LOD	86.50	111.00
$45 000-$54 999	323	<LOD	<LOD	<LOD	<LOD	433.00	<LOD	<LOD	<LOD	69.10	95.90
$55 000-$64 999	267	<LOD	<LOD	<LOD	<LOD	227.00	<LOD	<LOD	58.00	88.00	129.00
$65 000-$74 999	176	<LOD	<LOD	<LOD	<LOD	245.00	<LOD	<LOD	<LOD	83.00	111.00
$75 000 and over	684	<LOD	<LOD	<LOD	<LOD	427.00	<LOD	<LOD	<LOD	76.60	99.40

Table 5: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Race/Ethnicity

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Non-Hispanic White	1786	<LOD	<LOD	<LOD	<LOD	708.00	<LOD	<LOD	57.70	89.50	122.00
Non-Hispanic Black	927	<LOD	<LOD	<LOD	<LOD	524.00	<LOD	<LOD	68.00	127.00	183.00
Mexican American	1201	<LOD	<LOD	<LOD	<LOD	371.00	<LOD	<LOD	<LOD	<LOD	66.70
Other Race-Including MultiRacial	122	<LOD	<LOD	<LOD	<LOD	196.00	<LOD	<LOD	<LOD	87.30	105.00
Other Hispanic	196	<LOD	<LOD	<LOD	<LOD	209.00	<LOD	<LOD	<LOD	61.30	98.90

Table 6: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Gender

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Male	1991	<LOD	<LOD	<LOD	<LOD	708.00	<LOD	<LOD	<LOD	88.00	122.00
Female	2241	<LOD	<LOD	<LOD	<LOD	524.00	<LOD	<LOD	<LOD	91.80	126.00

Table 7: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Education

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Less than High School	2204	<LOD	<LOD	<LOD	<LOD	708.00	<LOD	<LOD	<LOD	92.80	136.00
High School Diploma	721	<LOD	<LOD	<LOD	<LOD	347.00	<LOD	<LOD	56.70	92.80	128.00
More than High School	1302	<LOD	<LOD	<LOD	<LOD	433.00	<LOD	<LOD	56.00	87.30	115.00

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Table 8: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Marital Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Married	1550	<LOD	<LOD	<LOD	<LOD	467.00	<LOD	<LOD	60.60	97.20	129.00
Widowed	259	68.98	62.90	75.66	<LOD	708.00	<LOD	72.50	109.00	159.00	190.00
Divorced	204	<LOD	<LOD	<LOD	<LOD	453.00	<LOD	<LOD	60.60	88.30	132.00
Separated	95	<LOD	<LOD	<LOD	<LOD	323.00	<LOD	<LOD	57.10	101.00	140.00
Never Married	1435	<LOD	<LOD	<LOD	<LOD	371.00	<LOD	<LOD	<LOD	<LOD	79.10
Living with Partner	160	<LOD	<LOD	<LOD	<LOD	287.00	<LOD	<LOD	<LOD	65.00	87.90

Table 9: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Military Service

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Served in Military	425	<LOD	<LOD	<LOD	<LOD	708.00	<LOD	<LOD	74.50	114.00	150.00
Did Not Serve in Military	2892	<LOD	<LOD	<LOD	<LOD	524.00	<LOD	<LOD	<LOD	87.90	124.00

Table 10: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Country of Birth

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Born in the US	3353	<LOD	<LOD	<LOD	<LOD	708.00	<LOD	<LOD	<LOD	89.40	123.00
Born in Mexico	554	<LOD	<LOD	<LOD	<LOD	371.00	<LOD	<LOD	<LOD	<LOD	<LOD
Born Elsewhere	315	<LOD	<LOD	<LOD	<LOD	467.00	<LOD	<LOD	61.30	105.00	143.00

Table 11: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Pregnancy Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Pregnant	189	<LOD	<LOD	<LOD	<LOD	164.00	<LOD	<LOD	<LOD	<LOD	<LOD
Not Pregnant	1239	<LOD	<LOD	<LOD	<LOD	524.00	<LOD	<LOD	<LOD	67.50	90.30

Table 12: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Type of Home

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
A Mobile Home or Trailer	368	<LOD	<LOD	<LOD	<LOD	255.00	<LOD	<LOD	<LOD	73.50	92.10
A detached single family home	2582	<LOD	<LOD	<LOD	<LOD	708.00	<LOD	<LOD	56.70	90.70	123.00
Attached Single Family Home	317	<LOD	<LOD	<LOD	<LOD	467.00	<LOD	<LOD	60.40	95.10	127.00
An Apartment	853	<LOD	<LOD	<LOD	<LOD	524.00	<LOD	<LOD	<LOD	89.00	133.00
Something Else	40	<LOD	<LOD	<LOD	<LOD	433.00	<LOD	<LOD	80.50	128.00	180.00
Dormitory	24	<LOD	.	.	<LOD	64.70	<LOD	<LOD	<LOD	<LOD	<LOD

Table 13: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Year Home Built

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
1990-present	553	<LOD	<LOD	<LOD	<LOD	427.00	<LOD	<LOD	<LOD	76.50	106.00
1978-1989	734	<LOD	<LOD	<LOD	<LOD	321.00	<LOD	<LOD	<LOD	87.80	110.00
1960-1977	756	<LOD	<LOD	<LOD	<LOD	524.00	<LOD	<LOD	60.60	96.00	126.00
1950-1959	442	<LOD	<LOD	<LOD	<LOD	708.00	<LOD	<LOD	69.80	105.00	173.00
1940-1949	216	<LOD	<LOD	<LOD	<LOD	445.00	<LOD	<LOD	59.80	102.00	148.00
before 1940	469	<LOD	<LOD	<LOD	<LOD	467.00	<LOD	<LOD	60.20	95.10	139.00

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Table 14: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Water Source

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Private-Public Water Company	3771	<LOD	<LOD	<LOD	<LOD	708.00	<LOD	<LOD	<LOD	88.40	126.00
Private Public Well	391	<LOD	<LOD	<LOD	<LOD	255.00	<LOD	<LOD	60.30	94.10	113.00
Some other Water Source	6	<LOD	.	.	<LOD	57.90	<LOD	<LOD	<LOD	<LOD	57.90

Table 15: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Helpings of Protein per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	16	87.99	60.27	128.45	<LOD	171.00	57.20	89.40	130.00	148.00	171.00
1	164	64.46	57.91	71.76	<LOD	453.00	<LOD	63.90	89.20	146.00	165.00
2	191	61.14	<LOD	70.06	<LOD	433.00	<LOD	63.50	92.00	127.00	164.00
3+	84	65.41	<LOD	83.55	<LOD	427.00	<LOD	60.30	98.70	159.00	204.00

Table 16: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Helpings of Milk/Dairy per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	89	58.75	<LOD	71.56	<LOD	347.00	<LOD	59.20	84.40	139.00	149.00
1	193	65.53	58.63	73.24	<LOD	453.00	<LOD	65.00	96.10	138.00	165.00
2	123	60.84	<LOD	69.18	<LOD	259.00	<LOD	60.30	81.70	150.00	171.00
3+	50	72.85	62.20	85.33	<LOD	204.00	<LOD	72.80	115.00	172.00	188.00

Table 17: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Helpings of Fruit per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	53	62.32	<LOD	75.40	<LOD	299.00	<LOD	62.60	84.40	136.00	172.00
1	205	63.19	57.33	69.64	<LOD	453.00	<LOD	61.20	91.70	139.00	164.00
2	128	62.37	<LOD	71.12	<LOD	433.00	<LOD	61.20	93.00	146.00	173.00
3+	70	67.18	<LOD	82.84	<LOD	347.00	<LOD	70.10	96.10	157.00	194.00

Table 18: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Helpings of Vegetables per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	56	<LOD	<LOD	73.28	<LOD	299.00	<LOD	<LOD	74.50	149.00	177.00
1	197	63.80	58.17	69.98	<LOD	453.00	<LOD	63.90	91.70	133.00	159.00
2	191	61.14	<LOD	70.06	<LOD	433.00	<LOD	63.50	92.00	127.00	164.00
3+	55	65.56	57.90	74.24	<LOD	259.00	<LOD	67.70	91.80	156.00	198.00

Table 19: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Helpings of Bread/grain per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	28	73.89	<LOD	108.42	<LOD	410.00	<LOD	72.80	110.00	177.00	259.00
1	164	70.40	64.29	77.09	<LOD	453.00	<LOD	67.20	101.00	153.00	198.00
2	165	60.83	<LOD	66.91	<LOD	427.00	<LOD	59.80	91.40	125.00	149.00
3+	99	<LOD	<LOD	67.71	<LOD	347.00	<LOD	<LOD	84.00	136.00	172.00

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Table 20: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Servings of Beans per month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	452	<LOD	<LOD	<LOD	<LOD	307.00	<LOD	<LOD	<LOD	95.90	102.00
1 to 5	1796	<LOD	<LOD	<LOD	<LOD	316.00	<LOD	<LOD	61.00	95.40	124.00
6 to 10	852	<LOD	<LOD	<LOD	<LOD	708.00	<LOD	<LOD	63.80	115.00	148.00
11 to 15	560	<LOD	<LOD	<LOD	<LOD	296.00	<LOD	<LOD	<LOD	83.50	118.00
15+	786	<LOD	<LOD	<LOD	<LOD	268.00	<LOD	<LOD	<LOD	83.60	110.00

Table 21: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Fish Consumed in Past Month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	1129	<LOD	<LOD	<LOD	<LOD	524.00	<LOD	<LOD	56.70	91.80	127.00
No	734	<LOD	<LOD	<LOD	<LOD	371.00	<LOD	<LOD	<LOD	58.90	77.90

Table 22: 2,4- D and Shellfish Consumed in Past Month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	833	<LOD	<LOD	<LOD	<LOD	453.00	<LOD	<LOD	<LOD	73.50	100.00
No	1030	<LOD	<LOD	<LOD	<LOD	524.00	<LOD	<LOD	<LOD	87.70	137.00

Table 23: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Body Mass Index Category

	N	Geometric	95% CI		Min	Max	Percentiles				
L_PCB153LA		Mean	Lower	Upper			25	50	75	90	95
Under Weight	122	<LOD	<LOD	<LOD	<LOD	296.00	<LOD	<LOD	70.30	124.00	158.00
Healthy Weight	2578	<LOD	<LOD	<LOD	<LOD	708.00	<LOD	<LOD	<LOD	87.60	125.00
Over Weight	3612	<LOD	<LOD	<LOD	<LOD	524.00	<LOD	<LOD	57.50	93.00	122.00

Table 24: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Ever told you have Weak/Failing Kidneys

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	40	<LOD	<LOD	58.78	<LOD	323.00	<LOD	<LOD	62.90	115.00	135.00
No	1217	<LOD	<LOD	<LOD	<LOD	524.00	<LOD	<LOD	<LOD	86.20	123.00

Table 25: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and total number of beers consumed per month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	798	<LOD	<LOD	<LOD	<LOD	453.00	<LOD	<LOD	58.00	98.70	139.00
0-5	268	<LOD	<LOD	<LOD	<LOD	226.00	<LOD	<LOD	<LOD	72.10	101.00
6 to 10	61	<LOD	<LOD	<LOD	<LOD	524.00	<LOD	<LOD	<LOD	115.00	122.00
11 to 15	40	<LOD	<LOD	<LOD	<LOD	157.00	<LOD	<LOD	<LOD	64.40	73.90
16+	91	<LOD	<LOD	<LOD	<LOD	247.00	<LOD	<LOD	<LOD	72.80	82.60

Table 26: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Water (gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0 to 896	2575	<LOD	<LOD	<LOD	<LOD	467.00	<LOD	<LOD	59.50	94.50	127.00
897-1792g	1790	<LOD	<LOD	<LOD	<LOD	708.00	<LOD	<LOD	62.10	96.10	121.00
>1792g	1224	<LOD	<LOD	<LOD	<LOD	524.00	<LOD	<LOD	<LOD	87.50	132.00

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Table 27: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Alcohol (gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	5120	<LOD	<LOD	<LOD	<LOD	708.00	<LOD	<LOD	<LOD	91.30	124.00
0-28	706	<LOD	<LOD	<LOD	<LOD	524.00	<LOD	<LOD	60.40	99.90	137.00
>28	460	<LOD	<LOD	<LOD	<LOD	268.00	<LOD	<LOD	58.10	89.50	119.00

Table 28: 2,6-D and Caffeine(gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	1190	<LOD	<LOD	<LOD	<LOD	445.00	<LOD	<LOD	<LOD	81.30	117.00
0-400	4695	<LOD	<LOD	<LOD	<LOD	708.00	<LOD	<LOD	57.50	95.10	127.00
400+	401	<LOD	<LOD	<LOD	<LOD	467.00	<LOD	<LOD	56.00	87.80	124.00

Table 29: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Fiber (gm) /day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0g	14	<LOD	<LOD	<LOD	<LOD	83.20	<LOD	<LOD	<LOD	<LOD	83.20
1 to 10	2084	<LOD	<LOD	<LOD	<LOD	453.00	<LOD	<LOD	<LOD	94.20	130.00
11 to 24	3350	<LOD	<LOD	<LOD	<LOD	524.00	<LOD	<LOD	57.10	92.10	122.00
25+	838	<LOD	<LOD	<LOD	<LOD	708.00	<LOD	<LOD	56.50	95.10	131.00

Table 30: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Breastfeeding Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Currently Breastfeeding	40	<LOD	<LOD	<LOD	<LOD	80.20	<LOD	<LOD	<LOD	<LOD	<LOD
Not currently Breastfeeding	117	<LOD	<LOD	<LOD	<LOD	111.00	<LOD	<LOD	<LOD	<LOD	<LOD

Table 31: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Liver Conditions

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Ever had a liver condition	85	<LOD	<LOD	<LOD	<LOD	524.00	<LOD	<LOD	61.80	75.90	112.00
Never had a liver condition	2717	<LOD	<LOD	<LOD	<LOD	708.00	<LOD	<LOD	59.50	96.10	130.00

Table 32: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Anyone Smoke in the Home

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	871	<LOD	<LOD	<LOD	<LOD	416.00	<LOD	<LOD	<LOD	78.00	103.00
No	3314	<LOD	<LOD	<LOD	<LOD	708.00	<LOD	<LOD	56.60	93.00	128.00

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Table 33: Serum Concentrations of 2,2',4,4'5,5'-hexachlorobiphenyl (PCB153) in ng/g and Ever told that you have Diabetes?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	263	56.88	<LOD	64.56	<LOD	524.00	<LOD	58.00	88.30	148.00	187.00
No	3936	<LOD	<LOD	<LOD	<LOD	708.00	<LOD	<LOD	<LOD	86.20	117.00

Table 34: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g by Currently Taking Birth Control Pills?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	127	<LOD	<LOD	<LOD	<LOD	168.00	<LOD	<LOD	<LOD	<LOD	81.30
No	368	<LOD	<LOD	<LOD	<LOD	180.00	<LOD	<LOD	<LOD	60.60	76.60

Table 35: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphanyl (PCB153) in ng/g and Now Use Depo-Provera Injectables

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	54	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
No	131	<LOD	<LOD	<LOD	<LOD	136.00	<LOD	<LOD	<LOD	<LOD	75.50

Table 36: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Currently Taking Estrogen Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	135	<LOD	<LOD	62.22	<LOD	221.00	<LOD	<LOD	83.00	142.00	180.00
No	108	<LOD	<LOD	60.40	<LOD	453.00	<LOD	57.20	91.40	123.00	154.00

Table 37: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Currently Taking Projestin Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	30	<LOD	<LOD	<LOD	<LOD	121.00	<LOD	<LOD	<LOD	71.80	83.00
No	52	<LOD	<LOD	57.02	<LOD	180.00	<LOD	56.80	75.90	129.00	171.00

Table 38: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Currently Taking Estrogen-Projestin Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	38	<LOD	<LOD	58.82	<LOD	177.00	<LOD	59.80	69.10	105.00	129.00
No	25	<LOD	<LOD	67.43	<LOD	192.00	<LOD	<LOD	81.60	180.00	192.00

Table 39: Serum Concentrations 2,2',4,4',5,5'-hexachlorobiphenyl (PCB153) in ng/g and Number of Prescription Medications Taken

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	3699	<LOD	<LOD	<LOD	<LOD	453.00	<LOD	<LOD	<LOD	69.80	96.30
1	1069	<LOD	<LOD	<LOD	<LOD	708.00	<LOD	<LOD	<LOD	83.60	111.00
2	576	<LOD	<LOD	<LOD	<LOD	433.00	<LOD	<LOD	67.10	109.00	132.00
3	377	<LOD	<LOD	<LOD	<LOD	467.00	<LOD	<LOD	72.80	122.00	147.00
4	260	<LOD	<LOD	<LOD	<LOD	524.00	<LOD	55.80	83.20	117.00	156.00
5	208	<LOD	<LOD	61.71	<LOD	321.00	<LOD	<LOD	85.50	122.00	170.00
6+	349	<LOD	<LOD	58.93	<LOD	323.00	<LOD	56.60	84.50	132.00	172.00

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*Classification and Regression Tree presented in the text

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APPENDIX 13: PCB180

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Table 1: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and age category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Age 5-11	-	-	-	-	-	-	-	-	-	-	-
Age 12-19	1422	<LOD	<LOD	<LOD	<LOD	356.00	<LOD	<LOD	<LOD	<LOD	<LOD
Age 20-40	1102	<LOD	<LOD	<LOD	<LOD	256.00	<LOD	<LOD	<LOD	28.60	37.10
Age 41-55	648	29.99	28.31	31.76	<LOD	282.00	<LOD	30.80	45.50	63.80	84.60
Age 55+	1054	50.82	48.33	53.45	<LOD	572.00	36.50	51.50	74.50	98.90	126.00

Table 2: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Occupation

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Executive, Administrators, & Managers	129	<LOD	<LOD	<LOD	<LOD	102.00	<LOD	<LOD	36.90	53.40	73.60
Management Related Occupations	49	<LOD	<LOD	33.08	<LOD	146.00	<LOD	<LOD	41.00	51.00	69.40
Engineers, Architects, and Scientists	63	<LOD	<LOD	29.65	<LOD	109.00	<LOD	<LOD	40.40	53.90	63.90
Health Diagnosing, Assessing & Treating Occupations	39	<LOD	<LOD	<LOD	<LOD	86.50	<LOD	<LOD	<LOD	37.20	39.60
Teachers	55	<LOD	<LOD	<LOD	<LOD	182.00	<LOD	<LOD	42.30	68.60	117.00
Writers, Artists, Entertainers & Athletes	28	<LOD	<LOD	28.94	<LOD	57.20	<LOD	<LOD	37.90	53.20	55.10
Other Professional Speciality Occupations	45	<LOD	<LOD	28.50	<LOD	128.00	<LOD	<LOD	42.60	54.10	74.90
Technicians and Related Supported Occupations	56	<LOD	<LOD	<LOD	<LOD	244.00	<LOD	<LOD	28.40	50.00	58.00
Supervisors and Proprietors, Sales Occupations	34	<LOD	<LOD	<LOD	<LOD	84.60	<LOD	<LOD	53.00	71.30	79.80
Sales Representatives, finance, business & commodities	37	<LOD	<LOD	34.08	<LOD	150.00	<LOD	31.90	48.50	68.60	92.90
Sales Workers, retail & personal services	157	<LOD	<LOD	<LOD	<LOD	256.00	<LOD	<LOD	30.70	53.90	85.00
Secretaries, Stenographers, and typists	31	<LOD	<LOD	<LOD	<LOD	79.90	<LOD	<LOD	34.30	47.20	58.10
Information Clerks	33	<LOD	<LOD	<LOD	<LOD	103.00	<LOD	<LOD	<LOD	31.30	62.70
Records Processing Occupations	43	<LOD	<LOD	<LOD	<LOD	60.00	<LOD	<LOD	<LOD	46.80	47.30
Material Recording, Scheduling, and distributing clerks	32	<LOD	<LOD	<LOD	<LOD	85.40	<LOD	<LOD	32.70	57.70	85.40
Miscellaneous administrative support occupations	112	<LOD	<LOD	<LOD	<LOD	123.00	<LOD	<LOD	37.90	64.30	74.20
Private Household Occupations	19	<LOD	<LOD	42.72	<LOD	85.70	<LOD	<LOD	30.30	55.90	85.70
Protective Service Occupations	37	<LOD	<LOD	<LOD	<LOD	105.00	<LOD	<LOD	37.80	79.00	83.50
Waiters and Waitresses	39	<LOD	<LOD	<LOD	<LOD	181.00	<LOD	<LOD	<LOD	36.30	38.50
Cooks	44	<LOD	<LOD	<LOD	<LOD	104.00	<LOD	<LOD	31.70	38.30	69.50
Miscellaneous food preparation and service occupations	70	<LOD	<LOD	<LOD	<LOD	190.00	<LOD	<LOD	<LOD	42.20	51.30
Health Service Occupation	55	<LOD	<LOD	<LOD	<LOD	205.00	<LOD	<LOD	42.00	89.60	205.00
Cleaning and Building Service Occupations	68	<LOD	<LOD	<LOD	<LOD	213.00	<LOD	<LOD	35.60	62.50	85.50
Personal Service Occupations	44	<LOD	<LOD	<LOD	<LOD	163.00	<LOD	<LOD	39.30	52.00	102.00
Farm Operators, Managers and Supervisors	11	42.60	<LOD	75.72	<LOD	134.00	<LOD	52.70	83.90	134.00	134.00
Farm and Nursery Workers	26	<LOD	<LOD	28.69	<LOD	74.90	<LOD	<LOD	29.70	50.90	74.90
Related Agricultural, Forestry and Fishing Occupations	36	<LOD	<LOD	<LOD	<LOD	62.00	<LOD	<LOD	<LOD	29.60	31.30
Vehicle, and Mobile Equipment Mechanics & Repairs	29	32.58	<LOD	45.60	<LOD	102.00	<LOD	35.40	54.00	83.80	86.00
Other Mechanics and repairers	31	<LOD	<LOD	34.97	<LOD	86.90	<LOD	28.60	42.20	57.00	83.50
Construction traders	96	<LOD	<LOD	<LOD	<LOD	144.00	<LOD	<LOD	35.20	55.60	93.80
Extractive and Precision Production Occupations	47	<LOD	<LOD	<LOD	<LOD	139.00	<LOD	<LOD	39.90	58.90	62.60
Textile, apparel and furnishings machine operators	13	<LOD	<LOD	<LOD	<LOD	107.00	<LOD	<LOD	32.50	55.40	55.40
Machine Operators, Assorted Materials	49	<LOD	<LOD	<LOD	<LOD	84.50	<LOD	<LOD	33.20	58.70	68.80
Fabricators, Assemblers, Inspectors, and Samplers	32	<LOD	<LOD	<LOD	<LOD	148.00	<LOD	<LOD	37.10	69.40	77.20
Motor vehicle operators	53	<LOD	<LOD	<LOD	<LOD	230.00	<LOD	<LOD	35.90	56.60	77.20
Other transportation and material moving occupations	19	<LOD	<LOD	44.19	<LOD	139.00	<LOD	<LOD	43.70	68.20	68.20
Construction laborers	22	<LOD	<LOD	<LOD	<LOD	167.00	<LOD	<LOD	34.30	62.80	62.80
Laborers, except construction	17	<LOD	<LOD	<LOD	<LOD	38.40	<LOD	<LOD	<LOD	30.80	38.40
Freight, Stock, and Material Movers, hand	41	<LOD	<LOD	<LOD	<LOD	397.00	<LOD	<LOD	32.20	66.90	66.90
Other helpers, equipment cleaners, hand packages and laborers	28	<LOD	<LOD	<LOD	<LOD	121.00	<LOD	<LOD	<LOD	<LOD	53.80

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Table 3: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Employment Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Working at a Job or Business	993	<LOD	<LOD	<LOD	<LOD	256.00	<LOD	<LOD	37.00	59.10	74.90
With a Job but not at Work	48	38.74	<LOD	53.70	<LOD	205.00	30.80	44.20	55.20	66.70	142.00
Looking for Work	49	<LOD	<LOD	<LOD	<LOD	79.80	<LOD	<LOD	<LOD	38.80	48.20
Not working at a job or Business	816	<LOD	<LOD	31.50	<LOD	572.00	<LOD	34.80	62.10	91.40	116.00

Table 4: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Income

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
$0-$4 999	99	<LOD	<LOD	<LOD	<LOD	153.00	<LOD	<LOD	<LOD	43.40	52.70
$ 5000-$9 999	216	38.74	<LOD	53.70	<LOD	205.00	30.80	44.20	55.20	66.70	142.00
$10 000-$14 999	359	<LOD	<LOD	<LOD	<LOD	79.80	<LOD	<LOD	<LOD	38.80	48.20
$15 000-$19 999	316	<LOD	<LOD	31.50	<LOD	572.00	<LOD	34.80	62.10	91.40	116.00
$20 000-$24 999	351	<LOD	<LOD	<LOD	<LOD	167.00	<LOD	<LOD	38.40	67.20	85.80
$25 000-$34 999	491	<LOD	<LOD	<LOD	<LOD	331.00	<LOD	<LOD	45.20	69.70	97.60
$35 000-$44 999	374	<LOD	<LOD	<LOD	<LOD	256.00	<LOD	<LOD	39.20	62.20	75.80
$45 000-$54 999	323	<LOD	<LOD	<LOD	<LOD	397.00	<LOD	<LOD	35.90	60.40	78.10
$55 000-$64 999	265	<LOD	<LOD	<LOD	<LOD	198.00	<LOD	<LOD	49.30	69.40	80.60
$65 000-$74 999	176	<LOD	<LOD	<LOD	<LOD	205.00	<LOD	<LOD	<LOD	56.00	85.40
$75 000 and over	684	<LOD	<LOD	<LOD	<LOD	179.00	<LOD	<LOD	39.80	59.10	76.50

Table 5: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Race/Ethnicity

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Non-Hispanic White	1778	<LOD	<LOD	<LOD	<LOD	572.00	<LOD	<LOD	45.10	69.40	86.50
Non-Hispanic Black	928	<LOD	<LOD	<LOD	<LOD	481.00	<LOD	<LOD	46.30	87.60	116.00
Mexican American	1199	<LOD	<LOD	<LOD	<LOD	331.00	<LOD	<LOD	<LOD	39.50	54.90
Other Race-Including MultiRacial	123	<LOD	<LOD	<LOD	<LOD	123.00	<LOD	<LOD	38.50	60.80	68.20
Other Hispanic	198	<LOD	<LOD	<LOD	<LOD	256.00	<LOD	<LOD	<LOD	42.00	70.10

Table 6: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Gender

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Male	1992	<LOD	<LOD	<LOD	<LOD	572.00	<LOD	<LOD	45.00	71.40	87.00
Female	2234	<LOD	<LOD	<LOD	<LOD	282.00	<LOD	<LOD	39.00	63.70	85.80

Table 7: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Education

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Less than High School	2200	<LOD	<LOD	<LOD	<LOD	572.00	<LOD	<LOD	36.80	69.40	94.80
High School Diploma	717	<LOD	<LOD	<LOD	<LOD	346.00	<LOD	<LOD	43.60	68.40	86.90
More than High School	1304	<LOD	<LOD	<LOD	<LOD	271.00	<LOD	<LOD	42.30	66.40	84.50

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Table 8: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Marital Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Married	1548	<LOD	<LOD	<LOD	<LOD	397.00	<LOD	<LOD	48.00	73.10	88.00
Widowed	257	49.25	44.12	54.98	<LOD	572.00	34.40	51.40	77.40	109.00	150.00
Divorced	203	<LOD	<LOD	31.05	<LOD	244.00	<LOD	28.60	46.50	63.70	93.80
Separated	95	<LOD	<LOD	28.55	<LOD	351.00	<LOD	<LOD	41.70	74.90	102.00
Never Married	1436	<LOD	<LOD	<LOD	<LOD	356.00	<LOD	<LOD	<LOD	35.10	50.90
Living with Partner	160	<LOD	<LOD	<LOD	<LOD	181.00	<LOD	<LOD	30.40	55.00	66.30

Table 9: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Military Service

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Served in Military	425	38.34	34.12	43.08	<LOD	572.00	<LOD	42.50	66.60	91.40	112.00
Did Not Serve in Military	2887	<LOD	<LOD	<LOD	<LOD	397.00	<LOD	<LOD	39.50	62.80	84.70

Table 10: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Country of Birth

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Born in the US	3346	<LOD	<LOD	<LOD	<LOD	572.00	<LOD	<LOD	42.90	68.20	86.90
Born in Mexico	551	<LOD	<LOD	<LOD	<LOD	331.00	<LOD	<LOD	<LOD	28.90	42.20
Born Elsewhere	319	<LOD	<LOD	<LOD	<LOD	321.00	<LOD	<LOD	39.50	69.40	96.10

Table 11: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Pregnancy Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Pregnant	189	<LOD	<LOD	<LOD	<LOD	96.30	<LOD	<LOD	<LOD	<LOD	<LOD
Not Pregnant	1239	<LOD	<LOD	<LOD	<LOD	282.00	<LOD	<LOD	28.60	48.00	60.10

Table 12: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Type of Home

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
A Mobile Home or Trailer	367	<LOD	<LOD	<LOD	<LOD	230.00	<LOD	<LOD	39.40	62.80	79.80
A detached single family home	2572	<LOD	<LOD	<LOD	<LOD	572.00	<LOD	<LOD	42.60	68.60	86.90
Attached Single Family Home	315	<LOD	<LOD	<LOD	<LOD	356.00	<LOD	<LOD	49.40	65.40	87.90
An Apartment	860	<LOD	<LOD	<LOD	<LOD	282.00	<LOD	<LOD	34.30	63.70	85.90
Something Else	40	<LOD	<LOD	<LOD	<LOD	244.00	<LOD	<LOD	51.40	131.00	244.00
Dormitory	24	<LOD	.	.	<LOD	32.50	<LOD	<LOD	<LOD	<LOD	32.50

Table 13: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Year Home Built

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
1990-present	552	<LOD	<LOD	<LOD	<LOD	256.00	<LOD	<LOD	38.70	53.40	69.40
1978-1989	734	<LOD	<LOD	<LOD	<LOD	230.00	<LOD	<LOD	43.60	68.20	80.60
1960-1977	754	<LOD	<LOD	<LOD	<LOD	282.00	<LOD	<LOD	46.50	71.50	94.80
1950-1959	443	<LOD	<LOD	28.22	<LOD	572.00	<LOD	<LOD	48.00	84.20	103.00
1940-1949	215	<LOD	<LOD	<LOD	<LOD	481.00	<LOD	<LOD	45.20	77.30	93.80
before 1940	466	<LOD	<LOD	<LOD	<LOD	321.00	<LOD	<LOD	48.00	72.00	92.10

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Table 14: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Water Source

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Private-Public Water Company	3768	<LOD	<LOD	<LOD	<LOD	572.00	<LOD	<LOD	40.60	66.30	86.00
Private Public Well	388	<LOD	<LOD	28.54	<LOD	346.00	<LOD	28.40	49.30	72.40	86.90
Some other Water Source	6	<LOD	.	.	<LOD	36.10	<LOD	<LOD	<LOD	<LOD	36.10

Table 15: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Helpings of Protein per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	16	67.04	45.79	98.15	<LOD	143.00	42.00	63.40	108.00	117.00	143.00
1	161	50.20	44.93	56.08	<LOD	272.00	37.90	52.20	71.30	97.60	116.00
2	188	46.79	41.80	52.37	<LOD	331.00	36.20	46.50	66.60	92.30	105.00
3+	85	52.90	41.89	66.80	<LOD	397.00	39.00	52.70	79.30	99.50	131.00

Table 16: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Helpings of Milk/Dairy per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	88	47.50	40.34	55.93	<LOD	331.00	35.90	51.00	70.60	86.00	104.00
1	190	50.55	46.14	55.39	<LOD	272.00	38.30	52.70	71.80	102.00	116.00
2	122	46.78	39.87	54.88	<LOD	397.00	33.60	46.40	62.00	92.80	129.00
3+	50	56.99	48.71	66.68	<LOD	134.00	40.90	56.10	92.90	99.50	109.00

Table 17: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Helpings of Fruit per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	52	52.57	46.91	58.91	<LOD	185.00	40.00	51.20	79.30	98.50	99.50
1	202	50.08	45.38	55.27	<LOD	397.00	37.80	51.00	68.40	99.40	120.00
2	127	45.98	40.04	52.79	<LOD	248.00	34.40	45.60	68.80	96.90	116.00
3+	70	51.99	43.37	62.32	<LOD	331.00	35.90	56.70	74.60	95.10	129.00

Table 18: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Helpings of Vegetables per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	56	40.26	33.28	48.69	<LOD	185.00	<LOD	43.80	70.80	82.90	104.00
1	194	52.03	48.73	55.55	<LOD	248.00	38.80	52.40	71.30	98.50	111.00
2	188	46.79	41.80	52.37	<LOD	331.00	36.20	46.50	66.60	92.30	105.00
3+	54	48.93	42.02	56.98	<LOD	160.00	35.90	53.30	79.30	92.90	102.00

Table 19: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Helpings of Bread/grain per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	29	58.76	42.06	82.10	<LOD	272.00	37.90	56.60	79.40	117.00	160.00
1	160	53.13	47.58	59.34	<LOD	397.00	39.30	52.50	73.10	96.30	123.00
2	164	49.33	44.50	54.68	<LOD	248.00	38.20	52.20	68.60	92.90	116.00
3+	98	41.62	36.19	47.86	<LOD	331.00	<LOD	41.70	62.00	96.90	103.00

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Table 20: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Servings of Beans per month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	452	<LOD	<LOD	<LOD	<LOD	256.00	<LOD	<LOD	35.20	61.80	95.70
1 to 5	1792	<LOD	<LOD	<LOD	<LOD	346.00	<LOD	<LOD	45.40	70.40	88.00
6 to 10	850	<LOD	<LOD	<LOD	<LOD	572.00	<LOD	<LOD	45.90	77.40	96.10
11 to 15	558	<LOD	<LOD	<LOD	<LOD	351.00	<LOD	<LOD	43.30	65.10	79.80
15+	786	<LOD	<LOD	<LOD	<LOD	232.00	<LOD	<LOD	37.90	60.80	82.80

Table 21: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Fish Consumed in Past Month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	1127	<LOD	<LOD	<LOD	<LOD	397.00	<LOD	<LOD	43.70	69.40	91.40
No	734	<LOD	<LOD	<LOD	<LOD	356.00	<LOD	<LOD	29.40	49.80	58.60

Table 22: 2,4- D and Shellfish Consumed in Past Month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	829	<LOD	<LOD	<LOD	<LOD	230.00	<LOD	<LOD	38.20	60.60	75.60
No	1032	<LOD	<LOD	<LOD	<LOD	397.00	<LOD	<LOD	41.80	69.80	91.70

Table 23: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Body Mass Index Category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Under Weight	121	<LOD	<LOD	28.50	<LOD	195.00	<LOD	<LOD	51.00	96.10	147.00
Healthy Weight	2574	<LOD	<LOD	<LOD	<LOD	572.00	<LOD	<LOD	41.40	71.30	92.80
Over Weight	3609	<LOD	<LOD	<LOD	<LOD	397.00	<LOD	<LOD	41.50	63.80	80.60

Table 24: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Ever told you have Weak/Failing Kidneys

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	39	35.46	<LOD	49.19	<LOD	248.00	29.50	39.00	47.80	102.00	104.00
No	1217	<LOD	<LOD	<LOD	<LOD	397.00	<LOD	<LOD	43.00	68.10	85.90

Table 25: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and total number of beers consumed per month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	798	<LOD	<LOD	<LOD	<LOD	397.00	<LOD	<LOD	47.80	69.80	96.60
0-5	267	<LOD	<LOD	<LOD	<LOD	230.00	<LOD	<LOD	34.50	58.90	83.50
6 to 10	61	<LOD	<LOD	<LOD	<LOD	282.00	<LOD	<LOD	37.90	55.60	79.00
11 to 15	40	<LOD	<LOD	<LOD	<LOD	129.00	<LOD	<LOD	<LOD	50.60	53.90
16+	91	<LOD	<LOD	<LOD	<LOD	185.00	<LOD	<LOD	46.50	69.40	78.10

Table 26: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Water (gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0 to 896	2574	<LOD	<LOD	<LOD	<LOD	397.00	<LOD	<LOD	43.40	71.40	92.90
897-1792g	1783	<LOD	<LOD	<LOD	<LOD	572.00	<LOD	<LOD	46.80	68.40	84.50
>1792g	1222	<LOD	<LOD	<LOD	<LOD	481.00	<LOD	<LOD	39.50	66.70	88.00

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Table 27: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Alcohol (gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	5112	<LOD	<LOD	<LOD	<LOD	572.00	<LOD	<LOD	40.90	66.90	85.40
0-28	704	<LOD	<LOD	<LOD	<LOD	397.00	<LOD	<LOD	45.30	75.60	92.00
>28	460	<LOD	<LOD	<LOD	<LOD	271.00	<LOD	<LOD	44.50	68.20	96.10

Table 28: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Caffeine(gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	1188	<LOD	<LOD	<LOD	<LOD	481.00	<LOD	<LOD	32.80	60.10	86.30
0-400	4687	<LOD	<LOD	<LOD	<LOD	572.00	<LOD	<LOD	42.40	68.60	88.40
400+	401	<LOD	<LOD	31.22	<LOD	397.00	<LOD	<LOD	48.30	71.70	86.90

Table 29: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Fiber (gm) /day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0g	14	<LOD	<LOD	<LOD	<LOD	43.90	<LOD	<LOD	<LOD	<LOD	43.90
1 to 10	2080	<LOD	<LOD	<LOD	<LOD	356.00	<LOD	<LOD	39.30	71.30	90.70
11 to 24	3347	<LOD	<LOD	<LOD	<LOD	481.00	<LOD	<LOD	43.60	67.70	85.80
25+	835	<LOD	<LOD	<LOD	<LOD	572.00	<LOD	<LOD	44.70	71.90	92.00

Table 30: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Breastfeeding Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Currently Breastfeeding	40	<LOD	<LOD	<LOD	<LOD	37.60	<LOD	<LOD	<LOD	<LOD	34.20
Not currently Breastfeeding	117	<LOD	<LOD	<LOD	<LOD	66.60	<LOD	<LOD	<LOD	<LOD	<LOD

Table 31: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Liver Conditions

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Ever had a liver condition	84	32.92	28.69	37.78	<LOD	346.00	<LOD	32.40	46.30	77.00	151.00
Never had a liver condition	2715	<LOD	<LOD	<LOD	<LOD	572.00	<LOD	<LOD	45.50	71.40	91.20

Table 32: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Anyone Smoke in the Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	871	<LOD	<LOD	<LOD	<LOD	356.00	<LOD	<LOD	38.30	62.90	84.70
No	3308	<LOD	<LOD	<LOD	<LOD	572.00	<LOD	<LOD	42.50	68.40	88.00

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Table 33: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Ever told that you have Diabetes?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	263	41.03	36.03	46.72	<LOD	321.00	<LOD	41.50	64.30	97.00	139.00
No	3930	<LOD	<LOD	<LOD	<LOD	572.00	<LOD	<LOD	39.40	63.90	84.20

Table 34: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g by Currently Taking Birth Control Pills?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	127	<LOD	<LOD	<LOD	<LOD	102.00	<LOD	<LOD	<LOD	29.40	58.10
No	370	<LOD	<LOD	<LOD	<LOD	244.00	<LOD	<LOD	<LOD	41.90	52.20

Table 35: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Now Use Depo-Provera Injectables

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	54	<LOD	<LOD	<LOD	<LOD	29.50	<LOD	<LOD	<LOD	<LOD	<LOD
No	131	<LOD	<LOD	<LOD	<LOD	77.00	<LOD	<LOD	<LOD	28.50	49.30

Table 36: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Currently Taking Estrogen Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	134	39.58	33.82	46.32	<LOD	244.00	<LOD	39.10	57.70	116.00	142.00
No	106	39.54	34.63	45.14	<LOD	172.00	<LOD	42.30	60.30	89.20	99.40

Table 37: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Currently Taking Projestin Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	29	<LOD	<LOD	29.99	<LOD	150.00	<LOD	<LOD	37.90	46.50	59.30
No	52	35.30	28.81	43.24	<LOD	244.00	<LOD	40.40	52.10	78.50	99.50

Table 38: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Currently Taking Estrogen-Projestin Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	36	39.12	33.89	45.16	<LOD	96.10	<LOD	45.70	61.40	78.50	79.40
No	25	32.99	<LOD	48.05	<LOD	142.00	<LOD	28.50	52.10	97.80	142.00

Table 39: Serum Concentrations 2,2',3,4,4',5,5'-heptachlorobiphenyl (PCB180) in ng/g and Number of Prescription Medications Taken

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	3695	<LOD	<LOD	<LOD	<LOD	356.00	<LOD	<LOD	30.80	51.40	68.20
1	1071	<LOD	<LOD	<LOD	<LOD	572.00	<LOD	<LOD	41.40	63.70	85.50
2	576	<LOD	<LOD	29.96	<LOD	351.00	<LOD	29.40	50.40	79.80	101.00
3	372	31.79	<LOD	35.95	<LOD	397.00	<LOD	32.20	60.50	84.50	99.20
4	257	33.99	<LOD	41.06	<LOD	481.00	<LOD	41.60	62.00	84.70	120.00
5	208	38.35	32.30	45.54	<LOD	346.00	28.40	40.40	61.80	82.00	102.00
6+	349	39.05	34.90	43.69	<LOD	271.00	<LOD	41.50	62.60	90.50	116.00

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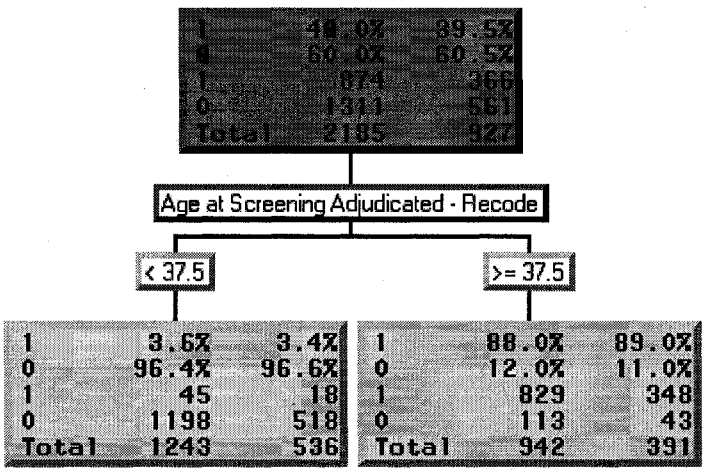
Figure 1: Classification and Regression Tree for PCB180



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APPENDIX 14: HPCDD

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Table 1: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g by age category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Age 5-11	-	-	-	-	-	-	-	-	-	-	-
Age 12-19	657	<LOD	<LOD	<LOD	<LOD	2470.00	<LOD	<LOD	<LOD	<LOD	63.60
Age 20-40	952	<LOD	<LOD	<LOD	<LOD	599.00	<LOD	<LOD	<LOD	69.90	84.50
Age 41-55	560	<LOD	<LOD	<LOD	<LOD	799.00	<LOD	<LOD	63.60	99.90	131.00
Age 55+	945	58.71	<LOD	64.50	<LOD	760.00	<LOD	62.70	97.50	155.00	194.00

Table 2: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Occupation

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Executive, Administrators, & Managers	117	<LOD	<LOD	<LOD	<LOD	174.00	<LOD	<LOD	62.20	99.50	132.00
Management Related Occupations	42	<LOD	<LOD	<LOD	<LOD	137.00	<LOD	<LOD	68.20	102.00	108.00
Engineers, Architects, and Scientists	51	<LOD	<LOD	<LOD	<LOD	102.00	<LOD	<LOD	<LOD	<LOD	62.80
Health Diagnosing, Assessing & Treating Occupations	31	<LOD	<LOD	58.31	<LOD	120.00	<LOD	<LOD	68.10	98.20	120.00
Teachers	48	<LOD	<LOD	<LOD	<LOD	262.00	<LOD	<LOD	57.10	77.80	186.00
Writers, Artists, Entertainers & Athletes	26	<LOD	<LOD	<LOD	<LOD	166.00	<LOD	<LOD	<LOD	81.20	161.00
Other Professional Speciality Occupations	38	<LOD	<LOD	<LOD	<LOD	200.00	<LOD	<LOD	59.00	71.00	74.70
Technicians and Related Supported Occupations	43	<LOD	<LOD	68.23	<LOD	599.00	<LOD	<LOD	82.00	132.00	139.00
Supervisors and Proprietors, Sales Occupations	27	<LOD	<LOD	<LOD	<LOD	131.00	<LOD	<LOD	<LOD	64.20	85.20
Sales Representatives, finance, business & commodities	29	<LOD	<LOD	<LOD	<LOD	130.00	<LOD	<LOD	74.80	88.30	96.70
Sales Workers, retail & personal services	106	<LOD	<LOD	<LOD	<LOD	196.00	<LOD	<LOD	<LOD	84.20	92.80
Secretaries, Stenographers, and typists	27	<LOD	<LOD	62.67	<LOD	128.00	<LOD	<LOD	88.90	110.00	128.00
Information Clerks	26	<LOD	<LOD	<LOD	<LOD	270.00	<LOD	<LOD	<LOD	75.10	93.00
Records Processing Occupations	33	<LOD	<LOD	<LOD	<LOD	129.00	<LOD	<LOD	<LOD	67.10	67.70
Material Recording, Scheduling, and distributing clerks	26	<LOD	<LOD	<LOD	<LOD	85.90	<LOD	<LOD	<LOD	<LOD	65.00
Miscellaneous administrative support occupations	83	<LOD	<LOD	<LOD	<LOD	164.00	<LOD	<LOD	<LOD	82.20	88.20
Private Household Occupations	16	<LOD	<LOD	740.01	<LOD	135.00	<LOD	<LOD	99.00	128.00	135.00
Protective Service Occupations	33	<LOD	<LOD	<LOD	<LOD	170.00	<LOD	<LOD	60.80	94.70	96.60
Waiters and Waitresses	31	<LOD	<LOD	<LOD	<LOD	80.80	<LOD	<LOD	<LOD	<LOD	58.60
Cooks	36	<LOD	<LOD	61.58	<LOD	115.00	<LOD	<LOD	87.30	105.00	115.00
Miscellaneous food preparation and service occupations	41	<LOD	<LOD	<LOD	<LOD	169.00	<LOD	<LOD	<LOD	56.70	101.00
Health Service Occupation	51	<LOD	<LOD	<LOD	<LOD	292.00	<LOD	<LOD	62.20	114.00	177.00
Cleaning and Building Service Occupations	55	<LOD	<LOD	<LOD	<LOD	183.00	<LOD	<LOD	62.00	84.00	105.00
Personal Service Occupations	34	<LOD	<LOD	78.11	<LOD	568.00	<LOD	<LOD	69.10	518.00	568.00
Farm Operators, Managers and Supervisors	8	72.95	62.67	84.93	<LOD	163.00	62.90	69.90	103.00	111.00	159.00
Farm and Nursery Workers	23	<LOD	<LOD	167.87	<LOD	179.00	<LOD	<LOD	80.90	130.00	179.00
Related Agricultural, Forestry and Fishing Occupations	25	<LOD	<LOD	<LOD	<LOD	167.00	<LOD	<LOD	65.10	66.90	71.90
Vehicle, and Mobile Equipment Mechanics & Repairs	24	<LOD	<LOD	<LOD	<LOD	162.00	<LOD	<LOD	<LOD	155.00	162.00
Other Mechanics and repairers	29	<LOD	<LOD	<LOD	<LOD	799.00	<LOD	<LOD	<LOD	70.60	75.00
Construction traders	71	<LOD	<LOD	<LOD	<LOD	170.00	<LOD	<LOD	<LOD	80.80	99.30
Extractive and Precision Production Occupations	35	<LOD	<LOD	<LOD	<LOD	182.00	<LOD	<LOD	70.30	117.00	134.00
Textile, apparel and furnishings machine operators	10	<LOD	.	.	<LOD	173.00	<LOD	<LOD	131.00	131.00	131.00
Machine Operators, Assorted Materials	36	<LOD	<LOD	<LOD	<LOD	127.00	<LOD	<LOD	59.10	71.00	74.80
Fabricators, Assemblers, Inspectors, and Samplers	28	<LOD	<LOD	58.96	<LOD	200.00	<LOD	<LOD	76.00	106.00	107.00
Motor vehicle operators	50	<LOD	<LOD	<LOD	<LOD	421.00	<LOD	<LOD	63.60	98.20	274.00
Other transportation and material moving occupations	17	<LOD	<LOD	72.68	<LOD	126.00	<LOD	<LOD	<LOD	71.40	91.10
Construction laborers	20	<LOD	<LOD	<LOD	<LOD	89.20	<LOD	<LOD	<LOD	66.90	66.90
Laborers, except construction	15	<LOD	<LOD	<LOD	<LOD	103.00	<LOD	<LOD	<LOD	58.20	103.00
Frieght, Stock, and Material Movers, hand	33	<LOD	<LOD	<LOD	<LOD	189.00	<LOD	<LOD	<LOD	70.40	166.00
Other helpers, equipment cleaners, hand packages and laborers	18	<LOD	<LOD	<LOD	<LOD	71.70	<LOD	<LOD	<LOD	71.70	71.70

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Table 3: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Employment Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Working at a Job or Business	657	<LOD	<LOD	<LOD	<LOD	799.00	<LOD	<LOD	62.20	99.30	130.00
With a Job but not at Work	32	<LOD	<LOD	57.60	<LOD	200.00	<LOD	<LOD	74.80	138.00	147.00
Looking for Work	16	<LOD	<LOD	<LOD	<LOD	91.50	<LOD	<LOD	56.40	61.30	82.40
Not working at a job or Business	515	<LOD	<LOD	<LOD	<LOD	760.00	<LOD	<LOD	87.10	138.00	191.00

Table 4: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Income

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
$0-$4 999	60	<LOD	<LOD	<LOD	<LOD	166.00	<LOD	<LOD	<LOD	65.70	101.00
$ 5000-$9 999	169	<LOD	<LOD	57.60	<LOD	200.00	<LOD	<LOD	74.80	138.00	147.00
$10 000-$14 999	270	<LOD	<LOD	<LOD	<LOD	91.50	<LOD	<LOD	56.40	61.30	82.40
$15 000-$19 999	227	<LOD	<LOD	<LOD	<LOD	760.00	<LOD	<LOD	87.10	138.00	191.00
$20 000-$24 999	250	<LOD	<LOD	<LOD	<LOD	423.00	<LOD	<LOD	58.20	106.00	134.00
$25 000-$34 999	364	<LOD	<LOD	<LOD	<LOD	799.00	<LOD	<LOD	63.40	110.00	132.00
$35 000-$44 999	261	<LOD	<LOD	<LOD	<LOD	271.00	<LOD	<LOD	65.40	83.70	106.00
$45 000-$54 999	231	<LOD	<LOD	<LOD	<LOD	274.00	<LOD	<LOD	61.30	101.00	150.00
$55 000-$64 999	196	<LOD	<LOD	<LOD	<LOD	599.00	<LOD	<LOD	65.60	92.60	147.00
$65 000-$74 999	130	<LOD	<LOD	<LOD	<LOD	198.00	<LOD	<LOD	56.90	77.90	103.00
$75 000 and over	482	<LOD	<LOD	<LOD	<LOD	412.00	<LOD	<LOD	59.00	91.60	120.00

Table 5: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Race/Ethnicity

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Non-Hispanic White	1366	<LOD	<LOD	<LOD	<LOD	599.00	<LOD	<LOD	65.30	101.00	132.00
Non-Hispanic Black	626	<LOD	<LOD	<LOD	<LOD	421.00	<LOD	<LOD	66.90	110.00	155.00
Mexican American	883	<LOD	<LOD	<LOD	<LOD	2470.00	<LOD	<LOD	62.60	98.50	148.00
Other Race-Including MultiRacial	87	<LOD	<LOD	<LOD	<LOD	197.00	<LOD	<LOD	58.20	105.00	128.00
Other Hispanic	152	<LOD	<LOD	<LOD	<LOD	423.00	<LOD	<LOD	<LOD	77.80	131.00

Table 6: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Gender

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Male	1463	<LOD	<LOD	<LOD	<LOD	2470.00	<LOD	<LOD	57.20	87.50	111.00
Female	1651	<LOD	<LOD	<LOD	<LOD	760.00	<LOD	<LOD	69.10	118.00	151.00

Table 7: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Education

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Less than High School	1438	<LOD	<LOD	<LOD	<LOD	2470.00	<LOD	<LOD	65.40	125.00	162.00
High School Diploma	578	<LOD	<LOD	<LOD	<LOD	799.00	<LOD	<LOD	65.40	102.00	129.00
More than High School	1096	<LOD	<LOD	<LOD	<LOD	599.00	<LOD	<LOD	61.70	94.60	126.00

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Table 8: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Marital Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Married	1353	<LOD	<LOD	<LOD	<LOD	799.00	<LOD	<LOD	69.70	105.00	138.00
Widowed	227	66.25	<LOD	79.35	<LOD	760.00	<LOD	68.50	125.00	194.00	246.00
Divorced	175	<LOD	<LOD	<LOD	<LOD	292.00	<LOD	<LOD	65.00	95.90	131.00
Separated	80	<LOD	<LOD	<LOD	<LOD	208.00	<LOD	<LOD	<LOD	76.80	109.00
Never Married	810	<LOD	<LOD	<LOD	<LOD	2470.00	<LOD	<LOD	<LOD	67.70	94.80
Living with Partner	135	<LOD	<LOD	<LOD	<LOD	255.00	<LOD	<LOD	<LOD	66.90	85.60

Table 9: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Military Service

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Served in Military	368	<LOD	<LOD	<LOD	<LOD	599.00	<LOD	<LOD	69.10	97.00	132.00
Did Not Serve in Military	2310	<LOD	<LOD	<LOD	<LOD	799.00	<LOD	<LOD	64.70	103.00	137.00

Table 10: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Country of Birth

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Born in the US	2400	<LOD	<LOD	<LOD	<LOD	2470.00	<LOD	<LOD	65.00	102.00	134.00
Born in Mexico	453	<LOD	<LOD	<LOD	<LOD	799.00	<LOD	<LOD	69.30	107.00	148.00
Born Elsewhere	254	<LOD	<LOD	<LOD	<LOD	423.00	<LOD	<LOD	57.80	80.80	131.00

Table 11: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Pregnancy Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Pregnant	162	<LOD	<LOD	<LOD	<LOD	175.00	<LOD	<LOD	<LOD	76.00	98.20
Not Pregnant	753	<LOD	<LOD	<LOD	<LOD	568.00	<LOD	<LOD	59.50	88.90	120.00

Table 12: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Type of Home

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
A Mobile Home or Trailer	268	<LOD	<LOD	<LOD	<LOD	760.00	<LOD	<LOD	63.40	102.00	141.00
A detached single family home	1905	<LOD	<LOD	<LOD	<LOD	2470.00	<LOD	<LOD	67.10	105.00	139.00
Attached Single Family Home	243	<LOD	<LOD	<LOD	<LOD	240.00	<LOD	<LOD	58.10	99.20	129.00
An Apartment	626	<LOD	<LOD	<LOD	<LOD	502.00	<LOD	<LOD	<LOD	87.40	127.00
Something Else	24	<LOD	<LOD	<LOD	<LOD	154.00	<LOD	<LOD	<LOD	60.90	95.00
Dormitory	12	<LOD	.	.	<LOD	74.80	<LOD	<LOD	<LOD	<LOD	74.80

Table 13: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Year Home Built

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
1990-present	388	<LOD	<LOD	<LOD	<LOD	274.00	<LOD	<LOD	61.30	98.20	128.00
1978-1989	537	<LOD	<LOD	<LOD	<LOD	799.00	<LOD	<LOD	65.10	89.50	129.00
1960-1977	591	<LOD	<LOD	<LOD	<LOD	292.00	<LOD	<LOD	68.10	112.00	135.00
1950-1959	337	<LOD	<LOD	<LOD	<LOD	2470.00	<LOD	<LOD	73.50	120.00	176.00
1940-1949	174	<LOD	<LOD	<LOD	<LOD	599.00	<LOD	<LOD	70.40	120.00	181.00
before 1940	353	<LOD	<LOD	<LOD	<LOD	423.00	<LOD	<LOD	56.70	97.80	131.00

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Table 14: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Water Source

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Private-Public Water Company	2765	<LOD	<LOD	<LOD	<LOD	2470.00	<LOD	<LOD	61.50	98.20	132.00
Private Public Well	301	<LOD	<LOD	<LOD	<LOD	342.00	<LOD	<LOD	77.50	125.00	149.00
Some other Water Source	4	67.24	.	.	<LOD	175.00	<LOD	101.00	101.00	175.00	175.00

Table 15: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Helpings of Protein per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	16	94.85	66.53	135.24	<LOD	423.00	<LOD	94.90	128.00	423.00	423.00
1	160	58.35	<LOD	68.24	<LOD	421.00	<LOD	63.00	92.90	172.00	198.00
2	188	59.27	<LOD	70.68	<LOD	502.00	<LOD	61.90	96.70	134.00	166.00
3+	92	62.06	<LOD	74.51	<LOD	435.00	<LOD	69.10	97.80	141.00	192.00

Table 16: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Helpings of Milk/Dairy per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	89	61.31	<LOD	75.93	<LOD	423.00	<LOD	61.50	97.50	172.00	182.00
1	188	<LOD	<LOD	66.24	<LOD	305.00	<LOD	58.60	92.90	141.00	188.00
2	124	67.14	58.40	77.20	<LOD	502.00	<LOD	70.40	101.00	151.00	224.00
3+	55	58.45	<LOD	71.52	<LOD	435.00	<LOD	64.50	99.60	123.00	141.00

Table 17: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Helpings of Fruit per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	50	71.26	58.23	87.20	<LOD	435.00	<LOD	70.40	116.00	194.00	211.00
1	205	<LOD	<LOD	60.11	<LOD	335.00	<LOD	<LOD	85.00	129.00	155.00
2	134	64.38	<LOD	81.13	<LOD	502.00	<LOD	68.80	91.70	166.00	224.00
3+	68	69.40	57.98	83.07	<LOD	240.00	<LOD	84.00	122.00	149.00	182.00

Table 18: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Helpings of Vegetables per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	58	<LOD	<LOD	64.64	<LOD	421.00	<LOD	<LOD	89.90	146.00	172.00
1	196	<LOD	<LOD	60.11	<LOD	305.00	<LOD	59.80	92.00	136.00	185.00
2	188	59.27	<LOD	70.68	<LOD	502.00	<LOD	61.90	96.70	134.00	166.00
3+	53	68.60	56.34	83.53	<LOD	289.00	<LOD	69.50	97.50	130.00	233.00

Table 19: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Helpings of Bread/grain per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	29	71.74	<LOD	101.33	<LOD	423.00	<LOD	62.20	102.00	194.00	423.00
1	162	59.14	<LOD	67.79	<LOD	421.00	<LOD	66.20	97.00	141.00	188.00
2	164	56.85	<LOD	64.11	<LOD	435.00	<LOD	61.90	85.00	129.00	182.00
3+	102	66.37	<LOD	86.47	<LOD	502.00	<LOD	68.80	122.00	155.00	211.00

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Table 20: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Servings of Beans per month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	182	<LOD	<LOD	<LOD	<LOD	292.00	<LOD	<LOD	67.80	102.00	128.00
1 to 5	998	<LOD	<LOD	<LOD	<LOD	568.00	<LOD	<LOD	74.80	122.00	145.00
6 to 10	434	<LOD	<LOD	<LOD	<LOD	760.00	<LOD	<LOD	73.70	118.00	166.00
11 to 15	322	<LOD	<LOD	<LOD	<LOD	336.00	<LOD	<LOD	62.50	99.20	138.00
15+	418	<LOD	<LOD	<LOD	<LOD	799.00	<LOD	<LOD	64.30	108.00	170.00

Table 21: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Fish Consumed in Past Month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	1110	<LOD	<LOD	<LOD	<LOD	518.00	<LOD	<LOD	63.30	94.70	121.00
No	720	<LOD	<LOD	<LOD	<LOD	2470.00	<LOD	<LOD	<LOD	86.00	123.00

Table 22: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Shellfish Consumed in Past Month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	819	<LOD	<LOD	<LOD	<LOD	599.00	<LOD	<LOD	60.40	83.40	110.00
No	1011	<LOD	<LOD	<LOD	<LOD	2470.00	<LOD	<LOD	60.20	96.10	130.00

Table 23: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Body Mass Index Category

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Under Weight	76	<LOD	<LOD	<LOD	<LOD	130.00	<LOD	<LOD	<LOD	120.00	120.00
Healthy Weight	1443	<LOD	<LOD	<LOD	<LOD	2470.00	<LOD	<LOD	<LOD	85.60	114.00
Over Weight	2665	<LOD	<LOD	<LOD	<LOD	799.00	<LOD	<LOD	70.90	115.00	152.00

Table 24: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Ever told you have Weak/Failing Kidneys

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	41	<LOD	<LOD	60.16	<LOD	196.00	<LOD	<LOD	76.00	102.00	128.00
No	1195	<LOD	<LOD	<LOD	<LOD	599.00	<LOD	<LOD	63.60	95.80	128.00

Table 25: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and total number of beers consumed per month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	789	<LOD	<LOD	<LOD	<LOD	599.00	<LOD	<LOD	68.50	108.00	149.00
0-5	263	<LOD	<LOD	<LOD	<LOD	232.00	<LOD	<LOD	62.00	82.00	102.00
6 to 10	59	<LOD	<LOD	<LOD	<LOD	268.00	<LOD	<LOD	67.30	94.70	120.00
11 to 15	37	<LOD	<LOD	<LOD	<LOD	97.70	<LOD	<LOD	<LOD	<LOD	69.40
16+	89	<LOD	<LOD	<LOD	<LOD	161.00	<LOD	<LOD	<LOD	73.60	89.90

Table 26: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Water (gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0 to 896	1591	<LOD	<LOD	<LOD	<LOD	435.00	<LOD	<LOD	66.10	106.00	137.00
897-1792g	1242	<LOD	<LOD	<LOD	<LOD	2470.00	<LOD	<LOD	72.70	120.00	166.00
>1792g	868	<LOD	<LOD	<LOD	<LOD	799.00	<LOD	<LOD	65.10	102.00	139.00

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Table 27: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Alcohol (gm)/day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	3217	<LOD	<LOD	<LOD	<LOD	2470.00	<LOD	<LOD	67.90	112.00	150.00
0-28	585	<LOD	<LOD	<LOD	<LOD	421.00	<LOD	<LOD	65.40	94.30	128.00
>28	365	<LOD	<LOD	<LOD	<LOD	254.00	<LOD	<LOD	<LOD	77.80	102.00

Table 28: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Caffeine(gm)/day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	706	<LOD	<LOD	<LOD	<LOD	568.00	<LOD	<LOD	63.30	103.00	161.00
0-400	3130	<LOD	<LOD	<LOD	<LOD	2470.00	<LOD	<LOD	68.10	111.00	142.00
400+	331	<LOD	<LOD	<LOD	<LOD	518.00	<LOD	<LOD	56.40	87.50	108.00

Table 29: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Fiber (gm) /day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0g	7	60.31	-	-	<LOD	106.00	<LOD	74.80	80.80	80.80	106.00
1 to 10	1312	<LOD	<LOD	<LOD	<LOD	423.00	<LOD	<LOD	66.80	107.00	142.00
11 to 24	2244	<LOD	<LOD	<LOD	<LOD	799.00	<LOD	<LOD	65.70	103.00	137.00
25+	604	<LOD	<LOD	<LOD	<LOD	2470.00	<LOD	<LOD	61.50	99.90	152.00

Table 30: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Breastfeeding Status

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Currently Breastfeeding	33	<LOD	<LOD	<LOD	<LOD	85.00	<LOD	<LOD	<LOD	82.20	82.20
Not currently Breastfeeding	90	<LOD	<LOD	<LOD	<LOD	86.50	<LOD	<LOD	<LOD	67.70	84.20

Table 31: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Liver Conditions

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Ever had a liver condition	76	<LOD	<LOD	<LOD	<LOD	268.00	<LOD	<LOD	71.40	121.00	155.00
Never had a liver condition	2376	<LOD	<LOD	<LOD	<LOD	799.00	<LOD	<LOD	66.10	103.00	138.00

Table 32: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Anyone Smoke in the Home

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	624	<LOD	<LOD	<LOD	<LOD	412.00	<LOD	<LOD	<LOD	72.80	94.30
No	2455	<LOD	<LOD	<LOD	<LOD	2470.00	<LOD	<LOD	68.70	110.00	145.00

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Table 33: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Ever told that you have Diabetes?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	225	64.62	<LOD	77.89	<LOD	799.00	<LOD	67.90	110.00	182.00	198.00
No	2860	<LOD	<LOD	<LOD	<LOD	2470.00	<LOD	<LOD	61.50	95.70	127.00
Borderline Diabetic	28	<LOD	<LOD	97.73	<LOD	292.00	<LOD	<LOD	132.00	174.00	207.00

Table 34: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g by Currently Taking Birth Control Pills?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	85	<LOD	<LOD	<LOD	<LOD	128.00	<LOD	<LOD	<LOD	66.90	81.20
No	312	<LOD	<LOD	<LOD	<LOD	255.00	<LOD	<LOD	58.80	84.20	108.00

Table 35: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Now Use Depo-Provera Injectables

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	37	<LOD	<LOD	<LOD	<LOD	85.60	<LOD	<LOD	<LOD	<LOD	57.80
No	101	<LOD	<LOD	<LOD	<LOD	211.00	<LOD	<LOD	64.10	86.40	120.00

Table 36: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Currently Taking Estrogen Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	114	<LOD	<LOD	61.05	<LOD	568.00	<LOD	<LOD	89.50	138.00	211.00
No	97	<LOD	<LOD	61.40	<LOD	760.00	<LOD	<LOD	79.90	158.00	185.00

Table 37: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Currently Taking Projestin Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	26	<LOD	<LOD	<LOD	<LOD	112.00	<LOD	<LOD	<LOD	74.70	76.60
No	46	<LOD	<LOD	59.27	<LOD	271.00	<LOD	<LOD	78.20	138.00	158.00

Table 38: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Currently Taking Estrogen-Projestin Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	34	<LOD	<LOD	63.23	<LOD	166.00	<LOD	<LOD	76.50	139.00	165.00
No	22	<LOD	<LOD	<LOD	<LOD	158.00	<LOD	<LOD	<LOD	105.00	158.00

Table 39: Serum Concentrations 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) in pg/g and Number of Prescription Medications Taken

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	2209	<LOD	<LOD	<LOD	<LOD	2470.00	<LOD	<LOD	<LOD	80.70	100.00
1	718	<LOD	<LOD	<LOD	<LOD	568.00	<LOD	<LOD	64.30	98.20	118.00
2	447	<LOD	<LOD	56.77	<LOD	760.00	<LOD	<LOD	79.30	145.00	190.00
3	291	<LOD	<LOD	<LOD	<LOD	427.00	<LOD	<LOD	75.00	107.00	164.00
4	205	<LOD	<LOD	64.44	<LOD	423.00	<LOD	<LOD	101.00	161.00	183.00
5	180	<LOD	<LOD	63.67	<LOD	336.00	<LOD	56.20	91.60	150.00	177.00
6+	284	<LOD	<LOD	67.12	<LOD	305.00	<LOD	<LOD	92.60	138.00	179.00

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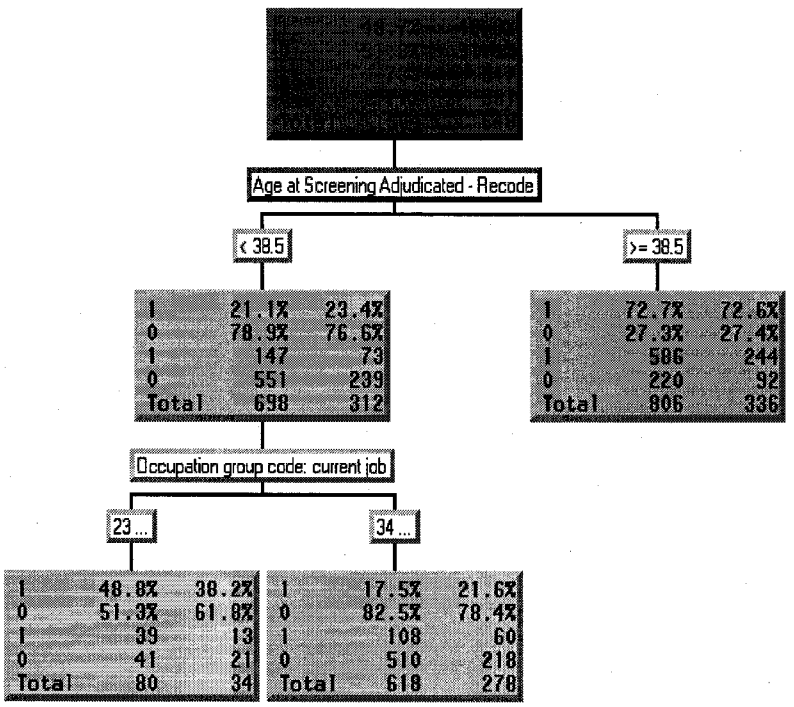
Classification and Regression Tree for 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin



*Occupation Group Codes Truncated

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APPENDIX 15: OCDD

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Table 1: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g by age category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Age 5-11	-	-	-	-	-	-	-	-	-	-	-
Age 12-19	667	<LOD	<LOD	<LOD	<LOD	11400.00	<LOD	<LOD	<LOD	<LOD	421.00
Age 20-40	933	<LOD	<LOD	<LOD	<LOD	7090.00	<LOD	<LOD	330.00	560.00	739.00
Age 41-55	555	<LOD	<LOD	338.00	<LOD	4310.00	<LOD	<LOD	516.00	745.00	1010.00
Age 55+	937	477.81	436.41	523.13	<LOD	8190.00	<LOD	482.00	791.00	1280.00	1650.00

Table 2: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Occupation

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Executive, Administrators, & Managers	113	<LOD	<LOD	<LOD	<LOD	1880.00	<LOD	<LOD	420.00	625.00	848.00
Management Related	42	<LOD	<LOD	410.83	<LOD	1080.00	<LOD	<LOD	509.00	904.00	1060.00
Engineers, Architects, and Scientists	50	<LOD	<LOD	<LOD	<LOD	710.00	<LOD	<LOD	<LOD	346.00	446.00
Health Diagnosing, Assessing & Treating	31	<LOD	<LOD	449.94	<LOD	1260.00	<LOD	<LOD	567.00	833.00	1090.00
Teachers	47	<LOD	<LOD	372.44	<LOD	3210.00	<LOD	<LOD	559.00	688.00	851.00
Writers, Artists, Entertainers & Athletes	26	<LOD	<LOD	<LOD	<LOD	1380.00	<LOD	<LOD	<LOD	546.00	1170.00
Other Professional Speciality	40	<LOD	<LOD	<LOD	<LOD	882.00	<LOD	<LOD	453.00	544.00	617.00
Technicians and Related Supported	41	333.24	<LOD	457.56	<LOD	7090.00	<LOD	<LOD	563.00	945.00	1050.00
Supervisors and Proprietors, Sales	27	<LOD	<LOD	<LOD	<LOD	2530.00	<LOD	<LOD	331.00	441.00	537.00
Sales Representatives,finance,business,commodities	30	<LOD	<LOD	330.76	<LOD	1600.00	<LOD	<LOD	433.00	620.00	741.00
Sales Workers, retail & personal services	104	<LOD	<LOD	<LOD	<LOD	1370.00	<LOD	<LOD	517.00	662.00	772.00
Secretaries, Stenographers, and typists	24	401.76	<LOD	549.14	<LOD	1060.00	<LOD	533.00	679.00	1030.00	1030.00
Information Clerks	26	<LOD	<LOD	<LOD	<LOD	1650.00	<LOD	<LOD	452.00	596.00	822.00
Records Processing	33	<LOD	<LOD	<LOD	<LOD	986.00	<LOD	<LOD	405.00	511.00	986.00
Material Recording, Scheduling,distributing clerks	26	<LOD	<LOD	<LOD	<LOD	881.00	<LOD	<LOD	422.00	469.00	509.00
Miscellaneous administrative support	82	<LOD	<LOD	<LOD	<LOD	1870.00	<LOD	<LOD	479.00	886.00	998.00
Private Household	16	397.85	<LOD	1089.79	<LOD	1200.00	<LOD	395.00	603.00	731.00	1200.00
Protective Service	31	<LOD	<LOD	346.33	<LOD	1370.00	<LOD	<LOD	482.00	781.00	880.00
Waiters and Waitresses	31	<LOD	<LOD	<LOD	<LOD	1700.00	<LOD	<LOD	<LOD	350.00	400.00
Cooks	35	<LOD	<LOD	388.80	<LOD	1190.00	<LOD	<LOD	555.00	727.00	877.00
Miscellaneous food preparation and service	44	<LOD	<LOD	358.03	<LOD	1260.00	<LOD	<LOD	480.00	731.00	731.00
Health Service Occupation	50	352.90	<LOD	480.02	<LOD	1780.00	<LOD	339.00	560.00	1170.00	1780.00
Cleaning and Building Service	55	<LOD	<LOD	340.16	<LOD	2160.00	<LOD	<LOD	420.00	705.00	1010.00
Personal Service	35	401.09	<LOD	596.21	<LOD	4310.00	<LOD	347.00	785.00	3060.00	4310.00
Farm Operators, Managers and Supervisors	9	456.11	<LOD	662.09	<LOD	930.00	<LOD	426.00	630.00	930.00	930.00
Farm and Nursery Workers	22	<LOD	<LOD	<LOD	<LOD	2070.00	<LOD	<LOD	439.00	837.00	837.00
Related Agricultural, Forestry and Fishing	25	<LOD	<LOD	356.82	<LOD	983.00	<LOD	<LOD	365.00	668.00	668.00
Vehicle and Mobile Equipment Mechanics, Repairs	23	<LOD	<LOD	330.73	<LOD	700.00	<LOD	<LOD	379.00	597.00	700.00
Other Mechanics and repairers	28	<LOD	<LOD	450.89	<LOD	2780.00	<LOD	<LOD	340.00	780.00	1280.00
Construction traders	73	<LOD	<LOD	<LOD	<LOD	1940.00	<LOD	<LOD	366.00	555.00	806.00
Extractive and Precision Production	34	<LOD	<LOD	394.85	<LOD	1800.00	<LOD	<LOD	474.00	727.00	1060.00
Textile, apparel and furnishings machine operators	11	381.06	<LOD	543.28	<LOD	870.00	<LOD	628.00	700.00	870.00	870.00
Machine Operators, Assorted Materials	35	<LOD	<LOD	337.41	<LOD	1220.00	<LOD	<LOD	378.00	624.00	926.00
Fabricators, Assemblers, Inspectors, and Samplers	28	<LOD	<LOD	427.63	<LOD	2150.00	<LOD	<LOD	674.00	830.00	1290.00
Motor vehicle operators	50	<LOD	<LOD	<LOD	<LOD	4150.00	<LOD	<LOD	453.00	901.00	1990.00
Other transportation and material moving	17	<LOD	<LOD	478.12	<LOD	1380.00	<LOD	<LOD	384.00	530.00	669.00
Construction laborers	20	<LOD	<LOD	<LOD	<LOD	721.00	<LOD	<LOD	<LOD	394.00	425.00
Laborers, except construction	15	<LOD	<LOD	<LOD	<LOD	490.00	<LOD	<LOD	<LOD	377.00	490.00
Frieght, Stock, and Material Movers, hand	33	<LOD	<LOD	<LOD	<LOD	1170.00	<LOD	<LOD	<LOD	553.00	1020.00
Other helpers, equipment cleaners, hand packages and laborers	17	<LOD	<LOD	<LOD	<LOD	1110.00	<LOD	<LOD	501.00	540.00	1110.00

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Table 3: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Employment Status

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Working at a Job or Business	627	<LOD	<LOD	358.92	<LOD	4310.00	<LOD	<LOD	526.00	865.00	1090.00
With a Job but not at Work	33	339.01	<LOD	479.52	<LOD	1130.00	<LOD	347.00	594.00	679.00	814.00
Looking for Work	14	342.95	<LOD	412.97	<LOD	516.00	<LOD	388.00	476.00	516.00	516.00
Not working at a job or Business	497	438.02	379.06	506.14	<LOD	8190.00	<LOD	439.00	731.00	1240.00	1610.00

Table 4: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Income

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
$0-$4 999	60	<LOD	<LOD	<LOD	<LOD	1480.00	<LOD	<LOD	<LOD	344.00	865.00
$ 5000-$9 999	167	339.01	<LOD	479.52	<LOD	1130.00	<LOD	347.00	594.00	679.00	814.00
$10 000-$14 999	272	342.95	<LOD	412.97	<LOD	516.00	<LOD	388.00	476.00	516.00	516.00
$15 000-$19 999	224	438.02	379.06	506.14	<LOD	8190.00	<LOD	439.00	731.00	1240.00	1610.00
$20 000-$24 999	248	<LOD	<LOD	365.61	<LOD	4150.00	<LOD	<LOD	517.00	874.00	1110.00
$25 000-$34 999	354	<LOD	<LOD	351.14	<LOD	8190.00	<LOD	<LOD	538.00	923.00	1230.00
$35 000-$44 999	260	<LOD	<LOD	<LOD	<LOD	1840.00	<LOD	<LOD	428.00	848.00	972.00
$45 000-$54 999	229	<LOD	<LOD	<LOD	<LOD	2880.00	<LOD	<LOD	462.00	696.00	1060.00
$55 000-$64 999	194	<LOD	<LOD	341.51	<LOD	7090.00	<LOD	<LOD	511.00	800.00	1060.00
$65 000-$74 999	128	<LOD	<LOD	<LOD	<LOD	1680.00	<LOD	<LOD	347.00	564.00	682.00
$75 000 and over	482	<LOD	<LOD	<LOD	<LOD	3820.00	<LOD	<LOD	469.00	668.00	998.00

Table 5: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Race/Ethnicity

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Non-Hispanic White	1353	<LOD	<LOD	<LOD	<LOD	7090.00	<LOD	<LOD	503.00	820.00	1060.00
Non-Hispanic Black	621	<LOD	<LOD	359.60	<LOD	4150.00	<LOD	<LOD	553.00	984.00	1320.00
Mexican American	882	<LOD	<LOD	<LOD	<LOD	11400.00	<LOD	<LOD	419.00	715.00	1130.00
Other Race-Including MultiRacial	84	<LOD	<LOD	339.25	<LOD	2090.00	<LOD	<LOD	498.00	727.00	851.00
Other Hispanic	152	<LOD	<LOD	<LOD	<LOD	2880.00	<LOD	<LOD	459.00	785.00	1070.00

Table 6: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Gender

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Male	1436	<LOD	<LOD	<LOD	<LOD	11400.00	<LOD	<LOD	388.00	628.00	873.00
Female	1656	339.20	<LOD	371.45	<LOD	8190.00	<LOD	336.00	596.00	948.00	1290.00

Table 7: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Education

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Less than High School	1448	<LOD	<LOD	<LOD	<LOD	11400.00	<LOD	<LOD	534.00	965.00	1480.00
High School Diploma	572	<LOD	<LOD	<LOD	<LOD	3210.00	<LOD	<LOD	501.00	846.00	1170.00
More than High School	1070	<LOD	<LOD	<LOD	<LOD	7090.00	<LOD	<LOD	491.00	753.00	972.00

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Table 8: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Marital Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Married	1337	<LOD	<LOD	346.80	<LOD	7090.00	<LOD	<LOD	536.00	861.00	1080.00
Widowed	226	632.90	540.26	741.42	<LOD	8190.00	351.00	671.00	1070.00	1660.00	2540.00
Divorced	175	<LOD	<LOD	351.17	<LOD	3210.00	<LOD	<LOD	498.00	700.00	997.00
Separated	77	<LOD	<LOD	382.67	<LOD	1880.00	<LOD	<LOD	498.00	847.00	1230.00
Never Married	815	<LOD	<LOD	<LOD	<LOD	11400.00	<LOD	<LOD	<LOD	501.00	745.00
Living with Partner	132	<LOD	<LOD	<LOD	<LOD	1700.00	<LOD	<LOD	429.00	595.00	731.00

Table 9: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Military Service

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Served in Military	355	<LOD	<LOD	336.48	<LOD	7090.00	<LOD	<LOD	475.00	727.00	1070.00
Did Not Serve in Military	2293	<LOD	<LOD	<LOD	<LOD	8190.00	<LOD	<LOD	519.00	861.00	1130.00

Table 10: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Country of Birth

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Born in the US	2379	<LOD	<LOD	<LOD	<LOD	11400.00	<LOD	<LOD	509.00	846.00	1110.00
Born in Mexico	453	<LOD	<LOD	<LOD	<LOD	8190.00	<LOD	<LOD	418.00	715.00	1180.00
Born Elsewhere	253	<LOD	<LOD	<LOD	<LOD	3210.00	<LOD	<LOD	433.00	727.00	915.00

Table 11: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Pregnancy Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Pregnant	160	<LOD	<LOD	<LOD	<LOD	1260.00	<LOD	<LOD	372.00	504.00	1090.00
Not Pregnant	756	<LOD	<LOD	329.17	<LOD	4310.00	<LOD	<LOD	516.00	702.00	970.00

Table 12: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Type of Home

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
A Mobile Home or Trailer	267	<LOD	<LOD	353.27	<LOD	8190.00	<LOD	<LOD	562.00	924.00	1060.00
A detached single family home	1893	<LOD	<LOD	<LOD	<LOD	11400.00	<LOD	<LOD	509.00	838.00	1100.00
Attached Single Family Home	238	<LOD	<LOD	<LOD	<LOD	2880.00	<LOD	<LOD	499.00	902.00	1170.00
An Apartment	622	<LOD	<LOD	<LOD	<LOD	4550.00	<LOD	<LOD	446.00	727.00	1040.00
Something Else	24	<LOD	<LOD	<LOD	<LOD	1720.00	<LOD	<LOD	524.00	927.00	927.00
Dormitory	12	<LOD	.	.	<LOD	870.00	<LOD	<LOD	<LOD	870.00	870.00

Table 13: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Year Home Built

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
1990-present	383	<LOD	<LOD	<LOD	<LOD	2880.00	<LOD	<LOD	508.00	702.00	998.00
1978-1989	535	<LOD	<LOD	<LOD	<LOD	4150.00	<LOD	<LOD	469.00	712.00	954.00
1960-1977	583	<LOD	<LOD	339.02	<LOD	2830.00	<LOD	<LOD	563.00	948.00	1240.00
1950-1959	335	<LOD	<LOD	342.72	<LOD	11400.00	<LOD	<LOD	534.00	903.00	1090.00
1940-1949	171	356.51	<LOD	454.62	<LOD	7090.00	<LOD	333.00	573.00	986.00	2770.00
before 1940	353	<LOD	<LOD	<LOD	<LOD	3210.00	<LOD	<LOD	524.00	846.00	987.00

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Table 14: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Water Source

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Private-Public Water Company	2736	<LOD	<LOD	<LOD	<LOD	11400.00	<LOD	<LOD	492.00	820.00	1070.00
Private Public Well	308	<LOD	<LOD	377.36	<LOD	5180.00	<LOD	<LOD	594.00	870.00	1170.00
Some other Water Source	4	342.76	.	.	<LOD	675.00	<LOD	504.00	524.00	675.00	675.00

Table 15: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Helpings of Protein per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	16	702.52	501.80	983.54	<LOD	1730.00	503.00	649.00	1010.00	1730.00	1730.00
1	159	439.69	364.13	530.93	<LOD	5180.00	<LOD	463.00	848.00	1420.00	1940.00
2	193	443.34	383.50	512.52	<LOD	2950.00	<LOD	453.00	697.00	986.00	1560.00
3+	91	477.24	381.87	596.42	<LOD	4550.00	<LOD	443.00	662.00	1110.00	1410.00

Table 16: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Helpings of Milk/Dairy per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	90	427.25	<LOD	567.70	<LOD	2880.00	<LOD	421.00	704.00	1010.00	2090.00
1	190	427.28	369.81	493.68	<LOD	2660.00	<LOD	428.00	731.00	1140.00	1870.00
2	126	521.15	455.07	596.82	<LOD	5180.00	<LOD	528.00	898.00	1410.00	1600.00
3+	53	438.82	354.40	543.35	<LOD	4550.00	<LOD	445.00	624.00	986.00	1210.00

Table 17: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Helpings of Fruit per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	52	514.31	402.73	656.80	<LOD	4550.00	<LOD	504.00	862.00	1560.00	2660.00
1	204	418.84	367.79	476.98	<LOD	5180.00	<LOD	416.00	725.00	1010.00	1600.00
2	133	467.00	374.74	581.96	<LOD	2950.00	<LOD	482.00	741.00	1410.00	2030.00
3+	71	490.32	425.88	564.51	<LOD	1560.00	<LOD	583.00	838.00	1130.00	1290.00

Table 18: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Helpings of Vegetables per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	58	368.60	<LOD	515.23	<LOD	2600.00	<LOD	<LOD	848.00	950.00	1480.00
1	197	430.62	377.70	490.96	<LOD	2660.00	<LOD	441.00	714.00	1100.00	1490.00
2	193	443.34	383.50	512.52	<LOD	2950.00	<LOD	453.00	697.00	986.00	1560.00
3+	54	412.19	347.01	489.62	<LOD	5180.00	<LOD	443.00	580.00	1010.00	1360.00

Table 19: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Helpings of Bread/grain per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	30	474.45	380.63	591.39	<LOD	1940.00	<LOD	408.00	563.00	1560.00	1730.00
1	160	477.12	396.19	574.57	<LOD	5180.00	<LOD	504.00	778.00	1170.00	2030.00
2	167	420.00	385.37	457.74	<LOD	4550.00	<LOD	426.00	725.00	982.00	1410.00
3+	103	481.00	370.70	624.11	<LOD	2950.00	<LOD	470.00	787.00	1210.00	2660.00

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Table 20: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Servings of Beans per month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	176	<LOD	<LOD	378.67	<LOD	2540.00	<LOD	<LOD	504.00	760.00	1090.00
1 to 5	946	359.07	<LOD	415.34	<LOD	4310.00	<LOD	351.00	598.00	944.00	1290.00
6 to 10	420	394.58	333.41	466.97	<LOD	8190.00	<LOD	414.00	636.00	1090.00	1520.00
11 to 15	306	<LOD	<LOD	402.17	<LOD	2770.00	<LOD	<LOD	498.00	998.00	1380.00
15+	408	340.31	<LOD	397.52	<LOD	3820.00	<LOD	<LOD	573.00	945.00	1150.00

Table 21: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Fish Consumed in Past Month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	1124	<LOD	<LOD	<LOD	<LOD	5180.00	<LOD	<LOD	453.00	726.00	952.00
No	734	<LOD	<LOD	<LOD	<LOD	11400.00	<LOD	<LOD	<LOD	662.00	926.00

Table 22: 2,4- D and Shellfish Consumed in Past Month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	831	<LOD	<LOD	<LOD	<LOD	7090.00	<LOD	<LOD	405.00	656.00	904.00
No	1027	<LOD	<LOD	<LOD	<LOD	11400.00	<LOD	<LOD	452.00	731.00	970.00

Table 23: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Body Mass Index Category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Under Weight	76	354.87	<LOD	462.12	<LOD	2770.00	<LOD	<LOD	546.00	1600.00	2770.00
Healthy Weight	1430	<LOD	<LOD	<LOD	<LOD	11400.00	<LOD	<LOD	498.00	702.00	1030.00
Over Weight	2611	<LOD	<LOD	345.04	<LOD	8190.00	<LOD	<LOD	552.00	907.00	1170.00

Table 24: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Ever told you have Weak/Failing Kidneys

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	41	379.73	<LOD	480.42	<LOD	1720.00	<LOD	351.00	800.00	1010.00	1010.00
No	1212	<LOD	<LOD	<LOD	<LOD	7090.00	<LOD	<LOD	453.00	727.00	970.00

Table 25: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and total number of beers consumed per month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	801	<LOD	<LOD	329.98	<LOD	7090.00	<LOD	<LOD	509.00	810.00	1130.00
0-5	265	<LOD	<LOD	<LOD	<LOD	2660.00	<LOD	<LOD	403.00	659.00	902.00
6 to 10	61	<LOD	<LOD	351.75	<LOD	1680.00	<LOD	<LOD	504.00	833.00	948.00
11 to 15	37	<LOD	<LOD	<LOD	<LOD	581.00	<LOD	<LOD	<LOD	507.00	581.00
16+	90	<LOD	<LOD	<LOD	<LOD	1800.00	<LOD	<LOD	<LOD	496.00	563.00

Table 26: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Water (gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0 to 896	1576	<LOD	<LOD	331.79	<LOD	5180.00	<LOD	<LOD	541.00	904.00	1130.00
897-1792g	1220	334.04	<LOD	378.59	<LOD	11400.00	<LOD	329.00	579.00	928.00	1600.00
>1792g	835	<LOD	<LOD	338.35	<LOD	8190.00	<LOD	<LOD	505.00	852.00	1060.00

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Table 27: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Alcohol (gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	3172	<LOD	<LOD	354.82	<LOD	11400.00	<LOD	<LOD	559.00	954.00	1290.00
0-28	577	<LOD	<LOD	<LOD	<LOD	5180.00	<LOD	<LOD	498.00	697.00	837.00
>28	350	<LOD	<LOD	<LOD	<LOD	1700.00	<LOD	<LOD	426.00	663.00	929.00

Table 28: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Caffeine(gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	689	<LOD	<LOD	<LOD	<LOD	4310.00	<LOD	<LOD	503.00	851.00	1110.00
0-400	3088	<LOD	<LOD	345.36	<LOD	11400.00	<LOD	<LOD	545.00	923.00	1240.00
400+	322	<LOD	<LOD	<LOD	<LOD	3060.00	<LOD	<LOD	486.00	647.00	814.00

Table 29: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Fiber (gm) /day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0g	8	<LOD	<LOD	724.05	<LOD	727.00	<LOD	340.00	376.00	376.00	727.00
1 to 10	1298	<LOD	<LOD	340.70	<LOD	3820.00	<LOD	<LOD	531.00	929.00	1310.00
11 to 24	2207	<LOD	<LOD	338.70	<LOD	8190.00	<LOD	<LOD	538.00	852.00	1150.00
25+	586	<LOD	<LOD	331.15	<LOD	11400.00	<LOD	<LOD	497.00	851.00	1060.00

Table 30: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Breastfeeding Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Currently Breastfeeding	32	<LOD	<LOD	<LOD	<LOD	916.00	<LOD	<LOD	<LOD	573.00	573.00
Not currently Breastfeeding	90	<LOD	<LOD	<LOD	<LOD	1880.00	<LOD	<LOD	<LOD	693.00	986.00

Table 31: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Liver Conditions

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Ever had a liver condition	73	<LOD	<LOD	330.80	<LOD	1810.00	<LOD	<LOD	475.00	745.00	977.00
Never had a liver condition	2347	<LOD	<LOD	<LOD	<LOD	8190.00	<LOD	<LOD	524.00	862.00	1130.00

Table 32: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Anyone Smoke in the Home

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	620	<LOD	<LOD	<LOD	<LOD	4150.00	<LOD	<LOD	428.00	714.00	984.00
No	2437	<LOD	<LOD	<LOD	<LOD	11400.00	<LOD	<LOD	528.00	861.00	1130.00

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Table 33: 2, 4-D and Ever told that you have Diabetes?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	221	478.01	411.83	554.81	<LOD	4550.00	<LOD	455.00	848.00	1220.00	1680.00
No	2842	<LOD	<LOD	<LOD	<LOD	11400.00	<LOD	<LOD	490.00	780.00	1030.00
Borderline Diabetic	28	427.41	<LOD	701.53	<LOD	2540.00	<LOD	340.00	861.00	1870.00	1870.00

Table 34: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g by Currently Taking Birth Control Pills?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	87	<LOD	<LOD	<LOD	<LOD	962.00	<LOD	<LOD	373.00	625.00	668.00
No	311	<LOD	<LOD	329.68	<LOD	2770.00	<LOD	<LOD	504.00	729.00	984.00

Table 35: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Now Use Depo-Provera Injectables

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	38	<LOD	<LOD	<LOD	<LOD	1880.00	<LOD	<LOD	349.00	498.00	592.00
No	97	<LOD	<LOD	359.40	<LOD	2660.00	<LOD	<LOD	458.00	741.00	847.00

Table 36: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Currently Taking Estrogen Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	117	444.60	370.08	534.13	<LOD	4310.00	<LOD	421.00	642.00	1110.00	1990.00
No	97	471.13	391.51	566.95	<LOD	8190.00	<LOD	469.00	858.00	1290.00	1540.00

Table 37: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Currently Taking Projestin Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	26	<LOD	<LOD	333.13	<LOD	1180.00	<LOD	<LOD	507.00	998.00	998.00
No	47	441.13	393.18	494.94	<LOD	2880.00	<LOD	498.00	674.00	1010.00	1180.00

Table 38: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Currently Taking Estrogen-Projestin Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	35	439.59	342.09	564.87	<LOD	2880.00	<LOD	462.00	544.00	1050.00	1610.00
No	23	369.69	<LOD	469.13	<LOD	2030.00	<LOD	<LOD	574.00	872.00	1300.00

Table 39: Serum Concentrations 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) in pg/g and Number of Prescription Medications Taken

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	2164	<LOD	<LOD	<LOD	<LOD	11400.00	<LOD	<LOD	403.00	644.00	886.00
1	720	<LOD	<LOD	337.63	<LOD	4310.00	<LOD	<LOD	517.00	814.00	1140.00
2	444	391.76	335.79	457.05	<LOD	8190.00	<LOD	394.00	628.00	998.00	1660.00
3	279	375.63	334.56	421.75	<LOD	3210.00	<LOD	359.00	642.00	962.00	1230.00
4	203	426.61	341.42	533.04	<LOD	2600.00	<LOD	428.00	877.00	1540.00	1660.00
5	179	424.82	344.56	523.78	<LOD	2200.00	<LOD	462.00	720.00	1240.00	1560.00
6+	274	478.78	399.78	573.39	<LOD	2780.00	332.00	474.00	731.00	1010.00	1360.00

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Classification and Regression Tree for OCDD presented in the text

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APPENDIX 16: HPCDF

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Table 1: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g by age category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Age 5-11	-	-	-	-	-	-	-	-	-	-	-
Age 12-19	600	<LOD	<LOD	<LOD	<LOD	306.00	<LOD	<LOD	<LOD	17.50	24.70
Age 20-40	901	<LOD	<LOD	<LOD	<LOD	249.00	<LOD	<LOD	<LOD	18.30	23.40
Age 41-55	534	<LOD	<LOD	<LOD	<LOD	234.00	<LOD	<LOD	<LOD	17.70	23.10
Age 55+	893	<LOD	<LOD	<LOD	<LOD	132.00	<LOD	<LOD	<LOD	19.10	25.80

Table 2: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Occupation

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Executive, Administrators, & Managers	112	<LOD	<LOD	<LOD	<LOD	249.00	<LOD	<LOD	<LOD	20.50	30.70
Management Related	38	<LOD	<LOD	<LOD	<LOD	19.80	<LOD	<LOD	<LOD	16.40	19.60
Engineers, Architects, and Scientists	50	<LOD	<LOD	<LOD	<LOD	34.60	<LOD	<LOD	<LOD	15.90	19.90
Health Diagnosing, Assessing & Treating	30	<LOD	<LOD	<LOD	<LOD	43.20	<LOD	<LOD	<LOD	18.10	22.00
Teachers	48	<LOD	<LOD	<LOD	<LOD	59.70	<LOD	<LOD	14.40	20.50	22.40
Writers, Artists, Entertainers & Athletes	24	<LOD	<LOD	<LOD	<LOD	20.20	<LOD	<LOD	<LOD	15.60	19.30
Other Professional Speciality	40	<LOD	<LOD	<LOD	<LOD	38.30	<LOD	<LOD	<LOD	<LOD	<LOD
Technicians and Related Supported	37	<LOD	<LOD	<LOD	<LOD	184.00	<LOD	<LOD	14.60	19.40	23.50
Supervisors and Proprietors, Sales	25	<LOD	<LOD	<LOD	<LOD	26.60	<LOD	<LOD	<LOD	<LOD	19.70
Sales Representatives,finance,business,commodities	26	<LOD	<LOD	<LOD	<LOD	28.40	<LOD	<LOD	<LOD	14.80	16.80
Sales Workers, retail & personal services	104	<LOD	<LOD	<LOD	<LOD	72.00	<LOD	<LOD	<LOD	22.10	30.40
Secretaries, Stenographers, and typists	27	<LOD	<LOD	14.05	<LOD	29.60	<LOD	<LOD	14.40	20.50	23.10
Information Clerks	23	<LOD	<LOD	<LOD	<LOD	16.90	<LOD	<LOD	<LOD	14.10	16.90
Records Processing	27	<LOD	<LOD	<LOD	<LOD	22.10	<LOD	<LOD	<LOD	<LOD	18.30
Material Recording, Scheduling,distributing clerks	24	<LOD	<LOD	<LOD	<LOD	16.90	<LOD	<LOD	<LOD	13.70	16.90
Miscellaneous administrative support	78	<LOD	<LOD	<LOD	<LOD	31.90	<LOD	<LOD	<LOD	14.30	17.20
Private Household	14	<LOD	<LOD	83.92	<LOD	19.10	<LOD	<LOD	<LOD	16.00	19.10
Protective Service	31	<LOD	<LOD	<LOD	<LOD	28.70	<LOD	<LOD	16.10	25.30	25.30
Waiters and Waitresses	29	<LOD	<LOD	<LOD	<LOD	33.10	<LOD	<LOD	<LOD	22.60	23.40
Cooks	34	<LOD	<LOD	<LOD	<LOD	25.50	<LOD	<LOD	14.80	20.00	20.40
Miscellaneous food preparation and service	44	<LOD	<LOD	<LOD	<LOD	46.90	<LOD	<LOD	<LOD	<LOD	24.80
Health Service Occupation	50	<LOD	<LOD	<LOD	<LOD	33.70	<LOD	<LOD	15.70	21.30	26.70
Cleaning and Building Service	52	<LOD	<LOD	<LOD	<LOD	55.90	<LOD	<LOD	<LOD	19.20	26.50
Personal Service	32	<LOD	<LOD	<LOD	<LOD	31.00	<LOD	<LOD	<LOD	23.50	31.00
Farm Operators, Managers and Supervisors	7	<LOD	<LOD	<LOD	<LOD	25.20	<LOD	<LOD	<LOD	13.80	14.70
Farm and Nursery Workers	21	<LOD	<LOD	22.77	<LOD	37.00	<LOD	<LOD	13.80	25.20	37.00
Related Agricultural, Forestry and Fishing	26	<LOD	<LOD	<LOD	<LOD	67.10	<LOD	<LOD	<LOD	14.20	21.00
Vehicle and Mobile Equipment Mechanics, Repairs	24	<LOD	<LOD	<LOD	<LOD	47.80	<LOD	<LOD	13.50	18.60	28.90
Other Mechanics and repairers	28	<LOD	<LOD	<LOD	<LOD	37.60	<LOD	<LOD	15.60	28.10	29.20
Construction traders	73	<LOD	<LOD	<LOD	<LOD	36.70	<LOD	<LOD	14.50	24.10	30.70
Extractive and Precision Production	32	<LOD	<LOD	<LOD	<LOD	27.10	<LOD	<LOD	<LOD	23.00	25.50
Textile, apparel and furnishings machine operators	8	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
Machine Operators, Assorted Materials	33	<LOD	<LOD	<LOD	<LOD	28.60	<LOD	<LOD	13.50	15.60	16.20
Fabricators, Assemblers, Inspectors, and Samplers	26	<LOD	<LOD	<LOD	<LOD	24.70	<LOD	<LOD	<LOD	22.50	24.70
Motor vehicle operators	48	<LOD	<LOD	<LOD	<LOD	234.00	<LOD	<LOD	<LOD	15.30	43.00
Other transportation and material moving	15	<LOD	<LOD	<LOD	<LOD	27.60	<LOD	<LOD	15.20	15.80	15.80
Construction laborers	19	<LOD	<LOD	16.71	<LOD	25.60	<LOD	<LOD	16.50	23.00	23.00
Laborers, except constuction	14	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD
Frieght, Stock, and Material Movers, hand	29	<LOD	<LOD	<LOD	<LOD	24.00	<LOD	<LOD	<LOD	18.00	23.80
Other helpers, equipment cleaners, hand packages and laborers	18	<LOD	<LOD	<LOD	<LOD	30.40	<LOD	<LOD	<LOD	22.40	30.40

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Table 3: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Employment Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Working at a Job or Business	657	<LOD	<LOD	<LOD	<LOD	234.00	<LOD	<LOD	14.40	21.40	27.60
With a Job but not at Work	33	<LOD	<LOD	13.80	<LOD	27.50	<LOD	<LOD	15.80	25.50	27.50
Looking for Work	16	<LOD	<LOD	<LOD	<LOD	19.80	<LOD	<LOD	<LOD	17.20	17.20
Not working at a job or Business	513	<LOD	<LOD	<LOD	<LOD	65.10	<LOD	<LOD	15.00	21.40	27.10

Table 4: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Income

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
$0-$4 999	54	<LOD	<LOD	<LOD	<LOD	46.90	<LOD	<LOD	<LOD	14.00	25.20
$ 5000-$9 999	160	<LOD	<LOD	13.80	<LOD	27.50	<LOD	<LOD	15.80	25.50	27.50
$10 000-$14 999	250	<LOD	<LOD	<LOD	<LOD	19.80	<LOD	<LOD	<LOD	17.20	17.20
$15 000-$19 999	222	<LOD	<LOD	<LOD	<LOD	65.10	<LOD	<LOD	15.00	21.40	27.10
$20 000-$24 999	236	<LOD	<LOD	<LOD	<LOD	234.00	<LOD	<LOD	<LOD	20.40	30.40
$25 000-$34 999	339	<LOD	<LOD	<LOD	<LOD	59.70	<LOD	<LOD	<LOD	17.40	23.80
$35 000-$44 999	250	<LOD	<LOD	<LOD	<LOD	249.00	<LOD	<LOD	<LOD	17.80	24.80
$45 000-$54 999	224	<LOD	<LOD	<LOD	<LOD	43.00	<LOD	<LOD	<LOD	17.20	23.00
$55 000-$64 999	185	<LOD	<LOD	<LOD	<LOD	184.00	<LOD	<LOD	<LOD	21.90	29.20
$65 000-$74 999	120	<LOD	<LOD	<LOD	<LOD	45.90	<LOD	<LOD	<LOD	15.60	20.90
$75 000 and over	460	<LOD	<LOD	<LOD	<LOD	61.80	<LOD	<LOD	<LOD	19.40	21.90

Table 5: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Race/Ethnicity

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Non-Hispanic White	1301	<LOD	<LOD	<LOD	<LOD	249.00	<LOD	<LOD	<LOD	17.50	22.90
Non-Hispanic Black	573	<LOD	<LOD	<LOD	<LOD	234.00	<LOD	<LOD	15.70	25.30	31.20
Mexican American	830	<LOD	<LOD	<LOD	<LOD	306.00	<LOD	<LOD	<LOD	14.70	20.20
Other Race-Including MultiRacial	81	<LOD	<LOD	<LOD	<LOD	72.00	<LOD	<LOD	<LOD	20.40	30.70
Other Hispanic	143	<LOD	<LOD	<LOD	<LOD	52.60	<LOD	<LOD	<LOD	17.40	30.40

Table 6: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Gender

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Male	1372	<LOD	<LOD	<LOD	<LOD	306.00	<LOD	<LOD	<LOD	19.30	25.30
Female	1556	<LOD	<LOD	<LOD	<LOD	249.00	<LOD	<LOD	<LOD	17.60	23.40

Table 7: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Education

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Less than High School	1338	<LOD	<LOD	<LOD	<LOD	306.00	<LOD	<LOD	<LOD	21.40	27.60
High School Diploma	545	<LOD	<LOD	<LOD	<LOD	72.00	<LOD	<LOD	<LOD	16.70	21.40
More than High School	1043	<LOD	<LOD	<LOD	<LOD	249.00	<LOD	<LOD	<LOD	18.00	22.70

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Table 8: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Marital Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Married	1292	<LOD	<LOD	<LOD	<LOD	234.00	<LOD	<LOD	19.30	24.90	
Widowed	214	<LOD	<LOD	<LOD	<LOD	52.60	<LOD	<LOD	<LOD	17.00	25.80
Divorced	167	<LOD	<LOD	<LOD	<LOD	59.70	<LOD	<LOD	<LOD	16.00	21.40
Separated	77	<LOD	<LOD	<LOD	<LOD	39.60	<LOD	<LOD	<LOD	27.40	30.40
Never Married	751	<LOD	<LOD	<LOD	<LOD	306.00	<LOD	<LOD	<LOD	18.40	23.40
Living with Partner	130	<LOD	<LOD	<LOD	<LOD	37.00	<LOD	<LOD	<LOD	18.30	25.30

Table 9: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Military Service

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Served in Military	350	<LOD	<LOD	<LOD	<LOD	184.00	<LOD	<LOD	13.50	18.40	25.20
Did Not Serve in Military	2184	<LOD	<LOD	<LOD	<LOD	249.00	<LOD	<LOD	<LOD	18.40	24.60

Table 10: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Country of Birth

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Born in the US	2255	<LOD	<LOD	<LOD	<LOD	306.00	<LOD	<LOD	<LOD	18.60	24.70
Born in Mexico	431	<LOD	<LOD	<LOD	<LOD	132.00	<LOD	<LOD	<LOD	15.40	20.00
Born Elsewhere	236	<LOD	<LOD	<LOD	<LOD	72.00	<LOD	<LOD	<LOD	17.20	26.70

Table 11: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Pregnancy Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Pregnant	156	<LOD	<LOD	<LOD	<LOD	44.00	<LOD	<LOD	<LOD	17.20	19.70
Not Pregnant	712	<LOD	<LOD	<LOD	<LOD	249.00	<LOD	<LOD	<LOD	18.30	23.50

Table 12: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Type of Home

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
A Mobile Home or Trailer	252	<LOD	<LOD	<LOD	<LOD	234.00	<LOD	<LOD	13.50	19.70	27.40
A detached single family home	1805	<LOD	<LOD	<LOD	<LOD	306.00	<LOD	<LOD	<LOD	19.30	25.30
Attached Single Family Home	214	<LOD	<LOD	<LOD	<LOD	249.00	<LOD	<LOD	<LOD	15.40	20.80
An Apartment	590	<LOD	<LOD	<LOD	<LOD	82.60	<LOD	<LOD	<LOD	18.30	22.40
Something Else	22	<LOD	<LOD	<LOD	<LOD	34.40	<LOD	<LOD	<LOD	<LOD	15.30
Dormitory	12	<LOD	.	.	<LOD	20.00	<LOD	<LOD	<LOD	17.60	17.60

Table 13: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Year Home Built

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
1990-present	357	<LOD	<LOD	<LOD	<LOD	69.60	<LOD	<LOD	<LOD	19.40	27.50
1978-1989	510	<LOD	<LOD	<LOD	<LOD	249.00	<LOD	<LOD	<LOD	17.20	23.00
1960-1977	558	<LOD	<LOD	<LOD	<LOD	82.60	<LOD	<LOD	<LOD	19.20	24.10
1950-1959	316	<LOD	<LOD	<LOD	<LOD	306.00	<LOD	<LOD	<LOD	20.00	26.50
1940-1949	168	<LOD	<LOD	<LOD	<LOD	184.00	<LOD	<LOD	<LOD	25.20	31.00
before 1940	330	<LOD	<LOD	<LOD	<LOD	43.20	<LOD	<LOD	<LOD	16.50	20.20

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Table 14: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Water Source

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Private-Public Water Company	2593	<LOD	<LOD	<LOD	<LOD	306.00	<LOD	<LOD	<LOD	17.60	23.40
Private Public Well	291	<LOD	<LOD	<LOD	<LOD	75.10	<LOD	<LOD	14.90	21.10	30.40
Some other Water Source	4	<LOD	.	.	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD

Table 15: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Helpings of Protein per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	14	<LOD	<LOD	15.37	<LOD	39.20	<LOD	<LOD	20.80	34.50	39.20
1	140	<LOD	<LOD	<LOD	<LOD	82.60	<LOD	<LOD	<LOD	16.30	17.40
2	166	<LOD	<LOD	<LOD	<LOD	21.30	<LOD	<LOD	<LOD	14.60	16.80
3+	84	<LOD	<LOD	<LOD	<LOD	48.20	<LOD	<LOD	<LOD	25.60	32.70

Table 16: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Helpings of Milk/Dairy per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	82	<LOD	<LOD	<LOD	<LOD	47.80	<LOD	<LOD	<LOD	21.40	34.50
1	166	<LOD	<LOD	<LOD	<LOD	82.60	<LOD	<LOD	<LOD	17.20	21.30
2	105	<LOD	<LOD	<LOD	<LOD	75.10	<LOD	<LOD	<LOD	<LOD	14.20
3+	50	<LOD	<LOD	<LOD	<LOD	48.20	<LOD	<LOD	<LOD	14.20	18.90

Table 17: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Helpings of Fruit per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	43	<LOD	<LOD	<LOD	<LOD	48.20	<LOD	<LOD	20.90	29.20	47.80
1	178	<LOD	<LOD	<LOD	<LOD	75.10	<LOD	<LOD	<LOD	15.80	18.90
2	123	<LOD	<LOD	<LOD	<LOD	82.60	<LOD	<LOD	<LOD	14.00	18.80
3+	60	<LOD	<LOD	<LOD	<LOD	39.20	<LOD	<LOD	<LOD	14.60	14.90

Table 18: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Helpings of Vegetables per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	53	<LOD	<LOD	<LOD	<LOD	29.70	<LOD	<LOD	14.60	17.20	22.40
1	172	<LOD	<LOD	<LOD	<LOD	48.20	<LOD	<LOD	<LOD	17.40	29.20
2	166	<LOD	<LOD	<LOD	<LOD	21.30	<LOD	<LOD	<LOD	14.60	16.80
3+	46	<LOD	<LOD	<LOD	<LOD	75.10	<LOD	<LOD	<LOD	14.20	20.30

Table 19: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Helpings of Bread/grain per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	28	<LOD	<LOD	<LOD	<LOD	34.50	<LOD	<LOD	14.20	16.80	34.50
1	139	<LOD	<LOD	<LOD	<LOD	82.60	<LOD	<LOD	<LOD	17.40	22.40
2	147	<LOD	<LOD	<LOD	<LOD	29.70	<LOD	<LOD	<LOD	14.00	16.40
3+	90	<LOD	<LOD	<LOD	<LOD	48.20	<LOD	<LOD	<LOD	17.20	20.30

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Table 20: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Servings of Beans per month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	186	<LOD	<LOD	<LOD	<LOD	65.10	<LOD	<LOD	16.70	30.70	34.60
1 to 5	990	<LOD	<LOD	<LOD	<LOD	234.00	<LOD	<LOD	15.20	21.40	25.80
6 to 10	436	<LOD	<LOD	<LOD	<LOD	62.40	<LOD	<LOD	14.10	20.50	25.20
11 to 15	316	<LOD	<LOD	<LOD	<LOD	55.90	<LOD	<LOD	14.00	18.60	27.40
15+	422	<LOD	<LOD	<LOD	<LOD	59.70	<LOD	<LOD	<LOD	22.10	25.60

Table 21: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Fish Consumed in Past Month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	1007	<LOD	<LOD	<LOD	<LOD	249.00	<LOD	<LOD	<LOD	14.50	19.50
No	647	<LOD	<LOD	<LOD	<LOD	306.00	<LOD	<LOD	<LOD	14.80	20.00

Table 22: 2,4- D and Shellfish Consumed in Past Month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	735	<LOD	<LOD	<LOD	<LOD	249.00	<LOD	<LOD	<LOD	14.90	19.70
No	919	<LOD	<LOD	<LOD	<LOD	306.00	<LOD	<LOD	<LOD	14.00	18.90

Table 23: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Body Mass Index Category

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Under Weight	74	<LOD	<LOD	<LOD	<LOD	32.00	<LOD	<LOD	15.50	27.80	28.40
Healthy Weight	1376	<LOD	<LOD	<LOD	<LOD	306.00	<LOD	<LOD	<LOD	20.50	26.50
Over Weight	2551	<LOD	<LOD	<LOD	<LOD	234.00	<LOD	<LOD	<LOD	19.30	24.80

Table 24: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Ever told you have Weak/Failing Kidneys

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	38	<LOD	<LOD	<LOD	<LOD	39.20	<LOD	<LOD	<LOD	<LOD	22.40
No	1070	<LOD	<LOD	<LOD	<LOD	249.00	<LOD	<LOD	<LOD	14.20	18.30

Table 25: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and total number of beers consumed per month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	712	<LOD	<LOD	<LOD	<LOD	184.00	<LOD	<LOD	<LOD	<LOD	17.40
0-5	227	<LOD	<LOD	<LOD	<LOD	249.00	<LOD	<LOD	<LOD	14.00	18.10
6 to 10	57	<LOD	<LOD	<LOD	<LOD	30.40	<LOD	<LOD	<LOD	18.50	30.40
11 to 15	34	<LOD	<LOD	<LOD	<LOD	29.80	<LOD	<LOD	<LOD	<LOD	<LOD
16+	79	<LOD	<LOD	<LOD	<LOD	27.40	<LOD	<LOD	<LOD	18.00	20.00

Table 26: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Water (gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0 to 896	1529	<LOD	<LOD	<LOD	<LOD	249.00	<LOD	<LOD	<LOD	17.90	22.90
897-1792g	1198	<LOD	<LOD	<LOD	<LOD	306.00	<LOD	<LOD	<LOD	21.40	28.10
>1792g	823	<LOD	<LOD	<LOD	<LOD	234.00	<LOD	<LOD	13.80	19.50	25.50

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Table 27: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Alcohol (gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	3071	<LOD	<LOD	<LOD	<LOD	306.00	<LOD	<LOD	<LOD	19.70	25.70
0-28	561	<LOD	<LOD	<LOD	<LOD	75.10	<LOD	<LOD	<LOD	18.40	24.80
>28	361	<LOD	<LOD	<LOD	<LOD	249.00	<LOD	<LOD	15.20	19.90	23.40

Table 28: 2,6-D and Caffeine(gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	675	<LOD	<LOD	<LOD	<LOD	234.00	<LOD	<LOD	<LOD	19.70	25.50
0-400	3003	<LOD	<LOD	<LOD	<LOD	306.00	<LOD	<LOD	<LOD	19.90	25.80
400+	315	<LOD	<LOD	<LOD	<LOD	47.80	<LOD	<LOD	<LOD	18.50	20.80

Table 29: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Fiber (gm) /day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0g	8	<LOD	<LOD	26.03	<LOD	18.40	<LOD	16.20	17.60	17.60	18.40
1 to 10	1256	<LOD	<LOD	<LOD	<LOD	82.60	<LOD	<LOD	<LOD	19.40	23.80
11 to 24	2151	<LOD	<LOD	<LOD	<LOD	249.00	<LOD	<LOD	<LOD	19.80	26.80
25+	578	<LOD	<LOD	<LOD	<LOD	306.00	<LOD	<LOD	<LOD	20.20	26.50

Table 30: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Breastfeeding Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Currently Breastfeeding	30	<LOD	<LOD	<LOD	<LOD	24.80	<LOD	<LOD	<LOD	<LOD	<LOD
Not currently Breastfeeding	88	<LOD	<LOD	<LOD	<LOD	45.90	<LOD	<LOD	<LOD	16.70	31.20

Table 31: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Liver Conditions

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Ever had a liver condition	70	<LOD	<LOD	<LOD	<LOD	47.80	<LOD	<LOD	<LOD	16.70	34.40
Never had a liver condition	2253	<LOD	<LOD	<LOD	<LOD	249.00	<LOD	<LOD	<LOD	18.50	24.20

Table 32: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Anyone Smoke in the Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	582	<LOD	<LOD	<LOD	<LOD	234.00	<LOD	<LOD	<LOD	19.70	25.70
No	2313	<LOD	<LOD	<LOD	<LOD	306.00	<LOD	<LOD	<LOD	18.30	24.10

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Table 33: 2, 4-D and Ever told that you have Diabetes?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	214	<LOD	<LOD	<LOD	<LOD	50.60	<LOD	<LOD	15.80	24.70	27.10
No	2686	<LOD	<LOD	<LOD	<LOD	306.00	<LOD	<LOD	<LOD	18.00	24.10

Table 34: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g by Currently Taking Birth Control Pills?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	82	<LOD	<LOD	<LOD	<LOD	43.40	<LOD	<LOD	<LOD	17.90	23.10
No	292	<LOD	<LOD	<LOD	<LOD	249.00	<LOD	<LOD	<LOD	19.50	25.30

Table 35: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Now Use Depo-Provera Injectables

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	35	<LOD	<LOD	<LOD	<LOD	45.90	<LOD	<LOD	<LOD	16.00	19.80
No	94	<LOD	<LOD	<LOD	<LOD	43.60	<LOD	<LOD	<LOD	17.20	17.50

Table 36: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Currently Taking Estrogen Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	112	<LOD	<LOD	<LOD	<LOD	132.00	<LOD	<LOD	<LOD	17.00	20.70
No	91	<LOD	<LOD	<LOD	<LOD	50.60	<LOD	<LOD	<LOD	19.60	22.70

Table 37: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Currently Taking Projestin Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	25	<LOD	<LOD	<LOD	<LOD	38.20	<LOD	<LOD	<LOD	<LOD	<LOD
No	46	<LOD	<LOD	<LOD	<LOD	52.60	<LOD	<LOD	<LOD	22.70	27.50

Table 38: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Currently Taking Estrogen-Projestin Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	33	<LOD	<LOD	<LOD	<LOD	16.90	<LOD	<LOD	<LOD	<LOD	14.30
No	23	<LOD	<LOD	<LOD	<LOD	22.70	<LOD	<LOD	<LOD	14.40	22.70

Table 39: Serum Concentrations 1,2,3,4,6,7,8-heptachlorodibenzofuran (HpCDF) in pg/g and Number of Prescription Medications Taken

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	2087	<LOD	<LOD	<LOD	<LOD	306.00	<LOD	<LOD	<LOD	18.60	24.10
1	693	<LOD	<LOD	<LOD	<LOD	249.00	<LOD	<LOD	13.70	19.80	23.10
2	429	<LOD	<LOD	<LOD	<LOD	184.00	<LOD	<LOD	14.10	21.80	26.60
3	290	<LOD	<LOD	<LOD	<LOD	48.60	<LOD	<LOD	<LOD	16.60	25.60
4	193	<LOD	<LOD	<LOD	<LOD	65.10	<LOD	<LOD	14.00	25.70	27.40
5	180	<LOD	<LOD	<LOD	<LOD	132.00	<LOD	<LOD	16.00	25.30	39.30
6+	275	<LOD	<LOD	<LOD	<LOD	50.60	<LOD	<LOD	<LOD	19.10	27.50

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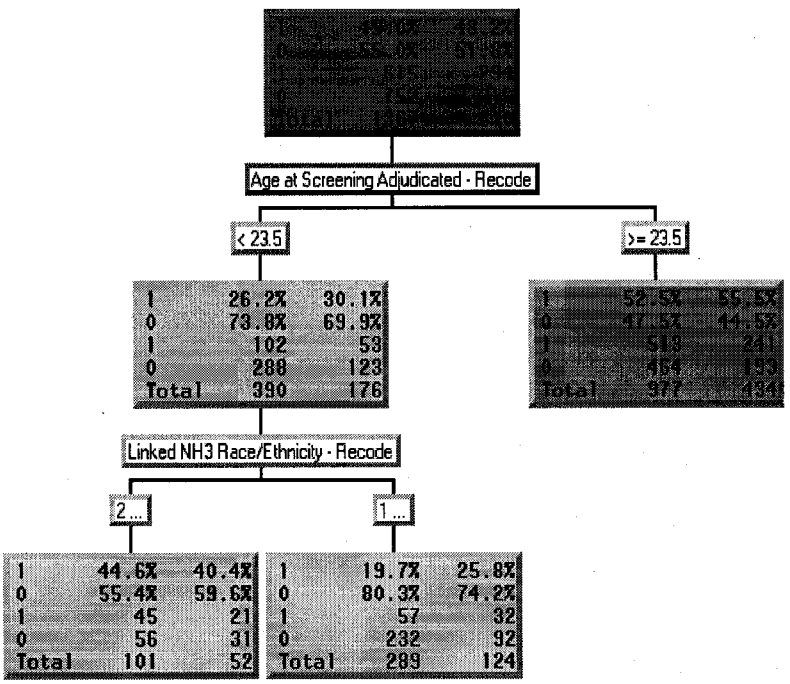
Classification and Regression Tree for HpCDF



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APPENDIX 17: β-HEXACHLOROCYCLOHEXANE

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Table 1:Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid by age category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Age 5-11	-	-	-	-	-	-	-	-	-	-	-
Age 12-19	758	<LOD	<LOD	<LOD	<LOD	3720.00	<LOD	<LOD	<LOD	<LOD	12.70
Age 20-40	615	<LOD	<LOD	<LOD	<LOD	1550.00	<LOD	<LOD	<LOD	14.10	26.90
Age 41-55	378	9.75	<LOD	10.64	<LOD	291.00	<LOD	<LOD	15.30	32.90	55.00
Age 55+	540	25.58	22.33	29.31	<LOD	3500.00	13.90	23.60	41.60	88.40	155.00

Table 2: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Occupation

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Executive, Administrators, & Managers	77	<LOD	<LOD	<LOD	<LOD	46.60	<LOD	<LOD	11.60	16.80	34.10
Management Related	21	<LOD	<LOD	12.61	<LOD	50.70	<LOD	<LOD	<LOD	23.60	50.70
Engineers, Architects, and Scientists	42	<LOD	<LOD	10.16	<LOD	130.00	<LOD	<LOD	11.30	32.90	37.70
Health Diagnosing, Assessing & Treating	25	<LOD	<LOD	<LOD	<LOD	1200.00	<LOD	<LOD	10.00	11.30	12.40
Teachers	36	<LOD	<LOD	10.54	<LOD	1550.00	<LOD	<LOD	10.10	18.70	156.00
Writers, Artists, Entertainers & Athletes	12	<LOD	<LOD	<LOD	<LOD	53.70	<LOD	<LOD	10.60	24.00	24.00
Other Professional Speciality	24	<LOD	<LOD	<LOD	<LOD	75.90	<LOD	<LOD	<LOD	15.70	21.90
Technicians and Related Supported	35	<LOD	<LOD	<LOD	<LOD	58.40	<LOD	<LOD	9.80	16.00	45.70
Supervisors and Proprietors, Sales	22	<LOD	<LOD	17.21	<LOD	71.70	<LOD	<LOD	17.30	23.50	71.70
Sales Representatives,finance,business,commodities	16	11.24	<LOD	18.56	<LOD	149.00	<LOD	14.80	31.90	32.30	149.00
Sales Workers, retail & personal services	92	<LOD	<LOD	11.31	<LOD	111.00	<LOD	<LOD	16.10	34.90	35.50
Secretaries, Stenographers, and typists	21	<LOD	<LOD	16.37	<LOD	28.80	<LOD	10.10	16.00	26.60	28.80
Information Clerks	15	<LOD	<LOD	98.92	<LOD	71.10	<LOD	<LOD	11.90	67.80	71.10
Records Processing	22	<LOD	<LOD	12.38	<LOD	67.20	<LOD	11.20	15.60	23.00	56.00
Material Recording, Scheduling,distributing clerks	22	9.79	<LOD	10.91	<LOD	80.90	<LOD	<LOD	11.40	33.30	80.90
Miscellaneous administrative support	71	<LOD	<LOD	10.37	<LOD	153.00	<LOD	<LOD	13.30	28.10	37.60
Private Household	10	<LOD	.	.	<LOD	57.10	<LOD	<LOD	<LOD	29.90	40.80
Protective Service	20	<LOD	<LOD	9.81	<LOD	54.80	<LOD	<LOD	10.40	22.90	26.50
Waiters and Waitresses	18	<LOD	<LOD	11.67	<LOD	36.60	<LOD	<LOD	10.00	26.20	26.30
Cooks	17	10.38	<LOD	12.56	<LOD	57.10	<LOD	<LOD	18.40	57.10	57.10
Miscellaneous food preparation and service	44	<LOD	<LOD	10.30	<LOD	219.00	<LOD	<LOD	17.10	31.30	47.50
Health Service Occupation	35	<LOD	<LOD	11.59	<LOD	109.00	<LOD	<LOD	23.40	36.70	38.50
Cleaning and Building Service	35	9.87	<LOD	13.82	<LOD	220.00	<LOD	<LOD	23.10	30.30	58.10
Personal Service	22	11.52	<LOD	20.46	<LOD	116.00	<LOD	16.20	35.50	36.80	36.80
Farm Operators, Managers and Supervisors	5	12.23	<LOD	176.26	<LOD	85.70	<LOD	20.00	35.20	35.20	85.70
Farm and Nursery Workers	11	20.43	<LOD	88.35	<LOD	205.00	<LOD	13.10	134.00	143.00	205.00
Related Agricultural, Forestry and Fishing	28	<LOD	<LOD	<LOD	<LOD	53.10	<LOD	<LOD	<LOD	16.60	21.50
Vehicle and Mobile Equipment Mechanics, Repairs	12	<LOD	<LOD	13.66	<LOD	38.80	<LOD	9.80	16.20	18.90	18.90
Other Mechanics and repairers	14	<LOD	<LOD	49.59	<LOD	134.00	<LOD	<LOD	11.10	14.20	15.00
Construction traders	44	<LOD	<LOD	<LOD	<LOD	291.00	<LOD	<LOD	<LOD	15.70	20.00
Extractive and Precision Production	24	11.62	<LOD	34.26	<LOD	3280.00	<LOD	<LOD	22.10	27.50	3280.00
Textile, apparel and furnishings machine operators	6	<LOD	.	.	<LOD	155.00	<LOD	<LOD	<LOD	<LOD	32.70
Machine Operators, Assorted Materials	28	<LOD	<LOD	<LOD	<LOD	83.40	<LOD	<LOD	9.80	24.40	28.90
Fabricators, Assemblers, Inspectors, and Samplers	15	9.45	<LOD	65.05	<LOD	166.00	<LOD	<LOD	11.40	131.00	166.00
Motor vehicle operators	24	<LOD	<LOD	<LOD	<LOD	52.30	<LOD	<LOD	10.90	12.10	22.00
Other transportation and material moving	10	<LOD	<LOD	26.68	<LOD	41.00	<LOD	<LOD	16.70	16.70	27.90
Construction laborers	16	<LOD	<LOD	13.37	<LOD	73.60	<LOD	<LOD	9.50	38.50	38.50
Laborers, except constuction	7	15.14	<LOD	35.52	<LOD	296.00	<LOD	13.00	55.00	55.00	296.00
Frieght, Stock, and Material Movers, hand	16	<LOD	<LOD	<LOD	<LOD	51.40	<LOD	<LOD	<LOD	11.80	51.40
Other helpers, equipment cleaners, hand packages and laborers	18	<LOD	<LOD	<LOD	<LOD	36.20	<LOD	<LOD	10.20	12.50	36.20

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Table 3: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Employment Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Working at a Job or Business	989	<LOD	<LOD	<LOD	<LOD	3280.00	<LOD	<LOD	12.10	26.90	41.00
With a Job but not at Work	48	<LOD	<LOD	11.40	<LOD	143.00	<LOD	<LOD	15.60	18.00	28.80
Looking for Work	48	<LOD	<LOD	11.95	<LOD	111.00	<LOD	<LOD	<LOD	30.20	111.00
Not working at a job or Business	809	14.12	12.47	16.00	<LOD	3720.00	<LOD	13.10	29.00	69.50	123.00

Table 4: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Income

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
$0-$4 999	57	<LOD	<LOD	16.13	<LOD	1850.00	<LOD	<LOD	<LOD	153.00	812.00
$ 5000-$9 999	95	<LOD	<LOD	11.40	<LOD	143.00	<LOD	<LOD	15.60	18.00	28.80
$10 000-$14 999	171	<LOD	<LOD	11.95	<LOD	111.00	<LOD	<LOD	<LOD	30.20	111.00
$15 000-$19 999	181	14.12	12.47	16.00	<LOD	3720.00	<LOD	13.10	29.00	69.50	123.00
$20 000-$24 999	191	10.77	<LOD	14.41	<LOD	220.00	<LOD	<LOD	19.80	45.40	64.00
$25 000-$34 999	276	9.52	<LOD	11.10	<LOD	298.00	<LOD	<LOD	16.90	35.10	49.60
$35 000-$44 999	215	<LOD	<LOD	10.11	<LOD	323.00	<LOD	<LOD	14.90	26.50	36.10
$45 000-$54 999	201	<LOD	<LOD	<LOD	<LOD	212.00	<LOD	<LOD	11.70	25.00	37.60
$55 000-$64 999	162	10.10	<LOD	12.38	<LOD	296.00	<LOD	<LOD	21.90	47.50	88.40
$65 000-$74 999	100	<LOD	<LOD	<LOD	<LOD	214.00	<LOD	<LOD	12.30	22.90	42.40
$75 000 and over	440	<LOD	<LOD	<LOD	<LOD	3280.00	<LOD	<LOD	11.40	22.60	33.40

Table 5: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Race/Ethnicity

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Non-Hispanic White	1051	<LOD	<LOD	<LOD	<LOD	3500.00	<LOD	<LOD	14.70	32.70	52.30
Non-Hispanic Black	513	<LOD	<LOD	9.46	<LOD	242.00	<LOD	<LOD	12.70	37.00	71.20
Mexican American	563	13.17	11.78	14.73	<LOD	323.00	<LOD	11.80	25.90	70.00	134.00
Other Race-Including MultiRacial	70	24.51	13.57	44.28	<LOD	3720.00	<LOD	16.70	36.20	310.00	1550.00
Other Hispanic	94	<LOD	<LOD	11.35	<LOD	155.00	<LOD	<LOD	16.10	38.50	80.90

Table 6: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Gender

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Male	1067	<LOD	<LOD	<LOD	<LOD	3720.00	<LOD	<LOD	12.80	27.50	45.70
Female	1224	10.44	9.64	11.31	<LOD	3500.00	<LOD	<LOD	19.00	48.20	87.00

Table 7: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Education

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Less than High School	1135	<LOD	<LOD	10.38	<LOD	3720.00	<LOD	<LOD	16.90	46.40	95.50
High School Diploma	394	9.66	<LOD	11.39	<LOD	3500.00	<LOD	<LOD	18.30	35.50	59.70
More than High School	759	<LOD	<LOD	9.63	<LOD	1550.00	<LOD	<LOD	15.70	33.70	55.00

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Table 8: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Marital Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Married	893	10.22	9.46	11.05	<LOD	3500.00	<LOD	<LOD	18.50	36.80	58.40
Widowed	152	32.87	25.37	42.58	<LOD	527.00	16.60	32.30	71.70	135.00	192.00
Divorced	109	10.86	<LOD	13.54	<LOD	222.00	<LOD	<LOD	17.00	45.70	57.10
Separated	55	11.86	<LOD	15.40	<LOD	155.00	<LOD	9.50	28.80	66.50	111.00
Never Married	795	<LOD	<LOD	<LOD	<LOD	3720.00	<LOD	<LOD	<LOD	16.00	28.20
Living with Partner	93	<LOD	<LOD	<LOD	<LOD	181.00	<LOD	<LOD	<LOD	14.70	18.40

Table 9: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Military Service

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Served in Military	241	11.10	9.90	12.44	<LOD	174.00	<LOD	11.10	19.80	35.20	45.40
Did Not Serve in Military	1575	9.47	<LOD	10.33	<LOD	3500.00	<LOD	<LOD	16.60	40.10	76.30

Table 10: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Country of Birth

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Born in the US	1873	<LOD	<LOD	<LOD	<LOD	527.00	<LOD	<LOD	13.90	31.40	51.40
Born in Mexico	258	21.09	18.03	24.67	<LOD	323.00	9.60	17.70	37.90	131.00	166.00
Born Elsewhere	157	19.27	14.54	25.56	<LOD	3720.00	<LOD	15.60	32.60	108.00	1200.00

Table 11: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Pregnancy Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Pregnant	107	<LOD	<LOD	10.39	<LOD	1270.00	<LOD	<LOD	<LOD	23.10	1270.00
Not Pregnant	816	<LOD	<LOD	<LOD	<LOD	3280.00	<LOD	<LOD	11.90	24.70	36.80

Table 12: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Type of Home

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
A Mobile Home or Trailer	200	<LOD	<LOD	10.01	<LOD	298.00	<LOD	<LOD	16.00	34.20	55.00
A detached single family home	1423	<LOD	<LOD	9.96	<LOD	3500.00	<LOD	<LOD	16.20	36.70	64.00
Attached Single Family Home	174	<LOD	<LOD	10.22	<LOD	310.00	<LOD	<LOD	17.30	32.70	50.70
An Apartment	427	<LOD	<LOD	10.64	<LOD	3720.00	<LOD	<LOD	15.80	53.00	87.00
Something Else	25	<LOD	<LOD	11.56	<LOD	97.00	<LOD	<LOD	14.70	20.00	32.00
Dormitory	16	10.43	.	.	<LOD	812.00	<LOD	<LOD	<LOD	153.00	812.00

Table 13: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Year Home Built

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
1990-present	333	<LOD	<LOD	9.89	<LOD	1550.00	<LOD	<LOD	13.00	28.80	48.20
1978-1989	378	<LOD	<LOD	9.65	<LOD	310.00	<LOD	<LOD	15.70	36.70	67.80
1960-1977	404	10.58	<LOD	12.33	<LOD	3500.00	<LOD	<LOD	17.50	48.70	87.00
1950-1959	228	10.51	<LOD	12.01	<LOD	527.00	<LOD	<LOD	21.50	40.30	53.10
1940-1949	108	<LOD	<LOD	11.77	<LOD	205.00	<LOD	<LOD	15.80	35.50	69.40
before 1940	258	<LOD	<LOD	9.42	<LOD	812.00	<LOD	<LOD	13.10	33.90	47.90

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Table 14: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Water Source

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Private-Public Water Company	2056	<LOD	<LOD	9.99	<LOD	3720.00	<LOD	<LOD	16.00	37.70	71.10
Private Public Well	194	<LOD	<LOD	10.39	<LOD	220.00	<LOD	<LOD	16.20	35.50	48.80
Some other Water Source	3	<LOD	.	.	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD

Table 15: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Helpings of Protein per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	15	48.99	35.88	66.88	13.01	146.83	36.13	40.77	70.84	146.83	146.83
1	162	29.12	25.61	33.12	<LOD	766.36	17.90	28.98	45.08	81.14	119.14
2	193	27.56	23.42	32.43	<LOD	356.78	15.26	25.57	47.40	90.16	130.09
3+	88	31.39	24.38	40.40	<LOD	650.44	22.02	33.87	51.33	73.42	119.78

Table 16: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Helpings of Milk/Dairy per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	86	31.45	25.84	38.27	<LOD	271.12	19.32	36.77	51.33	80.50	89.52
1	190	28.90	25.20	33.13	<LOD	766.36	17.90	26.79	49.59	90.16	126.87
2	128	26.94	21.71	33.43	<LOD	323.29	15.26	26.47	49.07	90.80	133.95
3+	54	33.29	26.87	41.25	<LOD	650.44	20.54	33.29	40.12	88.23	165.51

Table 17: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Helpings of Fruit per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	52	36.32	26.54	49.71	<LOD	392.84	21.64	38.77	64.40	119.78	242.79
1	208	27.05	23.38	31.31	<LOD	766.36	14.49	26.92	47.01	80.50	108.84
2	128	31.63	25.62	39.04	<LOD	343.25	19.06	30.98	54.29	90.16	119.14
3+	71	26.51	20.69	33.97	<LOD	650.44	17.00	26.98	36.77	75.35	121.07

Table 18: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Helpings of Vegetables per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	57	29.58	19.72	44.37	<LOD	392.84	19.45	28.34	45.08	92.09	245.36
1	201	27.67	22.30	34.34	<LOD	766.36	14.55	26.66	47.01	101.11	141.68
2	193	27.56	23.42	32.43	<LOD	356.78	15.26	25.57	47.40	90.16	130.09
3+	53	26.61	21.62	32.75	<LOD	151.34	18.74	25.18	39.99	68.91	70.84

Table 19: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Helpings of Bread/grain per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	31	27.92	18.12	43.02	<LOD	356.78	18.29	22.80	39.61	118.50	242.79
1	161	30.26	26.05	35.15	<LOD	766.36	18.93	29.17	50.55	96.60	136.53
2	165	27.73	24.38	31.53	<LOD	392.84	16.94	26.47	46.63	88.23	121.07
3+	102	30.67	23.09	40.74	<LOD	650.44	18.48	30.20	54.48	80.50	119.78

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Table 20: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Servings of Beans per month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	452	<LOD	<LOD	<LOD	<LOD	3280.00	<LOD	<LOD	11.20	26.60	45.70
1 to 5	1778	<LOD	<LOD	10.17	<LOD	1850.00	<LOD	<LOD	16.20	36.70	64.80
6 to 10	848	9.48	<LOD	10.95	<LOD	3500.00	<LOD	<LOD	17.30	36.30	64.00
11 to 15	552	<LOD	<LOD	9.84	<LOD	323.00	<LOD	<LOD	14.30	33.00	63.60
15+	786	11.47	<LOD	14.80	<LOD	3720.00	<LOD	<LOD	23.00	58.10	97.00

Table 21: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Fish Consumed in Past Month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	1111	11.12	9.91	12.47	<LOD	766.36	<LOD	9.53	21.70	46.63	76.64
No	718	<LOD	<LOD	10.69	<LOD	486.86	<LOD	<LOD	18.29	39.99	70.84

Table 22: 2,4- D and Shellfish Consumed in Past Month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	816	9.86	<LOD	11.52	<LOD	766.36	<LOD	<LOD	19.00	43.99	68.26
No	1013	10.98	9.52	12.66	<LOD	650.44	<LOD	<LOD	22.99	50.75	76.64

Table 23: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Body Mass Index Category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Under Weight	122	<LOD	<LOD	<LOD	<LOD	175.00	<LOD	<LOD	<LOD	22.50	38.50
Healthy Weight	2548	<LOD	<LOD	<LOD	<LOD	3720.00	<LOD	<LOD	12.04	32.60	56.00
Over Weight	3581	10.39	9.71	11.12	<LOD	3500.00	<LOD	<LOD	19.90	43.99	72.00

Table 24: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and total number of beers consumed per month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	793	13.49	11.47	15.88	<LOD	766.36	<LOD	12.56	26.66	54.29	81.14
0-5	259	10.62	<LOD	13.22	<LOD	708.40	<LOD	<LOD	19.58	44.63	87.58
6 to 10	61	<LOD	<LOD	13.43	<LOD	147.48	<LOD	<LOD	17.00	28.85	39.99
11 to 15	39	<LOD	<LOD	<LOD	<LOD	38.70	<LOD	<LOD	<LOD	14.17	21.06
16+	88	9.81	<LOD	13.34	<LOD	276.28	<LOD	<LOD	15.07	45.98	95.31

Table 25: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Water (gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0 to 896	2548	<LOD	<LOD	9.86	<LOD	3280.00	<LOD	<LOD	17.13	37.60	68.91
897-1792g	1772	10.79	9.76	11.92	<LOD	3720.00	<LOD	<LOD	20.10	46.60	90.16
>1792g	1217	<LOD	<LOD	9.88	<LOD	1270.00	<LOD	<LOD	16.62	35.03	55.77

Table 26: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Alcohol (gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	5068	9.70	<LOD	10.43	<LOD	3720.00	<LOD	<LOD	18.50	43.15	75.90
0-28	697	<LOD	<LOD	10.46	<LOD	245.36	<LOD	<LOD	15.80	27.50	44.80
>28	456	<LOD	<LOD	<LOD	<LOD	708.40	<LOD	<LOD	14.17	27.20	43.02

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Table 27: 2,6-D and Caffeine(gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	1180	<LOD	<LOD	10.15	<LOD	1550.00	<LOD	<LOD	16.00	35.50	71.70
0-400	4647	9.60	<LOD	10.25	<LOD	3720.00	<LOD	<LOD	17.40	42.40	73.30
400+	394	<LOD	<LOD	10.26	<LOD	310.00	<LOD	<LOD	15.78	27.20	35.94

Table 28: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Fiber (gm) /day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0g	14	<LOD	<LOD	<LOD	<LOD	55.71	<LOD	<LOD	<LOD	<LOD	<LOD
1 to 10	2063	9.38	<LOD	10.18	<LOD	3500.00	<LOD	<LOD	18.55	41.50	68.91
11 to 24	3311	9.48	<LOD	10.18	<LOD	3720.00	<LOD	<LOD	16.80	37.70	71.48
25+	833	9.47	<LOD	10.94	<LOD	1550.00	<LOD	<LOD	17.00	34.71	59.00

Table 29: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Breastfeeding Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Currently Breastfeeding	24	<LOD	<LOD	26.71	<LOD	1270.00	<LOD	<LOD	<LOD	14.00	1270.00
Not currently Breastfeeding	64	<LOD	<LOD	<LOD	<LOD	205.00	<LOD	<LOD	<LOD	12.10	26.80

Table 30: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Liver Conditions

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Ever had a liver condition	49	11.60	<LOD	14.86	<LOD	1850.00	<LOD	9.80	17.30	40.90	72.00
Never had a liver condition	1481	9.99	<LOD	10.97	<LOD	3500.00	<LOD	<LOD	17.70	40.40	71.70

Table 31: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Anyone Smoke in the Home

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	470	<LOD	<LOD	<LOD	<LOD	296.00	<LOD	<LOD	11.40	25.10	38.50
No	1794	9.69	<LOD	10.63	<LOD	3720.00	<LOD	<LOD	17.10	40.40	73.80

Table 32: 2, 4-D and Ever told that you have Diabetes?

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	143	24.08	17.80	32.58	<LOD	1550.00	10.90	24.40	52.00	114.00	216.00
No	2130	<LOD	<LOD	<LOD	<LOD	3720.00	<LOD	<LOD	14.40	33.60	56.00

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Table 33: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid by Currently Taking Birth Control Pills?

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	75	<LOD	<LOD	<LOD	<LOD	153.00	<LOD	<LOD	9.80	15.30	32.00
No	199	<LOD	<LOD	<LOD	<LOD	296.00	<LOD	<LOD	11.10	16.80	32.30

Table 34: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Now Use Depo-Provera Injectables

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	27	<LOD	<LOD	<LOD	<LOD	26.80	<LOD	<LOD	<LOD	9.90	13.60
No	73	<LOD	<LOD	<LOD	<LOD	92.20	<LOD	<LOD	<LOD	15.20	29.60

Table 35: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Currently Taking Estrogen Only Pills

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	72	21.18	18.14	24.73	<LOD	270.00	14.30	19.60	34.90	58.40	79.20
No	53	24.01	19.61	29.40	<LOD	3280.00	11.50	22.50	37.80	125.00	168.00

Table 36: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Currently Taking Projestin Only Pills

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	14	10.36	<LOD	18.79	<LOD	54.10	<LOD	10.00	17.00	31.90	42.80
No	31	11.39	10.03	12.93	<LOD	106.00	<LOD	11.50	16.80	31.30	37.80

Table 37: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Currently Taking Estrogen-Projestin Pills

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	20	12.48	<LOD	17.13	<LOD	106.00	<LOD	10.70	17.50	37.60	37.80
No	14	13.11	11.96	14.37	<LOD	97.00	10.00	11.50	16.00	26.60	74.90

Table 38: Serum Concentrations of β-hexachlorocyclohexane in ng/g of lipid and Number of Prescription Medications Taken

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	3671	<LOD	<LOD	<LOD	<LOD	3280.00	<LOD	<LOD	10.05	26.30	48.88
1	1054	<LOD	<LOD	<LOD	<LOD	3720.00	<LOD	<LOD	15.00	27.90	46.30
2	571	12.18	9.97	14.87	<LOD	1850.00	<LOD	10.10	20.74	50.62	90.16
3	372	14.37	11.76	17.55	<LOD	527.00	<LOD	11.91	27.50	64.40	125.00
4	258	18.19	15.41	21.48	<LOD	650.44	<LOD	19.45	35.10	64.00	87.60
5	203	17.50	13.88	22.05	<LOD	3500.00	<LOD	16.04	31.88	49.85	94.67
6+	346	20.23	16.65	24.56	<LOD	343.25	10.11	19.32	39.60	76.64	119.78

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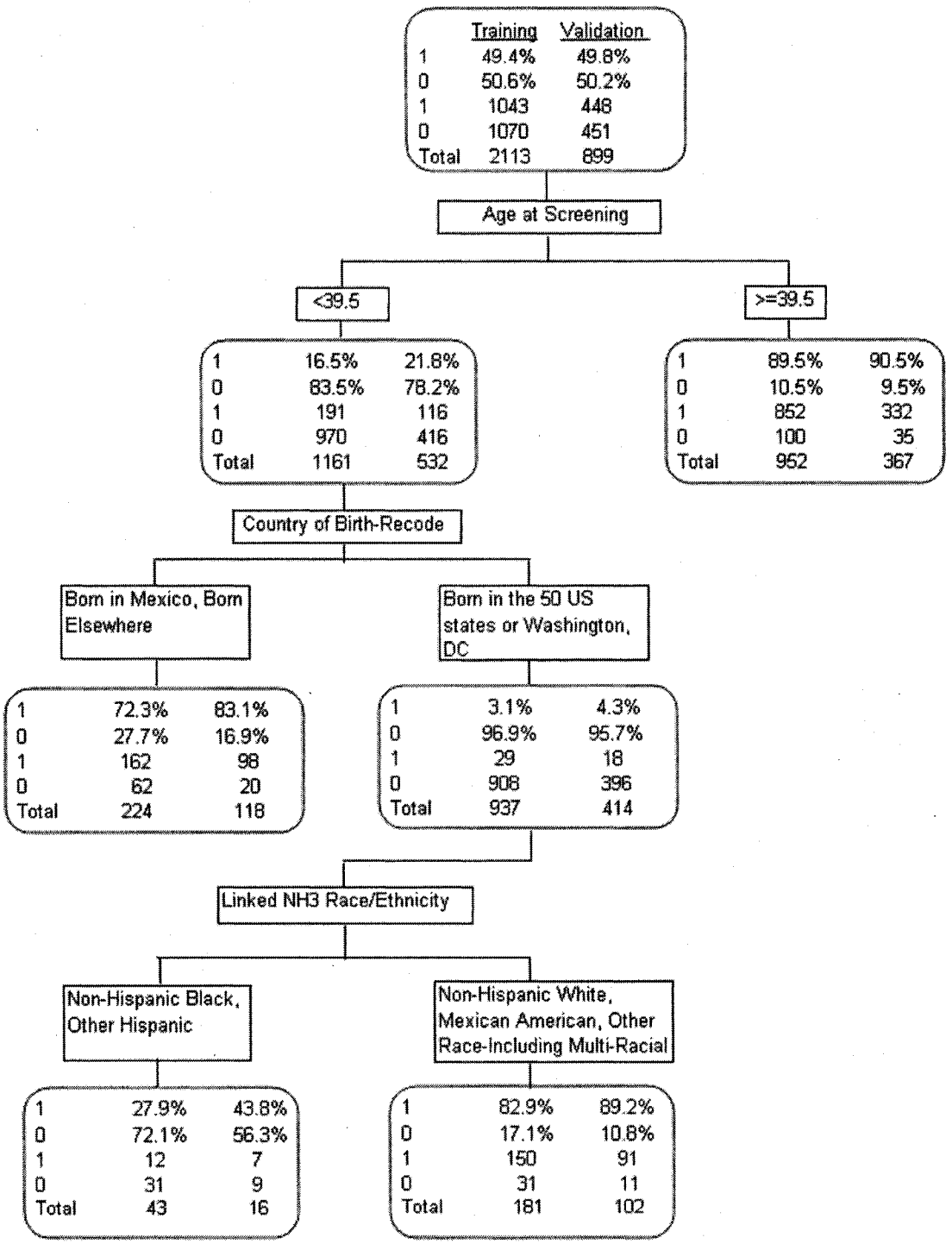
Classification and Regression Tree for β-hexachlorocyclohexane



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APPENDIX 18: p,p'-DDE

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Table 1: Serum Concentrations of p,p'-DDE in ng/g by age category

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Age 5-11	-	-	-	-	-	-	-	-	-	-	-
Age 12-19	1444	122.78	110.60	136.29	<LOD	28100.00	71.80	112.00	199.00	336.00	499.00
Age 20-40	1094	194.03	174.28	216.01	<LOD	27900.00	102.00	175.00	314.00	639.00	1010.00
Age 41-55	651	366.81	332.89	404.19	21.10	16300.00	182.00	308.00	669.00	1240.00	2400.00
Age 55+	1073	660.02	605.77	719.14	<LOD	24200.00	355.00	674.00	1330.00	2140.00	3060.00

Table 2: Serum Concentrations of p,p'-DDE in ng/g and Occupation

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Executive, Administrators, & Managers	128	248.86	207.17	298.94	24.80	4470.00	161.00	236.00	372.00	689.00	1330.00
Management Related	49	272.29	200.24	370.26	55.00	4740.00	138.00	241.00	507.00	1040.00	1430.00
Engineers, Architects, and Scientists	63	220.16	173.50	279.37	56.90	4130.00	120.00	179.00	380.00	647.00	875.00
Health Diagnosing, Assessing & Treating	38	229.75	146.51	360.28	52.00	5780.00	155.00	218.00	249.00	684.00	819.00
Teachers	57	292.71	240.33	356.51	39.70	3830.00	159.00	260.00	470.00	963.00	1500.00
Writers, Artists, Entertainers & Athletes	28	204.28	124.75	334.50	45.20	1880.00	99.70	194.00	358.00	469.00	1060.00
Other Professional Speciality	45	206.04	184.40	230.23	58.50	3300.00	128.00	155.00	374.00	691.00	763.00
Technicians and Related Supported	55	232.01	201.98	266.50	54.50	1270.00	120.00	193.00	443.00	789.00	812.00
Supervisors and Proprietors, Sales	34	255.93	214.89	304.81	32.40	2380.00	119.00	261.00	499.00	825.00	1070.00
Sales Representatives,finance,business,commodities	37	292.29	226.82	376.67	54.30	2180.00	123.00	243.00	628.00	1130.00	1720.00
Sales Workers, retail & personal services	156	215.54	170.55	272.40	<LOD	13100.00	102.00	181.00	356.00	939.00	1440.00
Secretaries, Stenographers, and typists	31	215.01	146.56	315.43	42.40	1650.00	128.00	194.00	384.00	778.00	869.00
Information Clerks	33	273.77	211.04	355.14	42.10	3060.00	118.00	359.00	753.00	1030.00	1130.00
Records Processing	43	260.99	193.43	352.14	34.70	1300.00	145.00	296.00	485.00	905.00	1170.00
Material Recording, Scheduling,distributing clerks	32	332.34	261.39	422.54	96.00	7130.00	193.00	239.00	477.00	1610.00	1940.00
Miscellaneous administrative support	111	289.01	228.74	365.18	36.90	6220.00	147.00	209.00	543.00	1360.00	1580.00
Private Household	19	330.19	183.73	593.42	106.00	11200.00	212.00	275.00	518.00	719.00	1370.00
Protective Service	37	250.27	204.41	306.44	<LOD	4010.00	135.00	218.00	463.00	747.00	1550.00
Waiters and Waitrasses	39	187.42	118.44	296.59	25.50	2400.00	72.30	130.00	310.00	969.00	1320.00
Cooks	44	385.97	251.98	591.22	49.00	6510.00	175.00	302.00	717.00	1530.00	5950.00
Miscellaneous food preparation and service	70	284.60	231.63	349.68	36.20	9240.00	130.00	271.00	467.00	1060.00	2480.00
Health Service Occupation	56	399.01	299.36	531.83	34.00	9410.00	175.00	400.00	757.00	2820.00	3120.00
Cleaning and Building Service	70	454.42	376.05	549.12	26.20	27900.00	187.00	368.00	1040.00	2690.00	5680.00
Personal Service	45	360.22	250.78	517.43	24.60	2590.00	148.00	388.00	791.00	1270.00	1700.00
Farm Operators, Managers and Supervisors	11	511.22	246.29	1061.14	126.00	4610.00	294.00	541.00	961.00	1830.00	1830.00
Farm and Nursery Workers	27	991.72	391.17	2514.26	144.00	20000.00	277.00	827.00	2280.00	16400.00	16400.00
Related Agricultural, Forestry and Fishing	35	326.17	196.47	541.51	41.10	16100.00	109.00	303.00	1010.00	1570.00	3050.00
Vehicle and Mobile Equipment Mechanics, Repairs	29	336.83	232.29	488.42	91.50	3260.00	205.00	363.00	462.00	879.00	1190.00
Other Mechanics and repairers	32	246.95	191.60	318.27	57.20	4450.00	163.00	242.00	338.00	585.00	969.00
Construction traders	96	298.12	232.58	382.13	53.10	16300.00	134.00	228.00	520.00	1240.00	3100.00
Extractive and Precision Production	47	293.72	189.93	454.24	55.00	5680.00	121.00	194.00	627.00	1570.00	3120.00
Textile, apparel and furnishings machine operators	13	336.85	203.36	557.95	<LOD	6440.00	168.00	222.00	870.00	4220.00	4220.00
Machine Operators, Assorted Materials	49	264.56	221.41	316.11	38.70	8590.00	95.30	183.00	500.00	2820.00	7080.00
Fabricators, Assemblers, Inspectors, and Samplers	33	197.23	183.38	212.12	52.00	15600.00	103.00	152.00	256.00	713.00	2890.00
Motor vehicle operators	53	242.34	194.98	301.21	58.00	3510.00	134.00	240.00	357.00	728.00	1400.00
Other transportation and material moving	19	318.25	194.91	519.64	73.40	7170.00	132.00	407.00	538.00	1200.00	1670.00
Construction laborers	22	413.01	220.52	773.54	78.10	21200.00	152.00	420.00	836.00	1050.00	2640.00
Laborers, except constuction	17	289.31	210.99	396.70	<LOD	16500.00	101.00	300.00	867.00	1100.00	1100.00
Frieght, Stock, and Material Movers, hand	41	201.91	175.83	231.85	57.40	1440.00	92.30	205.00	351.00	423.00	946.00
Other helpers, equipment cleaners, hand packages and laborers	28	280.57	220.55	356.92	42.60	3410.00	166.00	182.00	578.00	1120.00	3410.00

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Table 3: Serum Concentrations of p,p'-DDE in ng/g and Employment Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Working at a Job or Business	990	282.19	264.03	301.60	<LOD	21200.00	148.00	242.00	494.00	1110.00	1760.00
With a Job but not at Work	48	332.55	269.85	409.83	60.40	16400.00	142.00	360.00	776.00	919.00	1460.00
Looking for Work	49	279.94	144.28	543.12	44.20	2750.00	115.00	157.00	615.00	2690.00	2690.00
Not working at a job or Business	814	427.52	359.43	508.50	<LOD	24200.00	187.00	418.00	1050.00	2000.00	3090.00

Table 4: Serum Concentrations of p,p'-DDE in ng/g and Income

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
$0-$4 999	100	224.95	168.15	300.94	<LOD	6010.00	91.90	218.00	308.00	1160.00	2080.00
$ 5000-$9 999	217	332.55	269.85	409.83	60.40	16400.00	142.00	360.00	776.00	919.00	1460.00
$10 000-$14 999	362	279.94	144.28	543.12	44.20	2750.00	115.00	157.00	615.00	2690.00	2690.00
$15 000-$19 999	322	427.52	359.43	508.50	<LOD	24200.00	187.00	418.00	1050.00	2000.00	3090.00
$20 000-$24 999	353	296.15	240.41	364.80	<LOD	9900.00	133.00	270.00	722.00	1350.00	1660.00
$25 000-$34 999	497	329.79	277.24	392.29	<LOD	21400.00	138.00	315.00	788.00	1440.00	2400.00
$35 000-$44 999	375	267.73	225.40	318.02	19.30	12500.00	118.00	247.00	568.00	1210.00	1830.00
$45 000-$54 999	323	252.73	207.05	308.49	<LOD	16400.00	129.00	226.00	424.00	1080.00	1570.00
$55 000-$64 999	270	288.23	240.59	345.30	21.40	16500.00	130.00	244.00	513.00	1360.00	2070.00
$65 000-$74 999	177	230.60	194.79	273.00	24.70	5250.00	118.00	196.00	360.00	905.00	1410.00
$75 000 and over	689	236.96	212.58	264.13	<LOD	15600.00	123.00	210.00	426.00	744.00	1230.00

Table 5: Serum Concentrations of p,p'-DDE in ng/g and Race/Ethnicity

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Non-Hispanic White	1785	244.19	224.28	265.87	<LOD	7450.00	121.00	220.00	478.00	1010.00	1460.00
Non-Hispanic Black	931	321.34	277.32	372.35	19.80	24200.00	128.00	264.00	762.00	1860.00	3010.00
Mexican American	1223	668.00	606.58	735.65	<LOD	28100.00	287.00	592.00	1350.00	3320.00	6190.00
Other Race-Including MultiRacial	124	501.74	409.90	614.15	19.30	11100.00	165.00	421.00	1220.00	3460.00	5950.00
Other Hispanic	199	378.76	313.74	457.25	<LOD	15600.00	130.00	396.00	870.00	1740.00	2820.00

Table 6: Serum Concentrations of p,p'-DDE in ng/g and Gender

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Male	2006	274.86	251.68	300.18	<LOD	28100.00	129.00	242.00	520.00	1080.00	1740.00
Female	2256	301.21	273.23	332.06	<LOD	27900.00	128.00	259.00	689.00	1490.00	2470.00

Table 7: Serum Concentrations of p,p'-DDE in ng/g and Education

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Less than High School	2236	295.59	259.02	337.33	<LOD	28100.00	106.00	258.00	732.00	1860.00	3120.00
High School Diploma	717	303.56	269.26	342.23	<LOD	17300.00	145.00	286.00	615.00	1140.00	1740.00
More than High School	1304	277.47	255.15	301.75	<LOD	15600.00	135.00	236.00	518.00	1170.00	1670.00

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Table 8: Serum Concentrations of p,p'-DDE in ng/g and Marital Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Married	1564	348.94	317.83	383.11	<LOD	20000.00	163.00	317.00	691.00	1440.00	2440.00
Widowed	259	730.19	623.00	855.81	<LOD	24200.00	364.00	746.00	1570.00	2790.00	4630.00
Divorced	202	357.74	289.67	441.80	21.10	13100.00	175.00	304.00	832.00	1400.00	1830.00
Separated	95	433.79	278.06	676.73	38.70	15600.00	143.00	358.00	936.00	1920.00	9820.00
Never Married	1451	172.33	155.70	190.74	<LOD	28100.00	90.70	154.00	273.00	627.00	1130.00
Living with Partner	162	220.29	177.44	273.50	24.80	14600.00	115.00	216.00	382.00	721.00	1130.00

Table 9: Serum Concentrations of p,p'-DDE in ng/g and Military Service

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Served in Military	429	388.87	337.41	448.17	<LOD	6380.00	191.00	361.00	746.00	1450.00	1870.00
Did Not Serve in Military	2905	305.73	280.29	333.48	<LOD	28100.00	137.00	260.00	630.00	1370.00	2320.00

Table 10: Serum Concentrations of p,p'-DDE in ng/g and Country of Birth

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Born in the US	3370	250.79	230.66	272.67	<LOD	24200.00	121.00	221.00	496.00	1090.00	1610.00
Born in Mexico	563	1073.56	910.98	1265.15	83.70	28100.00	471.00	883.00	2350.00	5470.00	9820.00
Born Elsewhere	319	543.65	438.65	673.78	49.00	15600.00	248.00	539.00	1100.00	2840.00	5560.00

Table 11: Serum Concentrations of p,p'-DDE in ng/g and Pregnancy Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Pregnant	188	140.66	105.78	187.06	24.80	14600.00	71.20	117.00	222.00	583.00	2420.00
Not Pregnant	1243	247.08	224.03	272.51	<LOD	27900.00	117.00	216.00	469.00	1040.00	1690.00

Table 12: Serum Concentrations of p,p'-DDE in ng/g and Type of Home

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
A Mobile Home or Trailer	373	281.02	234.63	336.58	<LOD	21400.00	115.00	250.00	589.00	1340.00	2510.00
A detached single family home	2597	291.55	262.67	323.61	<LOD	27900.00	132.00	261.00	597.00	1280.00	1940.00
Attached Single Family Home	321	277.97	237.73	325.02	25.50	12300.00	133.00	225.00	552.00	1220.00	2330.00
An Apartment	858	301.04	271.17	334.19	<LOD	28100.00	128.00	234.00	648.00	1560.00	2730.00
Something Else	40	207.08	155.16	276.37	21.20	15600.00	97.70	191.00	541.00	722.00	1240.00
Dormitory	24	124.32	.	.	45.40	1360.00	77.60	111.00	189.00	287.00	376.00

Table 13: Serum Concentrations of p,p'-DDE in ng/g and Year Home Built

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
1990-present	559	242.73	222.01	265.38	<LOD	7450.00	126.00	207.00	436.00	872.00	1490.00
1978-1989	734	264.38	227.95	306.62	18.70	17300.00	118.00	219.00	498.00	1130.00	1870.00
1960-1977	762	344.46	309.64	383.19	<LOD	16300.00	155.00	302.00	730.00	1460.00	2200.00
1950-1959	444	357.42	294.41	433.90	<LOD	20000.00	161.00	342.00	833.00	1460.00	2050.00
1940-1949	220	285.17	234.57	346.70	30.80	9240.00	129.00	242.00	565.00	1320.00	2330.00
before 1940	469	245.10	214.73	279.78	<LOD	16100.00	109.00	208.00	534.00	1280.00	1730.00

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Table 14: Serum Concentrations of p,p'-DDE in ng/g and Water Source

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Private-Public Water Company	3798	292.92	270.17	317.58	<LOD	28100.00	129.00	254.00	609.00	1360.00	2230.00
Private Public Well	392	262.43	228.44	301.48	<LOD	20000.00	129.00	243.00	543.00	981.00	1430.00
Some other Water Source	7	277.58	.	.	86.90	3920.00	86.90	427.00	606.00	606.00	3920.00

Table 15: Serum Concentrations of p,p'-DDE in ng/g and Helpings of Protein per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	16	1034.68	767.57	1394.75	520.00	9040.00	684.00	823.00	2020.00	2020.00	2280.00
1	166	634.04	489.52	821.23	27.70	11100.00	331.00	644.00	1410.00	1900.00	2770.00
2	196	541.43	464.38	631.26	<LOD	15600.00	294.00	547.00	1080.00	1850.00	2620.00
3+	92	629.67	490.36	808.54	42.30	7810.00	334.00	565.00	1130.00	2930.00	4010.00

Table 16: Serum Concentrations of p,p'-DDE in ng/g and Helpings of Milk/Dairy per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	91	488.38	338.92	703.76	<LOD	5370.00	286.00	485.00	1120.00	2090.00	2550.00
1	195	702.39	585.87	842.09	27.70	11100.00	458.00	693.00	1290.00	1850.00	2930.00
2	128	546.20	421.29	708.14	48.70	15600.00	286.00	502.00	1010.00	2300.00	3050.00
3+	56	603.69	475.02	767.21	42.30	5280.00	329.00	604.00	1250.00	2330.00	2620.00

Table 17: Serum Concentrations of p,p'-DDE in ng/g and Helpings of Fruit per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	54	658.52	495.50	875.16	62.20	6510.00	363.00	532.00	1110.00	2370.00	4630.00
1	210	597.86	509.29	701.84	27.70	15600.00	331.00	586.00	1300.00	2300.00	2930.00
2	133	616.47	458.86	828.20	42.30	7810.00	314.00	633.00	1340.00	2020.00	2330.00
3+	74	518.75	425.58	632.30	<LOD	4010.00	295.00	638.00	1010.00	1730.00	2090.00

Table 18: Serum Concentrations of p,p'-DDE in ng/g and Helpings of Vegetables per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	60	623.53	361.06	1076.79	31.60	5420.00	342.00	633.00	1470.00	2120.00	2300.00
1	202	591.02	463.56	753.52	<LOD	15600.00	303.00	581.00	1370.00	2280.00	3150.00
2	196	541.43	464.38	631.26	<LOD	15600.00	294.00	547.00	1080.00	1850.00	2620.00
3+	55	664.89	548.43	806.08	42.30	4010.00	478.00	616.00	1500.00	2020.00	2230.00

Table 19: Serum Concentrations of p,p'-DDE in ng/g and Helpings of Bread/grain per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	31	664.50	466.60	946.32	62.20	6510.00	362.00	728.00	1340.00	1720.00	6510.00
1	165	684.26	549.08	852.72	27.70	11100.00	398.00	644.00	1500.00	2140.00	2840.00
2	169	545.10	439.18	676.56	27.70	15600.00	286.00	570.00	1030.00	2080.00	2770.00
3+	106	545.38	435.76	682.58	<LOD	7810.00	300.00	565.00	1090.00	2020.00	2550.00

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Table 20: Serum Concentrations of p,p'-DDE in ng/g and Servings of Beans per month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	450	177.86	152.64	207.26	<LOD	11100.00	88.70	166.00	312.00	701.00	1080.00
1 to 5	1792	293.76	263.82	327.10	<LOD	24200.00	138.00	254.00	616.00	1410.00	2020.00
6 to 10	848	331.92	279.54	394.11	<LOD	21400.00	154.00	281.00	679.00	1490.00	2670.00
11 to 15	558	313.69	270.48	363.80	40.40	16300.00	162.00	254.00	606.00	1210.00	1760.00
15+	786	441.30	357.83	544.24	<LOD	21200.00	176.00	386.00	872.00	2660.00	4540.00

Table 21: Serum Concentrations of p,p'-DDE in ng/g and Fish Consumed in Past Month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	1152	295.28	259.45	336.06	<LOD	27900.00	131.00	259.00	628.00	1280.00	1940.00
No	747	235.64	197.07	281.76	<LOD	28100.00	98.00	201.00	494.00	1130.00	2020.00

Table 22: 2,4- D and Shellfish Consumed in Past Month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	842	272.03	235.40	314.37	<LOD	28100.00	123.00	233.00	531.00	1090.00	1880.00
No	1057	277.95	238.12	324.44	<LOD	27900.00	115.00	269.00	647.00	1310.00	2020.00

Table 23: Serum Concentrations of p,p'-DDE in ng/g and Body Mass Index Category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Under Weight	122	294.49	243.11	356.74	55.80	27900.00	151.00	236.00	498.00	1080.00	2620.00
Healthy Weight	2587	252.71	229.87	277.81	<LOD	28100.00	118.00	220.00	448.00	1120.00	1700.00
Over Weight	3624	314.85	288.68	343.38	<LOD	24200.00	142.00	278.00	657.00	1430.00	2320.00

Table 24: Serum Concentrations of p,p'-DDE in ng/g and Ever told you have Weak/Failing Kidneys

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	40	606.84	349.00	1055.15	99.30	11100.00	458.00	604.00	1240.00	2020.00	2280.00
No	1237	308.87	266.78	357.61	<LOD	27900.00	133.00	279.00	647.00	1300.00	2120.00

Table 25: Serum Concentrations of p,p'-DDE in ng/g and total number of beers consumed per month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	813	349.09	290.80	419.07	<LOD	27900.00	148.00	329.00	713.00	1500.00	2230.00
0-5	269	290.82	250.09	338.19	40.80	14500.00	128.00	238.00	591.00	1160.00	2160.00
6 to 10	63	256.33	157.22	417.93	47.90	9350.00	130.00	169.00	538.00	1410.00	1550.00
11 to 15	39	168.05	138.57	203.82	53.10	1560.00	98.20	130.00	224.00	542.00	825.00
16+	94	283.60	215.84	372.63	<LOD	9040.00	146.00	248.00	641.00	1200.00	1610.00

Table 26: Serum Concentrations of p,p'-DDE in ng/g and Water (gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0 to 896	2587	281.52	253.47	312.67	<LOD	21200.00	123.00	238.00	624.00	1430.00	2300.00
897-1792g	1797	331.32	299.84	366.10	<LOD	28100.00	150.00	283.00	689.00	1460.00	2510.00
>1792g	1227	290.03	266.03	316.21	26.70	21400.00	139.00	240.00	518.00	1230.00	2040.00

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Table 27: Serum Concentrations of p,p'-DDE in ng/g and Alcohol (gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	5134	289.21	264.66	316.04	<LOD	28100.00	126.00	253.00	629.00	1410.00	2320.00
0-28	718	308.23	272.19	349.04	23.80	16400.00	154.00	264.00	542.00	1230.00	2070.00
>28	454	274.45	238.35	316.01	42.70	5780.00	146.00	233.00	494.00	1030.00	1550.00

Table 28: 2,6-D and Caffeine(gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	1190	284.13	249.04	324.16	<LOD	28100.00	120.00	232.00	589.00	1440.00	2770.00
0-400	4715	291.50	265.60	319.94	<LOD	27900.00	129.00	251.00	615.00	1360.00	2300.00
400+	401	289.13	245.84	340.05	22.10	5280.00	158.00	263.00	507.00	1120.00	1460.00

Table 29: Serum Concentrations of p,p'-DDE in ng/g and Fiber (gm) /day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0g	14	219.42	125.22	384.49	44.40	975.00	172.00	259.00	310.00	310.00	975.00
1 to 10	2085	277.32	249.36	308.42	<LOD	27900.00	119.00	243.00	616.00	1420.00	2290.00
11 to 24	3363	290.97	265.52	318.87	<LOD	28100.00	133.00	245.00	583.00	1350.00	2140.00
25+	844	319.56	281.85	362.31	<LOD	14600.00	154.00	271.00	597.00	1280.00	2140.00

Table 30: Serum Concentrations of p,p'-DDE in ng/g and Breastfeeding Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Currently Breastfeeding	40	160.08	94.78	270.37	31.50	6570.00	53.40	120.00	230.00	2730.00	2730.00
Not currently Breastfeeding	118	154.72	119.34	200.58	<LOD	7030.00	77.30	154.00	302.00	376.00	601.00

Table 31: Serum Concentrations of p,p'-DDE in ng/g and Liver Conditions

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Ever had a liver condition	86	368.60	281.03	483.47	30.50	16400.00	181.00	363.00	648.00	1220.00	2420.00
Never had a liver condition	2727	328.96	302.22	358.06	<LOD	27900.00	151.00	287.00	679.00	1430.00	2320.00

Table 32: Serum Concentrations of p,p'-DDE in ng/g and Anyone Smoke in the Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	880	246.34	218.58	277.62	<LOD	16500.00	113.00	222.00	528.00	1100.00	1830.00
No	3334	303.14	279.02	329.36	<LOD	28100.00	133.00	260.00	630.00	1400.00	2300.00

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Table 33: 2, 4-D and Ever told that you have Diabetes?

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	265	738.43	584.13	933.48	<LOD	13200.00	347.00	823.00	1740.00	3200.00	5190.00
No	3964	270.76	250.27	292.93	<LOD	28100.00	126.00	237.00	542.00	1170.00	1840.00

Table 34: Serum Concentrations of p,p'-DDE in ng/g by Currently Taking Birth Control Pills?

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	125	184.90	153.47	222.76	<LOD	13100.00	89.60	158.00	317.00	704.00	1040.00
No	371	230.93	198.32	268.90	26.90	16500.00	120.00	209.00	378.00	838.00	1410.00

Table 35: Serum Concentrations of p,p'-DDE in ng/g and Now Use Depo-Provera Injectables

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	54	148.67	108.49	203.74	22.10	1170.00	94.00	153.00	294.00	535.00	601.00
No	128	242.91	181.87	324.43	25.90	13100.00	107.00	176.00	439.00	1170.00	2510.00

Table 36: Serum Concentrations of p,p'-DDE in ng/g and Currently Taking Estrogen Only Pills

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	138	524.13	439.33	625.29	21.10	5310.00	286.00	532.00	1130.00	1670.00	2210.00
No	108	524.06	431.87	635.93	<LOD	21400.00	260.00	579.00	1060.00	1660.00	2330.00

Table 37: Serum Concentrations of p,p'-DDE in ng/g and Currently Taking Projestin Only Pills

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	30	426.21	291.50	623.17	51.10	5190.00	191.00	476.00	945.00	1170.00	1410.00
No	53	389.89	308.83	492.22	27.70	11200.00	238.00	355.00	853.00	1170.00	1520.00

Table 38: Serum Concentrations of p,p'-DDE in ng/g and Currently Taking Estrogen-Projestin Pills

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	38	382.15	304.26	479.98	84.50	3370.00	177.00	256.00	1040.00	1520.00	1940.00
No	25	519.84	427.05	632.79	103.00	2790.00	310.00	415.00	945.00	1460.00	1830.00

Table 39: Serum Concentrations of p,p'-DDE in ng/g and Number of Prescription Medications Taken

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	3716	244.19	224.61	265.48	<LOD	28100.00	117.00	210.00	435.00	985.00	1720.00
1	1073	248.68	210.20	294.21	21.80	27900.00	111.00	217.00	504.00	1170.00	1700.00
2	580	352.92	300.27	414.80	<LOD	21400.00	170.00	315.00	704.00	1460.00	2750.00
3	377	428.16	365.00	502.25	<LOD	15600.00	177.00	407.00	1030.00	1830.00	2620.00
4	257	436.72	358.76	531.61	<LOD	13200.00	195.00	457.00	872.00	1830.00	2820.00
5	207	449.59	352.33	573.70	21.10	10400.00	229.00	386.00	857.00	1940.00	3120.00
6+	350	513.14	409.88	642.40	<LOD	9900.00	208.00	589.00	1210.00	2200.00	3120.00

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Results of Classification and Regression Tree presented in the Text

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APPENDIX 19: TRANS-NONACHLOR

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Table 1: Serum Concentrations of trans-Nonachlor in ng/g by age category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Age 5-11	-	-	-	-	-	-	-	-	-	-	-
Age 12-19	1422	<LOD	<LOD	<LOD	<LOD	122.00	<LOD	<LOD	<LOD	15.20	21.60
Age 20-40	1087	<LOD	<LOD	<LOD	<LOD	194.00	<LOD	<LOD	19.40	29.50	38.10
Age 41-55	648	23.38	21.59	25.32	<LOD	243.00	16.00	24.10	35.20	53.90	71.50
Age 55+	1062	43.85	40.06	48.01	<LOD	834.00	27.80	42.10	64.00	109.00	150.00

Table 2: Serum Concentrations of trans-Nonachlor in ng/g and Occupation

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Executive, Administrators, & Managers	128	18.56	16.40	21.00	<LOD	88.90	<LOD	18.40	28.20	40.60	53.00
Management Related	48	18.14	14.70	22.39	<LOD	168.00	<LOD	16.70	32.90	38.10	62.30
Engineers, Architects, and Scientists	63	<LOD	<LOD	19.53	<LOD	89.60	<LOD	16.60	24.20	34.40	41.80
Health Diagnosing, Assessing & Treating	38	16.99	<LOD	25.30	<LOD	69.90	14.90	17.60	28.10	47.50	58.30
Teachers	56	17.19	<LOD	20.49	<LOD	143.00	<LOD	17.20	33.50	37.90	48.00
Writers, Artists, Entertainers & Athletes	28	14.50	<LOD	20.88	<LOD	62.40	<LOD	14.60	29.00	29.50	31.60
Other Professional Speciality	46	20.59	18.17	23.35	<LOD	92.70	<LOD	22.40	33.90	49.00	59.20
Technicians and Related Supported	56	14.73	<LOD	17.27	<LOD	78.50	<LOD	<LOD	23.30	39.00	44.00
Supervisors and Proprietors, Sales	33	16.88	15.03	18.96	<LOD	87.60	<LOD	15.60	29.20	39.20	39.60
Sales Representatives,finance,business,commodities	37	27.09	22.50	32.61	<LOD	126.00	19.40	30.60	36.40	54.60	116.00
Sales Workers, retail & personal services	153	14.99	<LOD	18.38	<LOD	88.90	<LOD	16.10	31.70	51.00	62.30
Secretaries, Stenographers, and typists	31	16.39	<LOD	20.99	<LOD	113.00	<LOD	19.90	31.40	37.20	37.30
Information Clerks	32	<LOD	<LOD	15.20	<LOD	135.00	<LOD	<LOD	17.10	32.10	51.80
Records Processing	43	17.46	<LOD	21.88	<LOD	61.00	<LOD	18.50	26.50	47.60	60.60
Material Recording, Scheduling,distributing clerks	31	21.04	17.88	24.75	<LOD	71.50	<LOD	22.90	30.20	38.70	40.40
Miscellaneous administrative support	111	17.69	<LOD	21.79	<LOD	151.00	<LOD	20.10	30.90	50.50	77.20
Private Household	19	<LOD	<LOD	27.15	<LOD	65.50	<LOD	<LOD	22.60	65.50	65.50
Protective Service	37	18.23	<LOD	23.76	<LOD	142.00	<LOD	15.50	34.60	68.50	78.20
Waiters and Waitresses	39	<LOD	<LOD	19.98	<LOD	129.00	<LOD	<LOD	26.30	53.10	65.90
Cooks	43	20.38	<LOD	29.38	<LOD	127.00	<LOD	21.70	28.60	84.20	127.00
Miscellaneous food preparation and service	71	<LOD	<LOD	15.60	<LOD	122.00	<LOD	<LOD	29.20	36.40	36.80
Health Service Occupation	55	19.80	15.51	25.29	<LOD	149.00	<LOD	22.60	45.50	67.60	74.40
Cleaning and Building Service	70	21.18	19.13	23.44	<LOD	175.00	<LOD	21.20	37.50	47.70	59.70
Personal Service	45	18.49	<LOD	24.58	<LOD	90.40	<LOD	14.90	29.20	53.90	73.60
Farm Operators, Managers and Supervisors	11	*37.86*	*15.14*	*94.67*	*<LOD*	*98.90*	*34.70*	*52.40*	*66.00*	*82.70*	*98.90*
Farm and Nursery Workers	26	19.79	<LOD	49.39	<LOD	156.00	<LOD	20.10	30.00	53.90	156.00
Related Agricultural, Forestry and Fishing	35	<LOD	<LOD	20.23	<LOD	74.10	<LOD	<LOD	25.00	33.40	41.50
Vehicle and Mobile Equipment Mechanics, Repairs	29	23.93	18.46	31.01	<LOD	179.00	18.50	21.10	39.90	66.00	170.00
Other Mechanics and repairers	32	18.14	<LOD	24.43	<LOD	89.00	<LOD	21.50	30.50	34.20	36.00
Construction traders	96	17.11	14.58	20.08	<LOD	115.00	<LOD	17.90	25.70	43.10	50.30
Extractive and Precision Production	47	16.60	<LOD	22.86	<LOD	117.00	<LOD	<LOD	38.10	67.00	68.40
Textile, apparel and furnishings machine operators	12	14.78	<LOD	15.71	<LOD	42.40	<LOD	<LOD	35.20	42.40	42.40
Machine Operators, Assorted Materials	48	17.89	14.56	21.99	<LOD	94.10	<LOD	17.90	35.40	52.90	56.30
Fabricators, Assemblers, Inspectors, and Samplers	33	16.84	<LOD	20.72	<LOD	67.20	<LOD	17.50	28.90	40.90	51.60
Motor vehicle operators	54	16.37	<LOD	19.49	<LOD	99.20	<LOD	18.70	23.70	33.00	41.50
Other transportation and material moving	18	20.66	<LOD	37.92	<LOD	214.00	<LOD	26.20	33.30	33.60	102.00
Construction laborers	21	<LOD	<LOD	17.68	<LOD	58.50	<LOD	14.50	25.10	44.10	58.50
Laborers, except constuction	17	<LOD	<LOD	<LOD	<LOD	64.00	<LOD	<LOD	15.30	40.10	64.00
Frieght, Stock, and Material Movers, hand	40	<LOD	<LOD	15.47	<LOD	66.70	<LOD	<LOD	27.10	40.70	41.30
Other helpers, equipment cleaners, hand packages and laborers	28	<LOD	<LOD	<LOD	<LOD	63.60	<LOD	<LOD	15.60	42.90	63.60

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Table 3: Serum Concentrations of trans-Nonachlor in ng/g and Employment Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Working at a Job or Business	986	16.09	14.60	17.73	<LOD	214.00	<LOD	17.20	29.50	44.00	60.10
With a Job but not at Work	48	23.10	19.43	27.45	<LOD	117.00	18.50	24.90	32.10	51.20	64.00
Looking for Work	47	<LOD	<LOD	15.22	<LOD	78.20	<LOD	<LOD	20.10	30.20	44.90
Not working at a job or Business	808	25.18	21.61	29.35	<LOD	834.00	<LOD	28.10	52.00	92.00	154.00

Table 4: Serum Concentrations of trans-Nonachlor in ng/g and Income

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
$0-$4 999	98	<LOD	<LOD	<LOD	<LOD	155.00	<LOD	<LOD	20.00	26.10	36.50
$ 5000-$9 999	219	23.10	19.43	27.45	<LOD	117.00	18.50	24.90	32.10	51.20	64.00
$10 000-$14 999	357	<LOD	<LOD	15.22	<LOD	78.20	<LOD	<LOD	20.10	30.20	44.90
$15 000-$19 999	321	25.18	21.61	29.35	<LOD	834.00	<LOD	28.10	52.00	92.00	154.00
$20 000-$24 999	345	18.76	15.49	22.72	<LOD	327.00	<LOD	19.40	35.60	57.60	84.40
$25 000-$34 999	488	18.78	16.76	21.05	<LOD	273.00	<LOD	21.00	41.40	60.60	84.00
$35 000-$44 999	372	17.69	15.22	20.56	<LOD	184.00	<LOD	20.20	34.20	50.30	70.50
$45 000-$54 999	323	16.11	<LOD	18.04	<LOD	225.00	<LOD	15.40	29.10	50.30	62.20
$55 000-$64 999	265	17.77	15.33	20.60	<LOD	584.00	<LOD	17.90	29.50	59.80	71.80
$65 000-$74 999	176	16.40	<LOD	18.91	<LOD	179.00	<LOD	17.60	26.60	41.20	65.10
$75 000 and over	683	16.70	15.49	18.02	<LOD	283.00	<LOD	17.20	28.90	43.40	55.00

Table 5: Serum Concentrations of trans-Nonachlor in ng/g and Race/Ethnicity

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Non-Hispanic White	1774	18.76	17.43	20.19	<LOD	834.00	<LOD	19.40	34.30	56.10	79.40
Non-Hispanic Black	918	19.96	17.52	22.74	<LOD	370.00	<LOD	19.40	38.10	76.70	110.00
Mexican American	1208	<LOD	<LOD	14.54	<LOD	205.00	<LOD	<LOD	25.50	45.80	59.70
Other Race-Including MultiRacial	123	20.16	17.58	23.11	<LOD	116.00	<LOD	23.80	40.70	68.00	78.80
Other Hispanic	196	<LOD	<LOD	14.71	<LOD	122.00	<LOD	<LOD	29.20	48.70	71.40

Table 6: Serum Concentrations of trans-Nonachlor in ng/g and Gender

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Male	1984	17.71	16.39	19.14	<LOD	834.00	<LOD	18.50	34.10	54.60	78.50
Female	2235	18.36	17.10	19.72	<LOD	584.00	<LOD	18.80	34.10	60.20	83.70

Table 7: Serum Concentrations of trans-Nonachlor in ng/g and Education

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Less than High School	2200	15.70	<LOD	17.23	<LOD	834.00	<LOD	<LOD	34.80	68.40	109.00
High School Diploma	720	20.09	18.20	22.18	<LOD	382.00	<LOD	21.80	36.20	56.30	80.70
More than High School	1294	18.78	17.36	20.32	<LOD	274.00	<LOD	19.40	32.90	51.00	68.00

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Table 8: Serum Concentrations of trans-Nonachlor in ng/g and Marital Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Married	1545	21.94	20.24	23.78	<LOD	834.00	<LOD	22.30	37.80	61.90	82.70
Widowed	260	49.82	44.51	55.77	<LOD	382.00	29.90	47.30	84.80	124.00	188.00
Divorced	203	24.12	20.50	28.39	<LOD	274.00	16.30	25.10	37.10	62.60	80.20
Separated	93	21.53	16.62	27.88	<LOD	221.00	<LOD	20.50	43.90	61.10	78.70
Never Married	1432	<LOD	<LOD	<LOD	<LOD	136.00	<LOD	<LOD	16.00	31.30	41.90
Living with Partner	160	15.88	<LOD	19.57	<LOD	156.00	<LOD	15.80	28.20	49.70	62.40

Table 9: Serum Concentrations of trans-Nonachlor in ng/g and Military Service

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Served in Military	422	29.09	25.52	33.15	<LOD	834.00	17.50	31.70	47.70	74.30	96.10
Did Not Serve in Military	2884	18.61	17.36	19.95	<LOD	584.00	<LOD	19.20	33.40	56.80	80.70

Table 10: Serum Concentrations of trans-Nonachlor in ng/g and Country of Birth

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Born in the US	3342	18.48	17.12	19.95	<LOD	834.00	<LOD	19.20	34.40	58.70	83.90
Born in Mexico	553	<LOD	<LOD	14.65	<LOD	205.00	<LOD	<LOD	23.20	38.10	56.80
Born Elsewhere	314	17.05	15.05	19.30	<LOD	129.00	<LOD	16.40	36.40	54.30	77.50

Table 11: Serum Concentrations of trans-Nonachlor in ng/g and Pregnancy Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Pregnant	187	<LOD	<LOD	<LOD	<LOD	194.00	<LOD	<LOD	<LOD	19.30	26.60
Not Pregnant	1238	15.04	<LOD	16.32	<LOD	213.00	<LOD	16.00	27.60	40.60	54.10

Table 12: Serum Concentrations of trans-Nonachlor in ng/g and Type of Home

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
A Mobile Home or Trailer	370	19.64	17.08	22.58	<LOD	214.00	<LOD	20.10	39.20	64.60	90.00
A detached single family home	2565	19.25	17.97	20.62	<LOD	834.00	<LOD	20.20	35.70	60.60	82.70
Attached Single Family Home	318	16.89	14.98	19.04	<LOD	168.00	<LOD	19.00	31.50	49.00	62.30
An Apartment	855	14.71	<LOD	16.50	<LOD	331.00	<LOD	<LOD	27.50	47.60	65.50
Something Else	39	<LOD	<LOD	18.59	<LOD	221.00	<LOD	<LOD	29.50	38.90	97.10
Dormitory	24	<LOD	.	.	<LOD	25.30	<LOD	<LOD	<LOD	18.00	19.60

Table 13: Serum Concentrations of trans-Nonachlor in ng/g and Year Home Built

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
1990-present	553	16.88	15.15	18.81	<LOD	221.00	<LOD	16.80	29.70	49.00	68.00
1978-1989	733	16.95	14.87	19.33	<LOD	273.00	<LOD	17.40	32.30	51.80	80.70
1960-1977	752	21.00	18.27	24.13	<LOD	834.00	<LOD	22.90	40.70	67.20	97.10
1950-1959	439	23.59	20.67	26.92	<LOD	584.00	<LOD	24.20	41.70	67.00	118.00
1940-1949	216	19.01	15.51	23.31	<LOD	243.00	<LOD	21.40	38.00	63.60	86.80
before 1940	470	18.72	17.29	20.27	<LOD	283.00	<LOD	19.80	33.90	54.60	69.90

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Table 14: Serum Concentrations of trans-Nonachlor in ng/g and Water Source

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Private-Public Water Company	3761	17.74	16.46	19.12	<LOD	834.00	<LOD	18.20	33.80	56.70	78.70
Private Public Well	387	20.84	18.08	24.02	<LOD	584.00	<LOD	21.80	34.90	66.00	104.00
Some other Water Source	7	<LOD	.	.	<LOD	47.70	<LOD	<LOD	<LOD	<LOD	47.70

Table 15: Serum Concentrations of trans-Nonachlor in ng/g and Helpings of Protein per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	16	63.49	52.88	76.23	17.90	112.00	39.30	71.40	106.00	112.00	112.00
1	164	42.36	37.15	48.31	<LOD	331.00	28.00	42.80	64.40	98.00	112.00
2	194	43.10	36.50	50.89	<LOD	207.00	27.60	41.40	62.20	99.30	118.00
3+	91	48.74	40.44	58.75	<LOD	268.00	34.10	47.00	67.60	95.50	125.00

Table 16: Serum Concentrations of trans-Nonachlor in ng/g and Helpings of Milk/Dairy per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	89	44.35	35.94	54.72	<LOD	207.00	28.10	44.00	75.20	109.00	152.00
1	192	45.50	40.48	51.16	<LOD	331.00	30.70	46.60	66.50	98.90	116.00
2	128	41.30	35.96	47.43	<LOD	170.00	27.20	41.20	53.90	87.20	112.00
3+	56	48.35	35.77	65.35	<LOD	268.00	33.30	46.10	85.50	107.00	120.00

Table 17: Serum Concentrations of trans-Nonachlor in ng/g and Helpings of Fruit per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	53	46.33	34.58	62.07	<LOD	152.00	33.70	45.60	77.50	97.80	118.00
1	208	42.69	38.53	47.30	<LOD	331.00	29.70	42.80	59.30	85.50	114.00
2	131	44.15	36.11	53.98	<LOD	268.00	27.20	41.40	67.90	112.00	143.00
3+	74	47.63	39.54	57.37	<LOD	142.00	30.70	49.40	71.40	98.00	107.00

Table 18: Serum Concentrations of trans-Nonachlor in ng/g and Helpings of Vegetables per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	60	40.46	30.91	52.96	<LOD	155.00	30.50	45.50	63.60	89.90	116.00
1	199	42.35	36.76	48.79	<LOD	331.00	27.90	44.50	63.60	84.80	101.00
2	194	43.10	36.50	50.89	<LOD	207.00	27.60	41.40	62.20	99.30	118.00
3+	55	50.66	44.90	57.15	17.00	268.00	33.10	52.60	75.10	107.00	123.00

Table 19: Serum Concentrations of trans-Nonachlor in ng/g and Helpings of Bread/grain per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	31	46.45	32.30	66.78	<LOD	152.00	28.50	42.30	86.60	118.00	118.00
1	162	46.66	41.95	51.89	<LOD	331.00	30.70	46.10	68.40	103.00	116.00
2	168	43.52	36.09	52.48	<LOD	207.00	30.00	42.70	61.70	85.20	125.00
3+	105	41.42	34.15	50.24	<LOD	268.00	23.90	39.90	63.60	95.50	99.30

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Table 20: Serum Concentrations of trans-Nonachlor in ng/g and Servings of Beans per month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	450	<LOD	<LOD	<LOD	<LOD	272.00	<LOD	<LOD	24.90	43.30	52.90
1 to 5	1778	18.17	15.81	20.88	<LOD	834.00	<LOD	19.40	33.70	59.70	87.60
6 to 10	840	18.08	15.40	21.21	<LOD	370.00	<LOD	18.90	38.70	62.50	84.40
11 to 15	554	17.62	14.70	21.12	<LOD	283.00	<LOD	17.90	33.60	55.50	71.80
15+	784	17.51	14.61	20.98	<LOD	382.00	<LOD	17.80	36.60	57.90	79.80

Table 21: Serum Concentrations of trans-Nonachlor in ng/g and Fish Consumed in Past Month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	1131	21.20	19.11	23.52	<LOD	268.00	<LOD	20.60	37.30	62.30	85.00
No	738	15.13	<LOD	16.94	<LOD	331.00	<LOD	14.90	26.30	47.70	67.60

Table 22: Serum Concentrations of trans-Nonachlor in ng/g and Shellfish Consumed in Past Month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	829	19.41	17.13	22.01	<LOD	214.00	<LOD	18.80	33.00	58.20	80.70
No	1040	18.71	17.20	20.36	<LOD	331.00	<LOD	18.50	34.80	59.80	85.00

Table 23: Serum Concentrations of trans-Nonachlor in ng/g and Body Mass Index Category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Under Weight	122	20.73	16.66	25.80	<LOD	144.00	<LOD	24.00	36.40	58.30	74.40
Healthy Weight	2567	15.07	<LOD	16.73	<LOD	584.00	<LOD	<LOD	28.70	52.50	77.10
Over Weight	3591	19.21	17.78	20.75	<LOD	834.00	<LOD	20.70	35.60	59.20	79.80

Table 24: Serum Concentrations of trans-Nonachlor in ng/g and Ever told you have Weak/Failing Kidneys

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	38	49.56	34.63	70.93	<LOD	243.00	27.40	58.70	85.00	112.00	155.00
No	1230	21.30	19.42	23.37	<LOD	331.00	<LOD	21.70	36.70	60.20	82.20

Table 25: Serum Concentrations of trans-Nonachlor in ng/g and total number of beers consumed per month

	N	Geometric	95% CI		&Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	807	24.91	22.06	28.12	<LOD	331.00	14.50	24.70	43.30	71.50	98.50
0-5	266	17.79	15.24	20.76	<LOD	268.00	<LOD	17.20	30.90	50.70	63.60
6 to 10	63	18.12	<LOD	25.68	<LOD	213.00	<LOD	16.10	30.90	42.90	56.80
11 to 15	39	14.69	<LOD	17.79	<LOD	64.10	<LOD	<LOD	19.40	23.50	30.70
16+	94	20.11	15.57	25.99	<LOD	141.00	<LOD	21.30	33.10	56.80	80.70

Table 26: Serum Concentrations of trans-Nonachlor in ng/g and Water (gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0 to 896	2557	17.87	16.09	19.86	<LOD	584.00	<LOD	18.50	35.70	61.10	86.80
897-1792g	1778	19.04	17.27	20.99	<LOD	834.00	<LOD	20.60	36.40	59.20	78.50
>1792g	1227	17.06	15.32	18.99	<LOD	327.00	<LOD	16.80	29.90	55.90	83.70

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Table 27: Serum Concentrations of trans-Nonachlor in ng/g and Alcohol (gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	5103	17.25	15.73	18.91	<LOD	834.00	<LOD	17.60	34.10	60.20	84.90
0-28	704	19.38	17.56	21.38	<LOD	584.00	<LOD	19.80	32.80	52.90	74.40
>28	447	19.30	17.01	21.89	<LOD	215.00	<LOD	19.30	34.30	53.00	63.60

Table 28: Serum Concentrations of trans-Nonachlor in ng/g and Caffeine(gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	1185	<LOD	<LOD	15.72	<LOD	331.00	<LOD	<LOD	26.10	48.70	67.20
0-400	4671	17.83	16.43	19.34	<LOD	834.00	<LOD	18.50	34.40	59.00	84.60
400+	398	22.43	20.01	25.16	<LOD	175.00	<LOD	23.00	37.80	54.60	67.60

Table 29: Serum Concentrations of trans-Nonachlor in ng/g and Fiber (gm) /day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0g	14	<LOD	<LOD	21.00	<LOD	47.50	<LOD	<LOD	18.80	18.80	47.50
1 to 10	2074	17.56	15.78	19.54	<LOD	834.00	<LOD	18.80	33.90	62.20	87.20
11 to 24	3327	17.82	16.44	19.32	<LOD	584.00	<LOD	18.50	33.90	56.40	77.20
25+	839	18.08	16.15	20.24	<LOD	382.00	<LOD	18.20	34.70	56.40	79.40

Table 30: Serum Concentrations of trans-Nonachlor in ng/g and Breastfeeding Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Currently Breastfeeding	40	<LOD	<LOD	<LOD	<LOD	31.30	<LOD	<LOD	<LOD	24.00	27.90
Not currently Breastfeeding	115	<LOD	<LOD	<LOD	<LOD	44.60	<LOD	<LOD	17.50	27.90	42.00

Table 31: Serum Concentrations of trans-Nonachlor in ng/g and Liver Conditions

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Ever had a liver condition	85	27.88	23.84	32.62	<LOD	249.00	18.50	26.70	40.10	59.20	84.40
Never had a liver condition	2707	20.71	19.27	22.26	<LOD	834.00	<LOD	21.50	37.00	62.20	85.00

Table 32: Serum Concentrations of trans-Nonachlor in ng/g and Anyone Smoke in the Home

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	868	17.45	15.85	19.22	<LOD	834.00	<LOD	18.10	30.90	53.20	77.20
No	3304	18.28	17.00	19.65	<LOD	584.00	<LOD	19.00	34.70	59.10	83.60

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Table 33: Serum Concentrations of trans-Nonachlor in ng/gand Ever told that you have Diabetes?

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	262	44.67	38.17	52.28	<LOD	283.00	28.80	47.00	78.70	126.00	171.00
No	3924	16.93	15.85	18.09	<LOD	834.00	<LOD	17.50	31.60	52.00	69.40

Table 34: Serum Concentrations of trans-Nonachlor in ng/g by Currently Taking Birth Control Pills?

L_NonachlorLA	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	125	<LOD	<LOD	15.63	<LOD	69.90	<LOD	<LOD	21.80	37.20	53.90
No	369	15.58	<LOD	17.34	<LOD	195.00	<LOD	16.60	27.40	37.00	43.50

Table 35: Serum Concentrations of trans-Nonachlor in ng/g and Now Use Depo-Provera Injectables

L_NonachlorLA	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	54	<LOD	<LOD	<LOD	<LOD	54.10	<LOD	<LOD	25.10	35.10	54.10
No	127	<LOD	<LOD	15.06	<LOD	63.60	<LOD	<LOD	23.40	34.80	43.30

Table 36: Serum Concentrations of trans-Nonachlor in ng/g and Currently Taking Estrogen Only Pills

L_NonachlorLA	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	135	33.45	28.77	38.89	<LOD	584.00	24.50	32.20	52.60	75.80	95.50
No	106	31.78	27.14	37.20	<LOD	235.00	20.50	30.70	48.20	84.00	116.00

Table 37: Serum Concentrations of trans-Nonachlor in ng/g and Currently Taking Projestin Only Pills

L_NonachlorLA	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	28	18.48	15.06	22.69	<LOD	38.80	<LOD	21.50	30.90	37.10	38.50
No	52	26.92	25.12	28.84	<LOD	131.00	18.20	26.10	33.70	48.20	71.40

Table 38: Serum Concentrations of trans-Nonachlor in ng/g and Currently Taking Estrogen-Projestin Pills

L_NonachlorLA	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	38	28.78	22.31	37.14	<LOD	131.00	17.50	27.10	48.20	64.90	73.80
No	23	25.37	19.58	32.88	<LOD	107.00	17.20	28.20	33.70	42.50	98.90

Table 39: Serum Concentrations of trans-Nonachlor in ng/g and Number of Prescription Medications Taken

L_NonachlorLA	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	3688	<LOD	<LOD	<LOD	<LOD	460.00	<LOD	<LOD	24.30	40.10	54.10
1	1063	16.03	<LOD	17.82	<LOD	255.00	<LOD	17.00	30.70	48.20	64.90
2	579	23.31	20.24	26.85	<LOD	235.00	<LOD	24.50	43.80	66.50	99.80
3	365	25.94	22.25	30.23	<LOD	370.00	15.30	27.40	43.10	77.20	117.00
4	260	33.15	27.94	39.34	<LOD	217.00	21.10	35.70	53.10	104.00	153.00
5	204	35.03	29.18	42.05	<LOD	268.00	24.70	33.80	55.60	85.00	120.00
6+	346	40.44	32.79	49.87	<LOD	834.00	23.90	40.80	67.00	99.80	215.00

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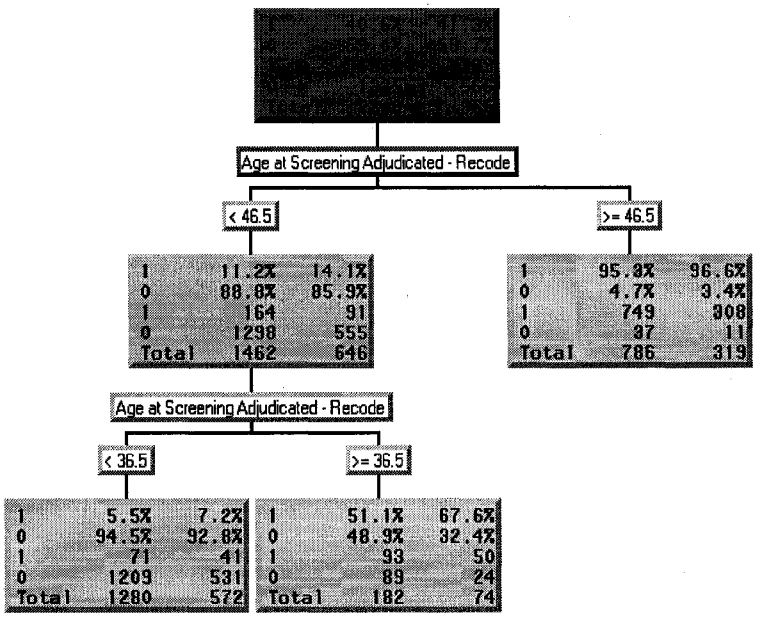
Classification and Regression Tree for trans-nonachlor



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APPENDIX 20: MONO-P-BUTYL PHTHALATE

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Table 1: Concentration of mono-p-butyl phthalate µg/L found in urine by age category

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Age 5-11	721	35.35	31.48	39.69	<LOD	2587.80	18.90	35.00	66.90	114.00	165.70
Age 12-19	1494	29.60	26.76	32.75	<LOD	1192.90	16.20	31.60	58.60	108.70	161.20
Age 20-40	1205	21.86	19.49	24.51	<LOD	4691.10	10.70	23.70	46.70	86.70	118.00
Age 41-55	759	17.26	15.24	19.55	<LOD	453.80	9.00	18.50	35.60	71.70	111.90
Age 55+	1144	16.40	14.66	18.36	<LOD	4357.50	8.50	17.20	33.30	67.70	108.90

Table 2: Concentration of mono-p-butyl phthalate µg/L found in urine and Occupation

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Executive, Administrators, & Managers	143	15.05	11.81	19.17	<LOD	184.20	7.40	15.30	34.60	57.70	87.60
Management Related	51	14.93	11.29	19.75	<LOD	399.50	8.00	18.40	25.00	33.10	64.10
Engineers, Architects, and Scientists	54	19.07	13.28	27.38	1.80	391.60	8.30	17.70	42.80	117.40	132.80
Health Diagnosing, Assessing & Treating	43	19.72	16.50	23.58	1.40	178.80	10.30	23.90	38.00	106.90	153.40
Teachers	80	14.16	10.10	19.85	<LOD	243.70	4.50	17.30	35.80	94.10	125.60
Writers, Artists, Entertainers & Athletes	39	17.40	13.00	23.28	2.30	118.00	8.50	20.60	35.80	68.60	73.60
Other Professional Speciality	54	17.09	13.18	22.17	2.30	119.80	7.60	14.90	33.40	81.60	101.90
Technicians and Related Supported	55	18.77	13.66	25.78	<LOD	327.50	9.20	21.60	43.20	64.30	88.00
Supervisors and Proprietors, Sales	41	19.36	15.32	24.47	1.90	594.40	12.30	21.90	33.00	52.20	78.30
Sales Representatives,finance,business,commodities	59	17.94	11.62	27.69	<LOD	422.40	10.30	22.60	38.80	74.70	78.80
Sales Workers, retail & personal services	147	26.41	20.30	34.36	<LOD	322.10	13.90	30.20	61.10	108.90	142.60
Secretaries, Stenographers, and typists	33	26.54	19.54	36.05	<LOD	221.40	15.60	29.10	57.20	84.00	174.40
Information Clerks	31	29.49	19.96	43.57	3.20	227.00	19.70	30.60	44.70	95.50	227.00
Records Processing	65	17.29	13.93	21.45	1.60	156.00	8.20	17.80	45.20	87.60	98.20
Material Recording, Scheduling,distributing clerks	35	21.32	14.86	30.57	3.10	231.20	12.50	24.60	38.70	51.70	92.70
Miscellaneous administrative support	132	26.20	20.10	34.16	<LOD	412.10	14.00	24.70	47.90	111.70	253.60
Private Household	18	28.75	19.27	42.89	<LOD	1192.90	23.60	46.40	63.60	188.90	188.90
Protective Service	34	14.77	8.49	25.70	<LOD	196.40	9.60	16.00	35.80	111.10	119.00
Waiters and Waitresses	43	27.60	16.27	46.83	<LOD	924.40	13.30	25.40	44.80	69.80	707.90
Cooks	58	16.45	10.34	26.17	<LOD	158.70	7.20	18.60	54.90	85.20	120.80
Miscellaneous food preparation and service	61	22.55	18.03	28.21	<LOD	162.20	16.00	25.30	39.50	90.20	107.70
Health Service Occupation	52	25.59	19.52	33.54	<LOD	167.10	14.10	29.20	55.30	86.00	122.00
Cleaning and Building Service	71	28.07	23.91	32.96	1.70	284.80	14.30	26.70	46.80	114.70	160.60
Personal Service	54	20.85	12.64	34.41	2.10	752.20	13.00	21.60	47.40	58.00	138.00
Farm Operators, Managers and Supervisors	8	27.30	.	.	9.20	216.90	9.80	29.60	79.60	79.60	216.90
Farm and Nursery Workers	31	12.83	8.59	19.17	<LOD	120.80	6.20	19.20	53.60	56.70	56.70
Related Agricultural, Forestry and Fishing	47	17.07	13.67	21.31	<LOD	181.40	9.20	15.50	41.60	47.80	68.90
Vehicle and Mobile Equipment Mechanics, Repairs	28	14.81	5.75	38.13	<LOD	95.40	7.70	18.90	30.60	46.20	95.40
Other Mechanics and repairers	38	23.44	18.93	29.01	1.80	103.40	12.40	37.60	55.80	84.40	85.60
Construction traders	127	19.61	13.83	27.80	1.30	197.10	9.70	21.20	34.90	82.30	118.50
Extractive and Precision Production	48	25.62	20.25	32.41	2.70	336.40	19.70	24.70	32.60	67.20	110.80
Textile, apparel and furnishings machine operators	19	35.92	21.63	59.65	<LOD	554.20	27.70	54.80	81.10	106.80	137.50
Machine Operators, Assorted Materials	66	24.80	19.11	32.17	<LOD	313.50	11.30	23.20	42.80	82.90	155.90
Fabricators, Assemblers, Inspectors, and Samplers	51	17.33	13.42	22.38	2.10	186.30	7.80	16.40	41.80	82.30	97.20
Motor vehicle operators	70	19.02	15.24	23.73	<LOD	131.50	13.50	19.50	31.60	53.70	55.50
Other transportation and material moving	21	14.38	10.82	19.12	3.50	93.10	8.40	13.40	20.50	60.40	93.10
Construction laborers	29	18.19	11.51	28.74	1.70	177.70	8.40	18.60	35.00	60.50	109.60
Laborers, except construction	6	24.77	.	.	9.40	47.90	11.30	43.20	47.90	47.90	47.90
Frieght, Stock, and Material Movers, hand	44	24.30	13.20	44.75	<LOD	639.10	9.00	23.20	45.30	150.30	224.60
Other helpers, equipment cleaners, hand packages and laborers	27	16.70	8.58	32.50	<LOD	453.80	7.40	20.90	35.10	68.10	95.10

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Table 3: Concentration of *mono-p-butyl phthalate* µg/L found in urine and Employment Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Working at a Job or Business	1071	17.38	15.70	19.23	<LOD	924.40	8.80	19.80	37.10	64.70	95.10
With a Job but not at Work	53	16.95	13.40	21.46	2.40	195.30	10.30	17.50	27.90	44.90	56.30
Looking for Work	56	14.05	9.56	20.64	<LOD	320.80	6.40	17.40	37.00	53.50	69.00
Not working at a job or Business	823	17.68	15.38	20.32	<LOD	4691.10	9.00	18.40	35.60	76.40	110.00

Table 4: Concentration of *mono-p-butyl phthalate* µg/L found in urine and Income

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
$0-$4 999	118	36.82	27.81	48.75	1.30	383.40	14.50	41.90	66.90	143.40	224.60
$ 5000-$9 999	314	16.95	13.40	21.46	2.40	195.30	10.30	17.50	27.90	44.90	56.30
$10 000-$14 999	408	14.05	9.56	20.64	<LOD	320.80	6.40	17.40	37.00	53.50	69.00
$15 000-$19 999	417	17.68	15.38	20.32	<LOD	4691.10	9.00	18.40	35.60	76.40	110.00
$20 000-$24 999	384	24.41	19.30	30.88	<LOD	924.40	12.90	24.40	51.10	107.70	146.00
$25 000-$34 999	623	18.16	15.77	20.90	<LOD	4357.50	10.10	20.30	34.90	67.20	107.40
$35 000-$44 999	489	23.30	19.59	27.71	<LOD	707.90	12.60	24.80	46.50	87.50	121.00
$45 000-$54 999	407	21.11	17.97	24.78	<LOD	638.50	11.30	20.20	41.90	78.40	100.50
$55 000-$64 999	325	18.27	15.24	21.91	<LOD	4691.10	9.50	20.70	34.80	68.90	93.40
$65 000-$74 999	243	20.01	16.19	24.73	<LOD	533.80	8.40	25.50	43.20	73.20	119.80
$75 000 and over	890	17.61	15.69	19.76	<LOD	594.40	9.10	18.90	37.20	76.90	121.30

Table 5: Concentration of *mono-p-butyl phthalate* µg/L found in urine and Race/Ethnicity

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Non-Hispanic White	2128	19.22	17.87	20.68	<LOD	4691.10	9.60	20.50	40.50	79.70	118.00
Non-Hispanic Black	1306	32.75	29.98	35.77	<LOD	1192.90	18.60	34.30	63.40	109.60	158.70
Mexican American	1491	21.50	19.55	23.64	<LOD	752.20	10.80	24.20	45.00	84.00	113.50
Other Race-Including MultiRacial	135	16.79	13.62	20.70	<LOD	533.80	8.60	21.40	38.90	63.60	84.40
Other Hispanic	263	29.17	23.74	35.85	<LOD	639.10	14.70	29.20	56.90	117.00	164.50

Table 6: Concentration of *mono-p-butyl phthalate* µg/L found in urine and Gender

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Male	2586	19.49	18.21	20.85	<LOD	4357.50	10.10	20.70	37.60	73.10	107.00
Female	2737	22.92	21.09	24.90	<LOD	4691.10	11.20	25.10	51.70	97.40	150.30

Table 7: Concentration of *mono-p-butyl phthalate* µg/L found in urine and Education

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Less than High School	3066	27.53	24.70	30.68	<LOD	2587.80	14.50	28.90	59.00	104.90	152.60
High School Diploma	825	19.45	17.23	21.96	<LOD	647.40	11.20	20.90	38.90	66.10	98.10
More than High School	1424	17.53	16.19	18.97	<LOD	4691.10	8.50	18.70	37.10	77.60	111.70

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Table 8: Concentration of *mono*-p-butyl phthalate µg/L found in urine and Marital Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Married	1738	16.81	15.44	18.30	<LOD	4691.10	8.40	18.50	34.50	67.20	108.90
Widowed	267	16.69	14.00	19.90	<LOD	394.30	8.30	18.00	39.10	71.00	98.30
Divorced	272	20.54	16.55	25.48	<LOD	4357.50	11.00	21.40	38.40	84.90	134.90
Separated	112	34.04	25.54	45.37	1.50	399.50	20.20	32.40	62.50	154.90	230.00
Never Married	1481	24.84	22.54	27.38	<LOD	1192.90	13.30	26.50	51.70	86.80	121.00
Living with Partner	161	22.20	18.41	26.77	<LOD	391.10	11.40	22.80	44.70	81.10	99.20

Table 9: Concentration of *mono*-p-butyl phthalate µg/L found in urine and Country of Birth

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Born in the US	4259	21.14	19.92	22.43	<LOD	4691.10	10.70	22.70	44.50	85.30	125.60
Born in Mexico	646	18.93	16.31	21.96	<LOD	721.20	9.10	21.20	40.20	71.00	104.00
Born Elsewhere	384	22.54	17.68	28.74	<LOD	639.10	10.10	23.30	54.30	96.40	132.80

Table 10: Concentration of *mono*-p-butyl phthalate µg/L found in urine and Pregnancy Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Pregnant	222	26.05	19.02	35.67	<LOD	412.10	12.90	27.80	54.30	95.00	179.20
Not Pregnant	1358	22.39	20.59	24.35	<LOD	4691.10	10.80	25.00	51.10	93.30	153.40

Table 11: Concentration of *mono*-p-butyl phthalate µg/L found in urine and Type of Home

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
A Mobile Home or Trailer	425	21.72	18.11	26.05	<LOD	721.20	10.60	25.20	47.50	93.20	174.70
A detached single family home	3216	19.19	17.71	20.78	<LOD	4691.10	9.80	20.40	39.80	76.90	111.70
Attached Single Family Home	420	24.73	20.80	29.41	<LOD	2587.80	13.10	28.40	53.90	98.10	152.50
An Apartment	1130	27.04	23.94	30.55	<LOD	958.30	13.70	28.80	56.80	109.60	153.40
Something Else	51	27.89	20.62	37.72	2.10	391.10	9.70	25.90	60.80	87.50	126.80
Dormitory	22	41.33	.	.	7.60	320.80	21.70	56.00	63.40	117.00	249.90

Table 12: Concentration of *mono*-p-butyl phthalate µg/L found in urine and Year Home Built

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
1990-present	714	17.64	15.19	20.50	<LOD	639.10	9.00	19.30	36.10	74.70	107.00
1978-1989	872	22.17	20.03	24.53	<LOD	556.30	10.90	24.80	47.40	89.80	132.80
1960-1977	938	18.49	16.60	20.60	<LOD	4691.10	8.80	20.60	41.90	76.90	111.70
1950-1959	516	19.06	16.53	21.98	<LOD	4357.50	10.30	19.80	37.30	73.60	98.30
1940-1949	281	23.75	19.88	28.37	<LOD	390.70	13.30	23.50	48.90	89.40	121.10
before 1940	595	21.24	18.22	24.76	<LOD	2587.80	11.50	22.90	41.80	75.30	101.90

Table 13: Concentration of *mono*-p-butyl phthalate µg/L found in urine and Water Source

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Private-Public Water Company	4714	21.17	19.77	22.65	<LOD	4691.10	10.70	23.00	45.80	84.60	120.80
Private Public Well	484	20.46	17.19	24.34	<LOD	4357.50	9.80	19.60	42.80	98.20	150.50
Some other Water Source	26	27.57	19.28	39.43	3.10	214.80	13.40	21.40	84.00	214.80	214.80

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Table 14: Concentration of *mono*-p-butyl phthalate µg/L found in urine and Helpings of Protein per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	15	35.61	5.50	230.64	1.90	169.90	16.30	30.90	98.70	169.90	169.90
1	191	18.30	14.29	23.42	<LOD	752.20	8.60	17.00	39.30	64.20	121.10
2	201	19.67	16.07	24.07	<LOD	345.50	9.60	19.80	39.70	87.20	137.50
3+	102	15.46	10.90	21.94	<LOD	554.20	7.20	17.70	37.00	73.60	112.70

Table 15: Concentration of *mono*-p-butyl phthalate µg/L found in urine and Helpings of Milk/Dairy per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	77	17.58	13.48	22.94	1.10	394.30	7.80	19.30	40.40	60.60	131.10
1	236	17.37	12.93	23.34	<LOD	752.20	8.80	18.90	35.30	68.50	108.80
2	146	20.17	13.78	29.54	<LOD	345.50	8.30	22.10	43.60	98.30	174.40
3+	52	19.97	12.00	33.24	<LOD	647.40	14.60	18.50	47.40	117.40	137.50

Table 16: Concentration of *mono*-p-butyl phthalate µg/L found in urine and Helpings of Fruit per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	52	19.41	11.07	34.04	<LOD	169.90	13.90	22.30	51.80	87.20	131.10
1	215	18.24	13.33	24.97	<LOD	752.20	8.40	18.00	37.00	103.00	196.40
2	160	17.44	13.65	22.29	<LOD	647.40	8.80	19.80	35.30	66.10	96.80
3+	83	20.72	14.99	28.64	2.20	554.20	12.00	18.90	36.10	118.00	137.50

Table 17: Concentration of *mono*-p-butyl phthalate µg/L found in urine and Helpings of Vegetables per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	47	13.19	6.89	25.27	<LOD	639.10	8.40	13.90	22.20	61.10	96.10
1	257	18.25	13.34	24.96	<LOD	752.20	8.20	19.40	43.10	87.20	137.50
2	201	19.67	16.07	24.07	<LOD	345.50	9.60	19.80	39.70	87.20	137.50
3+	67	19.58	12.91	29.69	1.10	292.00	10.70	18.00	40.20	98.30	121.10

Table 18: Concentration of *mono*-p-butyl phthalate µg/L found in urine and Helpings of Bread/grain per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	36	23.38	12.20	44.81	1.90	196.40	11.80	23.30	46.50	169.90	196.40
1	191	19.95	13.43	29.63	<LOD	752.20	9.10	19.90	45.40	87.80	174.40
2	172	16.67	12.53	22.18	<LOD	179.50	8.30	17.70	35.30	68.50	98.30
3+	111	17.73	11.85	26.53	<LOD	554.20	10.40	18.90	39.70	112.70	151.70

Table 19: Concentration of *mono*-p-butyl phthalate µg/L found in urine and Servings of Beans per month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	278	23.21	18.10	29.75	<LOD	2587.80	11.50	24.10	55.30	84.90	117.40
1 to 5	1061	18.67	16.43	21.21	<LOD	4357.50	9.90	20.30	37.30	68.50	103.40
6 to 10	546	17.28	15.18	19.66	<LOD	483.90	9.00	18.40	37.30	69.20	94.20
11 to 15	311	20.13	16.47	24.61	<LOD	958.30	10.20	22.80	40.80	76.90	108.90
15+	496	17.46	15.31	19.92	<LOD	4691.10	8.60	19.20	38.10	71.70	107.70

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Table 20: Concentration of *mono*-p-butyl phthalate µg/L found in urine and Fish Consumed in Past Month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	1519	22.24	19.90	24.85	<LOD	1192.90	10.40	23.50	49.30	93.20	141.60
No	916	28.62	24.79	33.05	<LOD	752.20	15.90	28.80	55.60	113.70	165.70

Table 21: Concentration of *mono*-p-butyl phthalate µg/L found in urine and Shellfish Consumed in Past Month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	1003	22.22	19.68	25.10	<LOD	1192.90	11.00	24.40	47.40	90.70	135.40
No	1436	25.71	22.26	29.68	<LOD	752.20	12.90	27.40	53.90	103.90	152.60

Table 22: Concentration of *mono*-p-butyl phthalate µg/L found in urine and Body Mass Index Category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Under Weight	94	27.18	20.79	35.55	<LOD	594.40	12.00	28.50	58.60	142.60	155.90
Healthy Weight	2197	21.46	19.99	23.03	<LOD	2587.80	10.30	23.20	47.60	93.10	131.50
Over Weight	2900	20.99	19.29	22.84	<LOD	4691.10	10.80	22.10	43.10	82.90	117.40

Table 23: Concentration of *mono*-p-butyl phthalate µg/L found in urine and Ever told you have Weak/Failing Kidneys

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	48	16.74	10.39	26.98	<LOD	121.10	10.80	23.60	41.30	52.70	82.00
No	1409	21.46	18.79	24.51	<LOD	752.20	10.30	22.80	46.50	93.20	142.60

Table 24: Concentration of *mono*-p-butyl phthalate µg/L found in urine and total number of beers consumed per month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	948	21.83	18.73	25.45	<LOD	752.20	10.30	22.80	47.70	106.80	156.00
0-5	289	21.51	18.09	25.59	<LOD	707.90	10.60	23.20	45.20	78.40	125.60
6 to 10	78	18.36	12.57	26.82	<LOD	241.50	9.10	23.80	46.50	86.80	101.90
11 to 15	40	20.99	12.68	34.73	<LOD	453.80	11.30	18.90	32.30	93.20	93.20
16+	106	19.90	16.64	23.80	<LOD	177.70	9.40	23.40	39.30	63.60	98.60

Table 25: Concentration of *mono*-p-butyl phthalate µg/L found in urine and Water (gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0 to 896	2305	24.04	22.07	26.18	<LOD	4691.10	12.60	24.40	49.30	94.10	146.00
897-1792g	1273	18.81	17.17	20.60	<LOD	4357.50	9.10	20.70	38.90	81.60	117.40
>1792g	882	17.02	15.30	18.94	<LOD	721.20	8.70	19.30	40.40	73.10	93.20

Table 26: Concentration of *mono*-p-butyl phthalate µg/L found in urine and Alcohol (gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	4080	21.73	20.25	23.33	<LOD	4691.10	10.80	23.40	47.30	87.60	127.10
0-28	667	18.85	16.60	21.40	<LOD	535.60	9.50	19.70	38.40	73.60	126.00
>28	346	20.97	17.99	24.43	<LOD	391.60	11.50	21.10	41.90	92.30	118.50

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Table 27: Concentration of mono-p-butyl phthalate µg/L found in urine and Caffeine(gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	995	25.30	23.29	27.47	<LOD	958.30	12.50	27.70	56.40	95.40	142.10
0-400	3825	20.88	19.21	22.70	<LOD	4357.50	10.50	22.20	44.80	84.50	126.70
400+	273	18.20	15.35	21.59	<LOD	4691.10	9.40	19.20	39.80	83.20	107.70

Table 28: Concentration of mono-p-butyl phthalate µg/L found in urine and Fiber (gm) /day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0g	10	18.97	9.13	39.41	9.00	46.80	11.50	21.70	25.90	43.80	46.00
1 to 10	1775	25.63	23.05	28.50	<LOD	2587.80	13.20	27.40	55.50	101.20	154.90
11 to 24	2668	19.85	18.37	21.45	<LOD	4691.10	10.10	20.70	42.20	79.80	117.00
25+	640	16.94	15.00	19.12	<LOD	721.20	8.30	19.10	35.00	68.60	93.10

Table 29: Concentration of mono-p-butyl phthalate µg/L found in urine and Breastfeeding Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Currently Breastfeeding	41	19.73	16.14	24.12	2.40	195.30	10.70	19.30	31.60	76.10	150.30
Not currently Breastfeeding	99	37.95	20.92	68.86	<LOD	584.30	16.90	39.90	90.20	165.10	584.30

Table 30: Concentration of mono-p-butyl phthalate µg/L found in urine and Liver Conditions

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Ever had a liver condition	87	16.55	11.97	22.88	<LOD	453.80	6.20	17.30	39.30	84.90	121.80
Never had a liver condition	3014	18.87	17.50	20.35	<LOD	4691.10	9.50	20.40	39.80	78.30	114.10

Table 31: Concentration of mono-p-butyl phthalate µg/L found in urine and Anyone Smoke in the Home

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	1137	26.93	23.82	30.45	<LOD	2587.80	14.50	29.10	54.10	97.90	144.70
No	4129	19.72	18.48	21.05	<LOD	4691.10	9.90	21.10	41.90	82.80	121.00

Table 32: Concentration of mono-p-butyl phthalate µg/L found in urine and Ever told that you have Diabetes?

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	280	19.46	16.22	23.35	<LOD	4357.50	10.40	17.50	44.50	84.90	135.60
No	4997	21.36	20.01	22.80	<LOD	4691.10	10.70	23.10	45.90	86.80	125.60

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Table 35: Concentration of mono-p-butyl phthalate µg/L found in urine by Currently Taking Birth Control Pills?

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	151	29.06	21.80	38.75	<LOD	4691.10	17.60	29.20	51.70	91.30	146.00
No	429	22.60	19.02	26.86	<LOD	535.60	11.20	25.90	51.30	102.10	153.40

Table 36: Concentration of mono-p-butyl phthalate µg/L found in urine and Now Use Depo-Provera Injectables

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	44	26.32	19.32	35.85	<LOD	390.70	10.00	27.90	70.50	101.90	249.90
No	153	31.26	24.24	40.31	<LOD	269.40	20.50	33.10	57.90	98.20	155.90

Table 37: Concentration of mono-p-butyl phthalate µg/L found in urine and Currently Taking Estrogen Only Pills

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	125	17.67	13.18	23.69	<LOD	556.30	8.90	19.20	38.80	84.90	98.30
No	131	16.89	13.39	21.30	<LOD	199.10	9.60	17.10	38.50	66.80	106.90

Table 38: Concentration of mono-p-butyl phthalate µg/L found in urine and Currently Taking Projestin Only Pills

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	28	19.41	9.61	39.24	2.10	153.40	9.40	20.30	44.00	87.60	108.90
No	52	16.07	11.12	23.23	<LOD	199.10	5.90	17.10	44.50	63.60	142.60

Table 39: Concentration of mono-p-butyl phthalate µg/L found in urine and Currently Taking Estrogen-Projestin Pills

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	46	14.89	10.00	22.16	<LOD	93.10	7.00	20.60	34.40	40.80	60.80
No	29	13.02	10.38	16.33	1.80	131.10	6.00	12.30	27.70	49.10	55.20

Table 40: Concentration of mono-p-butyl phthalate µg/L found in urine and Number of Prescription Medications Taken

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	3228	23.11	21.19	25.21	<LOD	2587.80	11.80	23.90	49.20	93.10	135.40
1	830	19.62	17.72	21.72	<LOD	494.60	10.00	22.40	42.00	78.40	104.90
2	446	22.06	19.82	24.56	<LOD	4691.10	11.00	23.10	43.10	86.80	127.10
3	333	16.32	13.23	20.14	<LOD	707.90	8.40	18.60	35.80	83.70	111.70
4	159	16.38	13.64	19.67	<LOD	294.80	8.90	16.00	31.20	60.80	103.00
5	115	20.68	15.26	28.01	1.10	223.90	9.60	21.00	44.90	121.80	152.50
6+	212	18.69	15.30	22.84	<LOD	4357.50	9.40	20.30	41.90	67.70	100.80

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Classification and Regression Tree for mono-p-butyl phthalate presented in the text

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APPENDIX 21: MONO-ETHYL PHTHALATE

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Table 1: Concentration of *mono*-ethyl phthalate µg/L found in urine by age category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Age 5-11	721	86.68	76.22	98.58	<LOD	9043.60	39.00	74.70	183.00	379.00	748.10
Age 12-19	1494	205.62	175.00	241.60	<LOD	39631.70	78.00	190.10	535.30	1401.50	2426.30
Age 20-40	1205	225.36	197.44	257.23	<LOD	39938.00	81.90	214.70	554.90	1396.30	2529.20
Age 41-55	759	174.98	152.89	200.27	<LOD	19090.00	63.90	158.40	463.90	1117.20	2495.60
Age 55+	1139	155.46	133.80	180.62	<LOD	29019.80	46.50	137.80	401.20	1492.60	4352.70

Table 2: Concentration of *mono*-ethyl phthalate µg/L found in urine and Occupation

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Executive, Administrators, & Managers	143	173.44	131.12	229.41	6.50	29019.80	71.40	170.90	443.60	1117.20	2362.30
Management Related	51	138.37	87.68	218.38	5.80	6984.10	54.30	118.60	339.90	767.80	1414.00
Engineers, Architects, and Scientists	54	167.56	109.39	256.65	13.70	10193.50	48.50	126.60	598.40	915.40	1273.50
Health Diagnosing, Assessing & Treating	43	115.34	88.46	150.38	3.50	2327.60	56.40	150.60	393.60	736.20	780.80
Teachers	79	124.64	84.56	183.72	<LOD	12214.70	40.50	119.40	383.40	893.80	1783.80
Writers, Artists, Entertainers & Athletes	39	138.84	90.75	212.42	14.50	5029.70	61.40	143.20	386.80	1165.70	2320.10
Other Professional Speciality	54	133.95	94.81	189.24	5.20	12081.00	34.60	100.80	307.90	1716.80	3180.60
Technicians and Related Supported	55	203.42	116.50	355.18	<LOD	20524.00	54.00	184.90	786.90	2314.10	2814.60
Supervisors and Proprietors, Sales	41	227.65	142.76	363.01	27.90	7151.30	96.90	210.80	357.70	1324.20	6718.60
Sales Representatives,finance,business,commodities	59	209.97	155.60	283.34	8.70	9841.10	70.00	220.00	553.20	1066.50	3096.10
Sales Workers, retail & personal services	146	239.75	181.62	316.49	3.50	11731.20	99.20	208.40	645.60	1850.40	2541.70
Secretaries, Stenographers, and typists	33	248.59	142.55	433.52	20.30	10624.00	86.80	250.70	623.30	707.60	10624.00
Information Clerks	31	174.86	97.68	312.99	26.70	4234.70	51.90	213.80	449.20	977.30	977.30
Records Processing	65	145.67	110.88	191.38	18.90	2677.70	63.40	115.30	377.40	892.70	1117.00
Material Recording, Scheduling,distributing clerks	35	266.25	155.91	454.69	2.40	4015.90	122.30	192.10	589.10	1509.20	1882.10
Miscellaneous administrative support	132	240.73	195.68	296.15	9.30	21301.00	115.20	241.60	601.20	1064.80	1543.90
Private Household	18	347.76	276.78	436.94	14.10	9462.90	96.70	536.60	1172.00	9462.90	9462.90
Protective Service	34	233.63	200.06	272.84	24.50	6685.80	84.20	212.40	461.40	1765.00	2757.50
Waiters and Waitresses	43	274.68	204.00	369.85	25.80	8049.90	148.10	207.30	409.30	1889.30	2724.40
Cooks	58	160.67	70.81	364.56	2.80	32320.10	37.10	184.30	489.50	1144.40	2987.10
Miscellaneous food preparation and service	61	196.83	132.43	292.56	9.90	4412.10	85.20	202.90	363.60	712.20	1088.10
Health Service Occupation	52	322.26	180.93	574.00	15.50	11238.60	97.80	356.80	706.30	1520.80	4674.10
Cleaning and Building Service	71	277.42	224.63	342.62	8.50	5351.90	97.60	261.20	732.20	1662.90	4906.60
Personal Service	54	268.26	111.72	644.17	3.30	18291.70	117.60	279.20	529.90	2061.80	7510.20
Farm Operators, Managers and Supervisors	8	331.80	.	.	31.10	3733.50	282.20	339.00	501.10	3733.50	3733.50
Farm and Nursery Workers	31	130.25	26.72	634.95	11.20	5598.90	35.90	74.40	674.10	899.50	899.50
Related Agricultural, Forestry and Fishing	47	157.12	93.98	262.70	1.40	4669.80	48.30	122.90	654.10	1506.80	2127.10
Vehicle and Mobile Equipment Mechanics, Repairs	28	206.04	176.27	240.83	19.40	4460.60	52.30	136.80	589.90	1536.70	3265.20
Other Mechanics and repairers	38	335.09	206.33	544.21	14.80	6265.60	61.60	292.10	1833.00	2529.20	3613.80
Construction traders	127	236.50	156.56	357.27	<LOD	39938.00	78.90	257.30	535.40	1600.70	2672.60
Extractive and Precision Production	48	213.04	160.30	283.13	34.70	17316.30	111.70	176.10	477.00	968.20	1508.40
Textile, apparel and furnishings machine operators	19	336.12	193.84	582.82	22.10	14703.40	75.10	179.10	1113.80	8336.40	8336.40
Machine Operators, Assorted Materials	66	186.61	129.84	268.19	13.50	3783.70	63.90	167.10	366.70	795.50	1336.50
Fabricators, Assemblers, Inspectors, and Samplers	51	243.77	158.69	374.47	4.00	19090.00	85.90	194.10	852.90	3871.50	5945.40
Motor vehicle operators	70	358.85	262.26	491.02	11.80	13313.00	107.60	332.70	621.20	7163.70	9315.10
Other transportation and material moving	21	110.01	59.71	202.69	7.00	1577.20	42.50	156.70	278.00	526.60	533.90
Construction laborers	29	230.55	152.42	348.71	11.10	7076.00	114.70	247.40	352.70	3768.30	4068.50
Laborers, except constuction	6	148.82	.	.	51.10	711.90	63.40	164.40	164.40	418.00	418.00
Frieght, Stock, and Material Movers, hand	44	218.36	100.09	476.40	8.40	14398.20	80.30	286.60	806.20	1047.50	1467.10
Other helpers, equipment cleaners, hand packages and laborers	27	128.40	43.05	382.93	1.20	15084.20	10.00	287.00	798.80	2628.30	3409.40

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Table 3: Concentration of *mono*-ethyl phthalate µg/L found in urine and Employment Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Working at a Job or Business	1071	196.12	175.11	219.65	<LOD	32320.10	70.20	183.60	498.30	1345.60	2818.30
With a Job but not at Work	53	178.63	105.26	303.13	22.40	10193.50	63.90	182.40	354.60	1047.70	1509.20
Looking for Work	56	157.24	103.02	239.99	14.40	39631.70	58.10	177.80	406.50	1034.80	1394.10
Not working at a job or Business	823	192.56	159.27	232.81	<LOD	21932.20	61.10	176.30	573.30	1524.70	3293.80

Table 4: Concentration of *mono*-ethyl phthalate µg/L found in urine and Income

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
$0-$4 999	118	261.23	168.03	406.13	11.40	6107.10	87.00	355.10	734.50	1421.10	2189.30
$ 5000-$9 999	314	178.63	105.26	303.13	22.40	10193.50	63.90	182.40	354.60	1047.70	1509.20
$10 000-$14 999	408	157.24	103.02	239.99	14.40	39631.70	58.10	177.80	406.50	1034.80	1394.10
$15 000-$19 999	417	192.56	159.27	232.81	<LOD	21932.20	61.10	176.30	573.30	1524.70	3293.80
$20 000-$24 999	384	223.21	158.50	314.36	2.90	39938.00	71.80	206.40	588.90	1533.60	3601.30
$25 000-$34 999	622	175.22	144.35	212.68	1.10	17316.30	61.00	155.30	397.60	1240.10	3522.90
$35 000-$44 999	488	197.28	161.56	240.90	1.30	29019.80	71.70	174.00	572.80	1396.90	2943.90
$45 000-$54 999	407	179.74	147.95	218.36	<LOD	14398.20	63.70	168.70	450.50	1117.00	1783.80
$55 000-$64 999	325	158.13	128.16	195.09	<LOD	19090.00	52.50	137.20	435.20	1009.80	3279.10
$65 000-$74 999	242	182.35	151.68	219.23	6.90	20524.00	63.50	173.50	453.70	1123.70	2207.30
$75 000 and over	889	154.21	137.05	173.51	<LOD	21301.00	55.40	143.60	396.70	985.90	1716.80

Table 5: Concentration of *mono*-ethyl phthalate µg/L found in urine and Race/Ethnicity

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Non-Hispanic White	2124	154.86	141.90	168.99	<LOD	23810.00	54.90	140.30	390.20	1018.90	2431.20
Non-Hispanic Black	1306	334.45	309.24	361.71	<LOD	39631.70	134.70	322.60	798.30	2097.40	3607.40
Mexican American	1490	203.05	184.38	223.60	<LOD	17316.30	75.30	204.40	482.70	1346.20	2134.10
Other Race-Including MultiRacial	135	89.20	66.32	119.98	<LOD	8049.90	30.90	74.80	250.70	734.10	1450.20
Other Hispanic	263	269.77	207.08	351.43	4.50	39938.00	97.80	289.30	642.00	1768.00	3451.10

Table 6: Concentration of *mono*-ethyl phthalate µg/L found in urine and Gender

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Male	2585	180.36	161.35	201.62	<LOD	39938.00	58.00	163.80	513.90	1467.10	3416.50
Female	2733	173.68	158.51	190.30	<LOD	39631.70	65.40	167.10	422.00	1028.20	1989.00

Table 7: Concentration of *mono*-ethyl phthalate µg/L found in urine and Education

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Less than High School	3065	172.01	149.85	197.44	<LOD	39631.70	58.70	154.30	431.90	1350.40	2756.20
High School Diploma	825	207.79	183.29	235.56	<LOD	21301.00	71.70	200.60	524.90	1299.10	2357.80
More than High School	1420	167.47	151.46	185.16	<LOD	39938.00	58.30	154.20	434.00	1065.80	2529.20

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Table 8: Concentration of mono-ethyl phthalate µg/L found in urine and Marital Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Married	1735	173.77	153.91	196.20	<LOD	39938.00	60.90	157.20	472.90	1250.60	2829.60
Widowed	267	171.61	123.09	239.26	4.90	16920.00	56.90	137.20	371.00	1839.80	6049.60
Divorced	271	186.84	147.88	236.06	<LOD	29019.80	58.70	194.00	549.40	1488.30	3103.60
Separated	112	305.13	209.58	444.25	<LOD	32320.10	86.80	299.10	694.10	2818.30	5626.70
Never Married	1481	226.77	200.35	256.68	<LOD	39631.70	88.50	234.30	549.70	1346.20	2163.20
Living with Partner	160	199.18	150.74	263.20	11.10	8336.40	80.00	178.00	424.80	1149.00	2314.10

Table 9: Concentration of mono-ethyl phthalate µg/L found in urine and Country of Birth

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Born in the US	4254	171.55	157.97	186.29	<LOD	39631.70	61.00	157.60	431.90	1147.60	2440.00
Born in Mexico	646	255.32	222.13	293.46	<LOD	17316.30	108.20	253.90	563.90	1577.20	2761.10
Born Elsewhere	384	197.42	143.70	271.22	<LOD	39938.00	60.40	186.60	621.20	1889.30	3103.60

Table 10: Concentration of mono-ethyl phthalate µg/L found in urine and Pregnancy Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Pregnant	222	239.39	178.38	321.27	<LOD	18291.70	93.90	217.90	490.60	1442.00	2622.10
Not Pregnant	1358	192.52	172.81	214.47	<LOD	39631.70	80.40	187.50	453.90	1065.80	2251.20

Table 11: Concentration of mono-ethyl phthalate µg/L found in urine and Type of Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
A Mobile Home or Trailer	425	160.17	137.53	186.53	<LOD	21932.20	58.90	140.30	391.90	1346.20	2431.20
A detached single family home	3211	162.93	145.55	182.39	<LOD	39938.00	57.30	153.40	413.00	1065.60	2231.40
Attached Single Family Home	420	155.90	126.46	192.20	2.80	29019.80	61.90	143.20	434.00	919.90	1569.80
An Apartment	1130	255.30	219.93	296.36	1.30	32320.10	84.60	221.80	674.80	2251.20	3971.70
Something Else	51	189.93	147.03	245.35	11.40	6242.10	66.90	228.30	474.90	864.90	1629.90
Dormitory	22	633.90	.	.	40.20	39631.70	186.50	598.40	1299.70	4054.50	12214.70

Table 12: Concentration of mono-ethyl phthalate µg/L found in urine and Year Home Built

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
1990-present	714	152.21	131.20	176.58	<LOD	18291.70	57.50	140.80	377.90	976.00	1676.30
1978-1989	871	168.99	145.09	196.82	1.70	21932.20	58.10	156.10	415.70	1047.80	2611.90
1960-1977	936	177.65	149.22	211.50	<LOD	39938.00	59.00	180.30	486.60	1362.60	2724.40
1950-1959	516	167.66	142.55	197.19	<LOD	21301.00	55.20	148.10	510.20	1228.20	2495.60
1940-1949	280	178.48	132.73	239.99	<LOD	14480.00	59.80	154.90	382.70	1534.40	4108.60
before 1940	594	170.78	142.74	204.32	<LOD	23810.00	61.80	153.90	472.60	1165.70	2413.00

Table 13: Concentration of mono-ethyl phthalate µg/L found in urine and Water Source

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Private-Public Water Company	4711	176.55	162.34	192.02	<LOD	39938.00	61.40	167.30	453.90	1228.20	2611.90
Private Public Well	482	171.32	144.01	203.80	1.70	20524.00	60.30	150.30	468.20	1228.70	2357.80
Some other Water Source	26	408.92	190.92	875.83	22.70	5669.20	147.00	420.10	1368.20	2431.20	2431.20

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Table 14: Concentration of mono-ethyl phthalate µg/L found in urine and Helpings of Protein per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	15	239.24	55.27	1035.53	20.80	3624.50	82.10	230.60	805.30	805.30	3624.50
1	191	163.31	119.50	223.17	1.30	16995.20	46.60	120.60	490.50	1989.00	4068.50
2	199	150.27	104.88	215.31	3.20	10624.00	48.00	134.00	357.30	1079.40	3115.90
3+	99	104.46	70.45	154.89	3.40	23810.00	24.70	86.40	335.60	840.30	1677.70

Table 15: Concentration of mono-ethyl phthalate µg/L found in urine and Helpings of Milk/Dairy per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	76	103.80	66.63	161.69	8.30	5598.90	36.00	76.80	350.10	776.60	1391.30
1	235	140.43	94.23	209.29	1.30	23810.00	46.60	106.20	369.40	1317.90	3483.40
2	144	168.07	136.14	207.49	12.30	16995.20	56.70	150.30	450.40	1103.00	4068.50
3+	51	181.90	97.58	339.09	3.40	12348.00	41.50	134.00	836.60	3115.90	8179.00

Table 16: Concentration of mono-ethyl phthalate µg/L found in urine and Helpings of Fruit per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	52	132.50	40.53	433.16	1.30	16995.20	24.00	103.90	372.30	8179.00	8179.00
1	213	174.28	123.64	245.65	3.20	12820.80	52.10	145.10	515.60	1989.00	4068.50
2	160	134.36	99.97	180.60	3.40	23810.00	54.10	115.90	335.60	1009.20	1448.20
3+	80	120.87	85.43	171.03	4.40	6555.90	30.80	100.60	344.10	886.60	2001.30

Table 17: Concentration of mono-ethyl phthalate µg/L found in urine and Helpings of Vegetables per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	46	101.08	49.96	204.52	9.60	5598.90	44.40	78.10	230.60	420.50	1216.80
1	256	154.80	111.02	215.85	1.30	12820.80	49.80	145.10	408.30	1448.20	3522.90
2	199	150.27	104.88	215.31	3.20	10624.00	48.00	134.00	357.30	1079.40	3115.90
3+	65	110.32	72.52	167.84	8.30	23810.00	34.50	100.10	335.60	693.60	886.60

Table 18: Concentration of mono-ethyl phthalate µg/L found in urine and Helpings of Bread/grain per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	36	108.27	33.96	345.20	1.30	4953.70	44.40	122.90	358.90	1677.70	1677.70
1	190	173.27	121.33	247.45	3.20	16995.20	46.60	150.30	532.30	1541.50	6555.90
2	169	141.40	110.87	180.34	3.40	23810.00	42.50	118.30	357.30	1075.90	3522.90
3+	110	125.56	76.83	205.21	10.20	5598.90	45.70	103.90	249.20	1079.40	3733.50

Table 19: Concentration of mono-ethyl phthalate µg/L found in urine and Servings of Beans per month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	278	199.05	148.44	266.90	12.70	39631.70	58.60	178.30	537.00	2291.70	4820.70
1 to 5	1061	178.78	154.26	207.19	<LOD	32320.10	60.10	169.30	474.20	1250.60	2724.40
6 to 10	546	153.31	123.30	190.63	<LOD	15084.20	53.00	144.40	441.00	1009.80	1836.90
11 to 15	311	159.22	119.00	213.03	<LOD	9394.00	70.20	147.00	406.60	920.80	1407.40
15+	496	202.78	169.86	242.08	<LOD	21932.20	86.10	202.90	506.70	1491.00	2628.30

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Table 20: Concentration of mono-ethyl phthalate µg/L found in urine and Fish Consumed in Past Month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	1515	175.29	154.06	199.46	1.30	39938.00	59.40	160.40	463.90	1299.10	2846.00
No	915	193.06	160.69	231.94	1.90	20524.00	68.70	174.90	462.80	1332.70	3256.50

Table 21: Concentration of mono-ethyl phthalate µg/L found in urine and Shellfish Consumed in Past Month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	1001	177.50	153.43	205.35	1.30	21301.00	61.80	170.90	461.40	1123.70	2278.80
No	1433	183.75	159.56	211.61	1.90	39938.00	62.50	159.90	463.40	1346.20	3451.10

Table 22: Concentration of mono-ethyl phthalate µg/L found in urine and Body Mass Index Category

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Under Weight	94	121.02	87.56	167.27	<LOD	4015.90	37.80	139.60	301.60	762.30	1624.60
Healthy Weight	2196	152.02	140.07	164.98	<LOD	39631.70	56.50	144.10	399.70	930.10	1936.60
Over Weight	2896	197.05	177.89	218.27	<LOD	39938.00	66.40	178.30	517.80	1412.10	3258.20

Table 23: Concentration of mono-ethyl phthalate µg/L found in urine and Ever told you have Weak/Failing Kidneys

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	48	123.61	75.16	203.28	5.80	3096.30	77.30	103.90	242.40	977.30	1228.20
No	1404	189.21	162.21	220.69	1.30	39938.00	63.30	180.80	481.10	1336.50	3483.40

Table 24: Concentration of mono-ethyl phthalate µg/L found in urine and total number of beers consumed per month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	944	192.00	168.86	218.31	1.30	23810.00	67.90	180.80	454.90	1350.90	3483.40
0-5	288	188.74	133.42	266.99	3.20	39938.00	60.40	168.30	536.40	1407.00	5130.90
6 to 10	78	210.33	118.35	373.78	3.70	9774.10	69.70	210.10	577.60	1336.50	2281.50
11 to 15	40	151.51	86.38	265.74	6.00	2745.60	63.40	174.00	355.00	773.40	1541.50
16+	106	151.98	105.09	219.79	9.70	12348.00	66.90	121.00	336.10	935.70	1430.50

Table 25: Concentration of mono-ethyl phthalate µg/L found in urine and Water (gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0 to 896	2303	194.52	174.45	216.91	<LOD	32320.10	61.40	172.80	517.80	1436.60	3641.10
897-1792g	1273	160.64	137.87	187.15	3.20	39938.00	56.60	153.90	396.40	1103.00	2314.10
>1792g	880	164.34	144.78	186.55	<LOD	18291.70	63.50	151.00	444.70	1009.80	2159.40

Table 26: Concentration of mono-ethyl phthalate µg/L found in urine and Alcohol (gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	4075	182.48	164.81	202.04	<LOD	39938.00	61.90	166.20	472.60	1339.50	2943.90
0-28	667	141.98	120.24	167.67	<LOD	39631.70	54.10	128.20	358.10	1009.20	1716.80
>28	346	217.70	175.48	270.08	<LOD	17316.30	74.90	213.80	577.60	1231.80	2281.50

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Table 27: Concentration of mono-ethyl phthalate µg/L found in urine and Caffeine(gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	994	183.31	155.82	215.65	<LOD	39631.70	65.20	162.90	476.20	1396.30	2465.50
0-400	3821	176.27	161.97	191.82	<LOD	39938.00	61.90	164.40	453.90	1228.20	2541.70
400+	273	189.53	148.46	241.94	1.70	16995.20	61.60	179.70	529.30	1430.50	3293.80

Table 28: Concentration of mono-ethyl phthalate µg/L found in urine and Fiber (gm) /day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0g	10	242.17	107.60	545.04	40.70	8634.60	99.20	314.00	668.40	668.40	1047.50
1 to 10	1772	205.57	180.87	233.64	<LOD	39631.70	70.70	187.00	533.40	1430.50	3224.20
11 to 24	2666	167.66	151.82	185.15	<LOD	39938.00	58.70	153.90	414.70	1154.50	2511.00
25+	640	160.90	132.74	195.03	<LOD	17316.30	54.90	150.30	481.60	1073.20	2431.20

Table 29: Concentration of mono-ethyl phthalate µg/L found in urine and Breastfeeding Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Currently Breastfeeding	41	86.44	63.40	117.85	10.10	1438.20	45.00	104.90	133.60	419.20	742.90
Not currently Breastfeeding	99	341.08	157.51	738.61	<LOD	20771.00	170.00	339.90	691.20	1892.60	20771.00

Table 30: Concentration of mono-ethyl phthalate µg/L found in urine and Liver Conditions

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Ever had a liver condition	87	180.54	137.71	236.70	5.20	11950.00	60.30	139.40	627.50	1763.90	3416.50
Never had a liver condition	3009	189.24	173.02	206.98	<LOD	39938.00	64.70	180.10	486.10	1336.50	2943.90

Table 31: Concentration of mono-ethyl phthalate µg/L found in urine and Anyone Smoke in the Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	1136	210.26	186.10	237.56	<LOD	29019.80	77.40	193.30	549.70	1541.50	3456.90
No	4125	168.31	153.39	184.67	<LOD	39938.00	58.60	154.30	435.20	1117.20	2444.60

Table 32: Concentration of mono-ethyl phthalate µg/L found in urine and Ever told that you have Diabetes?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	280	184.09	144.04	235.28	3.30	23810.00	58.40	167.80	503.30	1661.60	3733.50
No	4993	176.50	161.98	192.32	<LOD	39938.00	62.00	165.80	453.70	1228.20	2470.00

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Table 33: Concentration of mono-ethyl phthalate µg/L found in urine by Currently Taking Birth Control Pills?

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	151	277.39	193.43	397.79	10.10	39631.70	117.20	272.70	478.30	1047.80	2051.90
No	429	194.84	166.87	227.50	1.70	21932.20	80.20	172.20	424.80	1345.60	2724.40

Table 34: Concentration of mono-ethyl phthalate µg/L found in urine and Now Use Depo-Provera Injectables

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	44	274.27	179.77	418.45	29.10	8337.90	91.70	301.00	645.60	1051.60	4054.50
No	153	258.35	175.59	380.12	<LOD	20524.00	97.80	213.50	701.70	1350.90	2251.20

Table 35: Concentration of mono-ethyl phthalate µg/L found in urine and Currently Taking Estrogen Only Pills

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	124	165.67	119.27	230.13	3.30	4674.10	59.70	192.60	463.40	793.90	1063.80
No	130	132.21	101.93	171.50	3.40	12348.00	54.90	107.20	369.40	897.70	997.80

Table 36: Concentration of mono-ethyl phthalate µg/L found in urine and Currently Taking Projestin Only Pills

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	28	109.83	44.36	271.91	13.50	1783.80	45.80	85.90	282.20	694.10	708.00
No	51	131.90	91.51	190.11	10.20	12348.00	49.50	103.90	373.50	836.60	1072.20

Table 37: Concentration of mono-ethyl phthalate µg/L found in urine and Currently Taking Estrogen-Projestin Pills

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	45	128.13	96.49	170.13	6.10	4126.40	46.60	119.30	342.50	1075.10	2943.90
No	29	70.76	41.48	120.72	3.50	1350.40	35.20	83.50	142.00	404.20	474.20

Table 38: Concentration of mono-ethyl phthalate µg/L found in urine and Number of Prescription Medications Taken

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	3226	184.43	166.04	204.86	<LOD	29019.80	63.90	171.30	489.50	1336.50	2529.20
1	830	163.43	141.69	188.51	1.70	39938.00	57.60	151.90	415.40	1064.40	2470.50
2	446	176.09	144.66	214.35	3.30	19090.00	63.70	174.00	449.60	1058.90	2163.20
3	332	158.44	120.03	209.15	<LOD	16995.20	49.40	144.90	362.90	1257.30	2943.90
4	159	165.19	123.28	221.35	3.20	12820.80	75.50	153.90	378.00	787.80	1661.60
5	114	227.26	153.08	337.39	8.30	23810.00	61.80	233.10	679.10	2156.80	4352.70
6+	211	170.55	129.60	224.43	1.10	11950.00	58.10	161.20	495.20	1291.90	4131.00

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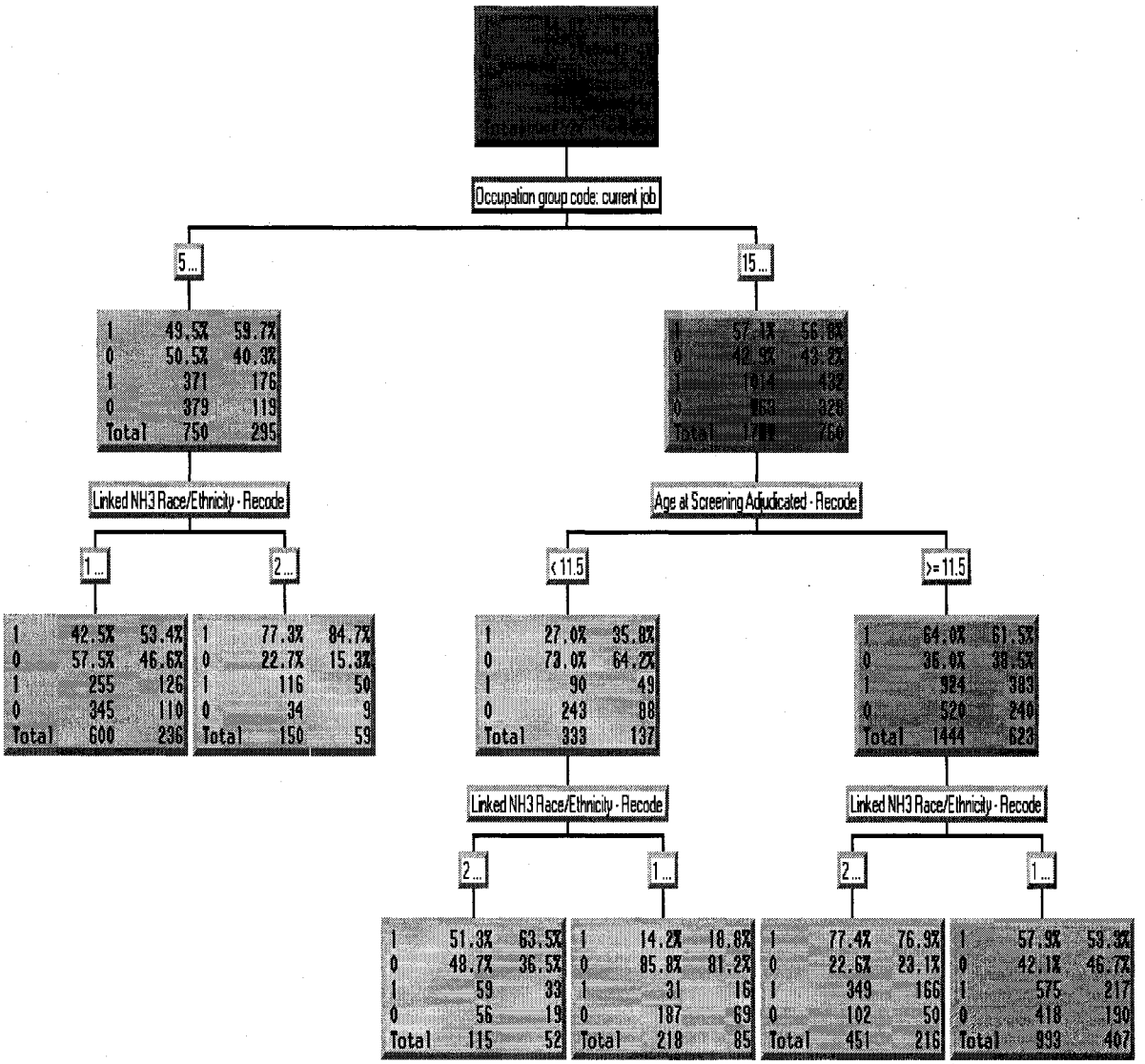
Classification and Regression Tree for mono-ethyl phthalate



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APPENDIX 22: MONO-BENZYL PHTHALATE

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Table 1: Concentration of mono-benzyl phthalate µg/L found in urine by age category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Age 5-11	721	36.01	32.02	40.50	<LOD	1685.00	16.10	38.00	77.00	160.70	214.20
Age 12-19	1494	24.34	21.90	27.05	<LOD	1274.30	12.70	27.20	53.60	96.60	146.50
Age 20-40	1205	16.12	14.49	17.93	<LOD	1109.80	7.70	17.90	35.80	72.40	114.80
Age 41-55	759	11.21	9.89	12.71	<LOD	1197.60	5.30	12.30	23.90	48.10	82.40
Age 55+	1144	9.27	8.00	10.74	<LOD	1921.00	4.00	10.40	24.00	46.00	67.10

Table 2: Concentration of mono-benzyl phthalate µg/L found in urine and Occupation

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Executive, Administrators, & Managers	143	10.70	8.02	14.29	<LOD	316.80	4.00	11.50	27.20	52.40	68.80
Management Related	51	11.88	9.16	15.42	<LOD	122.60	6.40	15.00	23.90	41.80	48.20
Engineers, Architects, and Scientists	54	10.38	8.09	13.33	<LOD	132.50	5.70	9.80	20.30	45.40	58.10
Health Diagnosing, Assessing & Treating	43	11.09	8.23	14.94	<LOD	851.40	4.10	12.20	32.50	101.70	121.00
Teachers	80	7.82	5.37	11.39	<LOD	184.60	1.90	8.60	23.40	48.20	71.30
Writers, Artists, Entertainers & Athletes	39	11.16	7.63	16.33	<LOD	74.40	5.40	13.40	41.30	43.50	54.70
Other Professional Speciality	54	10.87	8.19	14.44	<LOD	907.80	4.40	9.80	32.00	54.50	63.20
Technicians and Related Supported	55	12.79	8.42	19.42	<LOD	174.40	6.00	12.30	27.50	64.30	84.70
Supervisors and Proprietors, Sales	41	13.98	7.91	24.72	<LOD	185.60	6.20	15.20	39.80	84.60	128.80
Sales Representatives,finance,business,commodities	59	11.23	7.83	16.11	<LOD	116.30	5.00	9.50	25.10	52.20	103.10
Sales Workers, retail & personal services	147	15.07	11.20	20.28	<LOD	739.70	8.10	18.20	39.00	57.90	71.90
Secretaries, Stenographers, and typists	33	11.18	8.38	14.91	<LOD	94.80	5.00	12.60	24.70	38.60	38.60
Information Clerks	31	19.11	14.18	25.76	1.30	70.20	10.10	24.60	39.70	46.30	46.30
Records Processing	65	9.71	7.44	12.69	<LOD	217.30	5.00	10.30	22.50	52.00	75.50
Material Recording, Scheduling,distributing clerks	35	16.16	8.10	32.22	<LOD	1009.40	6.80	19.50	30.10	68.70	142.20
Miscellaneous administrative support	132	13.58	10.77	17.14	0.80	332.10	7.70	13.00	24.80	61.90	78.20
Private Household	18	14.32	8.59	23.89	<LOD	123.20	7.00	17.90	37.30	123.20	123.20
Protective Service	34	10.97	7.61	15.82	<LOD	250.80	4.20	14.00	32.30	53.40	53.70
Waiters and Waitresses	43	13.08	9.04	18.93	1.10	131.40	6.20	12.50	30.80	44.40	60.50
Cooks	58	12.51	7.08	22.08	<LOD	298.30	5.10	15.60	35.90	74.10	94.70
Miscellaneous food preparation and service	61	22.07	17.00	28.67	<LOD	603.50	12.70	26.50	43.30	65.90	159.90
Health Service Occupation	52	19.96	16.12	24.72	<LOD	178.70	10.40	19.50	48.20	67.10	80.80
Cleaning and Building Service	71	24.98	18.33	34.03	1.40	449.50	10.90	20.90	68.40	113.00	117.20
Personal Service	54	13.28	8.21	21.49	<LOD	170.30	5.80	9.80	29.50	70.70	81.30
Farm Operators, Managers and Supervisors	8	23.88	.	.	2.90	134.70	6.00	34.60	134.70	134.70	134.70
Farm and Nursery Workers	31	7.21	3.74	13.91	<LOD	68.30	3.70	6.00	13.20	31.60	39.90
Related Agricultural, Forestry and Fishing	47	13.51	9.57	19.06	<LOD	193.60	6.30	18.00	31.20	42.40	56.80
Vehicle and Mobile Equipment Mechanics, Repairs	28	18.39	10.54	32.08	<LOD	121.50	12.90	20.10	31.70	40.60	121.50
Other Mechanics and repairers	38	18.70	14.56	24.03	<LOD	131.10	12.10	19.40	39.40	71.20	104.70
Construction traders	127	16.51	11.00	24.79	<LOD	395.50	6.90	16.80	39.50	84.60	140.10
Extractive and Precision Production	48	22.27	14.77	33.56	3.00	203.50	12.70	19.70	38.30	102.00	152.20
Textile, apparel and furnishings machine operators	19	20.88	12.90	33.80	<LOD	414.60	5.50	22.70	74.70	414.60	414.60
Machine Operators, Assorted Materials	66	19.13	13.92	26.29	<LOD	97.70	10.70	22.10	34.20	51.30	63.80
Fabricators, Assemblers, Inspectors, and Samplers	51	14.35	11.12	18.52	1.20	241.30	5.90	12.30	29.10	53.80	98.70
Motor vehicle operators	70	13.18	10.49	16.55	<LOD	164.30	8.50	14.00	22.00	50.30	94.20
Other transportation and material moving	21	11.88	7.25	19.46	4.00	34.00	5.00	15.70	25.90	32.40	34.00
Construction laborers	29	19.23	11.50	32.18	2.10	461.70	10.40	16.40	36.90	72.40	174.80
Laborers, except construction	6	17.47	.	.	4.30	32.80	17.20	19.90	19.90	21.30	21.30
Frieght, Stock, and Material Movers, hand	44	11.16	8.51	14.63	<LOD	1274.30	5.20	11.90	21.40	47.90	94.60
Other helpers, equipment cleaners, hand packages and laborers	27	11.61	3.87	34.78	<LOD	129.00	4.80	25.00	41.60	119.40	129.00

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Table 3: Concentration of mono-benzyl phthalate µg/L found in urine and Employment Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Working at a Job or Business	1071	13.21	11.80	14.78	<LOD	1009.40	6.10	14.20	32.30	70.70	102.00
With a Job but not at Work	53	12.10	6.58	22.23	0.80	132.50	6.60	11.40	21.30	60.90	95.60
Looking for Work	56	14.30	8.80	23.21	<LOD	261.80	6.00	13.10	39.00	77.10	83.90
Not working at a job or Business	823	12.88	11.79	14.07	<LOD	1109.80	5.60	14.50	32.20	58.30	109.90

Table 4: Concentration of mono-benzyl phthalate µg/L found in urine and Income

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
$0-$4 999	118	24.57	17.16	35.18	<LOD	859.50	14.80	33.00	56.70	99.70	99.70
$ 5000-$9 999	314	12.10	6.58	22.23	0.80	132.50	6.60	11.40	21.30	60.90	95.60
$10 000-$14 999	408	14.30	8.80	23.21	<LOD	261.80	6.00	13.10	39.00	77.10	83.90
$15 000-$19 999	417	12.88	11.79	14.07	<LOD	1109.80	5.60	14.50	32.20	58.30	109.90
$20 000-$24 999	384	17.45	13.29	22.90	<LOD	736.40	8.80	19.90	47.10	84.20	110.20
$25 000-$34 999	623	13.82	11.88	16.09	<LOD	342.80	6.20	15.80	33.00	61.30	94.80
$35 000-$44 999	489	15.50	12.39	19.39	<LOD	809.50	7.00	16.00	41.00	71.20	107.00
$45 000-$54 999	407	15.88	13.17	19.14	<LOD	756.40	7.60	17.40	38.50	76.30	115.90
$55 000-$64 999	325	14.53	12.29	17.18	<LOD	1009.40	5.90	15.60	34.70	74.70	121.50
$65 000-$74 999	243	14.38	11.41	18.14	<LOD	907.80	6.40	16.40	34.80	64.70	119.20
$75 000 and over	890	11.32	10.11	12.67	<LOD	851.40	5.30	12.80	27.10	51.90	91.00

Table 5: Concentration of mono-benzyl phthalate µg/L found in urine and Race/Ethnicity

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Non-Hispanic White	2128	13.94	12.96	15.00	<LOD	1921.00	6.30	15.00	34.30	68.10	112.30
Non-Hispanic Black	1306	23.18	21.41	25.08	<LOD	1197.60	12.00	23.70	49.70	97.90	141.40
Mexican American	1491	13.46	12.00	15.08	<LOD	1274.30	6.00	15.10	30.30	69.10	98.30
Other Race-Including MultiRacial	135	12.03	9.66	15.00	<LOD	178.80	5.20	13.20	36.00	61.60	102.30
Other Hispanic	263	18.63	16.57	20.95	<LOD	1685.00	8.80	21.20	40.40	68.70	106.80

Table 6: Concentration of mono-benzyl phthalate µg/L found in urine and Gender

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Male	2586	15.72	14.27	17.31	<LOD	1921.00	7.70	16.60	35.70	75.30	116.80
Female	2737	14.34	13.19	15.59	<LOD	1685.00	6.10	15.40	36.50	70.70	113.00

Table 7: Concentration of mono-benzyl phthalate µg/L found in urine and Education

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Less than High School	3066	21.47	19.26	23.94	<LOD	1921.00	9.80	22.80	50.60	100.10	164.60
High School Diploma	825	14.49	12.76	16.46	<LOD	380.20	7.40	15.70	33.50	64.40	84.60
More than High School	1424	11.10	10.04	12.28	<LOD	1109.80	4.90	12.30	27.40	52.10	92.40

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Table 8: Concentration of *mono*-benzyl phthalate µg/L found in urine and Marital Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Married	1738	11.00	9.91	12.21	<LOD	1009.40	5.10	12.30	25.40	52.10	82.40
Widowed	267	10.49	8.46	13.02	<LOD	380.20	5.00	11.40	24.30	46.70	61.30
Divorced	272	14.40	11.51	18.02	<LOD	261.80	6.20	14.20	35.50	67.80	102.00
Separated	112	19.07	14.75	24.64	<LOD	270.90	11.20	19.30	41.60	88.50	121.60
Never Married	1481	18.24	16.21	20.51	<LOD	1274.30	9.00	20.50	40.40	77.10	119.20
Living with Partner	161	14.76	11.84	18.39	<LOD	238.00	7.10	16.10	32.50	49.30	85.10

Table 9: Concentration of *mono*-benzyl phthalate µg/L found in urine and Country of Birth

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Born in the US	4259	15.55	14.54	16.62	<LOD	1921.00	7.20	17.00	37.80	76.40	121.00
Born in Mexico	646	11.27	9.69	13.11	<LOD	1274.30	5.20	11.70	25.30	56.40	90.40
Born Elsewhere	384	12.25	10.34	14.52	<LOD	1197.60	5.30	12.60	29.50	52.40	84.20

Table 10: Concentration of *mono*-benzyl phthalate µg/L found in urine and Pregnancy Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Pregnant	222	18.65	14.98	23.22	<LOD	239.80	8.60	21.00	42.90	74.00	132.00
Not Pregnant	1358	14.20	12.85	15.70	<LOD	1009.40	6.00	15.60	35.30	70.70	109.90

Table 11: Concentration of *mono*-benzyl phthalate µg/L found in urine and Type of Home

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
A Mobile Home or Trailer	425	22.50	19.33	26.19	<LOD	809.50	9.60	24.20	52.10	106.10	160.70
A detached single family home	3216	13.61	12.61	14.70	<LOD	1274.30	6.20	14.80	32.90	62.40	99.10
Attached Single Family Home	420	14.11	11.04	18.03	<LOD	631.00	6.30	15.00	33.50	84.20	115.90
An Apartment	1130	17.55	15.10	20.41	<LOD	1921.00	7.70	19.40	42.50	88.20	132.00
Something Else	51	15.38	11.26	21.02	<LOD	613.80	6.20	16.10	67.10	102.00	183.50
Dormitory	22	35.47	.	.	2.80	739.70	26.40	40.90	71.40	302.30	303.00

Table 12: Concentration of *mono*-benzyl phthalate µg/L found in urine and Year Home Built

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
1990-present	714	15.89	13.42	18.82	<LOD	1685.00	7.40	16.60	36.80	81.10	117.20
1978-1989	872	13.59	11.82	15.63	<LOD	1109.80	6.40	14.40	34.00	56.50	116.00
1960-1977	938	13.05	11.34	15.01	<LOD	1921.00	5.60	15.30	30.70	67.30	109.90
1950-1959	516	12.30	10.42	14.52	<LOD	405.20	5.80	13.40	29.80	54.10	78.40
1940-1949	281	16.61	13.59	20.31	<LOD	1274.30	8.00	15.80	43.20	75.30	119.20
before 1940	595	15.82	12.78	19.58	<LOD	1009.40	7.40	17.50	38.40	71.20	111.80

Table 13: Concentration of *mono*-benzyl phthalate µg/L found in urine and Water Source

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Private-Public Water Company	4714	14.66	13.78	15.59	<LOD	1921.00	6.50	15.80	35.60	71.20	111.30
Private Public Well	484	16.76	14.08	19.95	<LOD	1009.40	7.50	16.50	39.40	76.30	141.50
Some other Water Source	26	22.66	11.32	45.39	1.20	106.10	19.60	26.40	36.60	47.90	80.60

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Table 14: Concentration of mono-benzyl phthalate µg/L found in urine and Helpings of Protein per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	15	15.06	1.21	187.74	<LOD	233.10	6.90	15.00	112.90	112.90	233.10
1	191	10.72	7.92	14.50	<LOD	1921.00	4.90	11.20	26.40	53.30	70.70
2	201	9.67	6.63	14.12	<LOD	164.60	4.10	11.50	23.80	42.50	50.30
3+	102	7.04	4.39	11.28	<LOD	284.10	3.50	6.90	15.30	44.20	68.10

Table 15: Concentration of mono-benzyl phthalate µg/L found in urine and Helpings of Milk/Dairy per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	77	7.54	5.51	10.31	<LOD	331.90	3.90	8.60	15.50	24.00	41.90
1	236	9.39	6.15	14.34	<LOD	1921.00	3.70	9.00	25.80	59.40	87.40
2	146	10.34	7.27	14.72	<LOD	114.70	4.40	11.50	27.60	45.00	67.60
3+	52	10.72	6.64	17.30	<LOD	137.60	4.90	11.60	26.90	38.80	47.70

Table 16: Concentration of mono-benzyl phthalate µg/L found in urine and Helpings of Fruit per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	52	10.12	5.08	20.17	<LOD	112.90	5.10	12.30	21.40	67.60	79.50
1	215	9.51	6.68	13.52	<LOD	1921.00	3.70	9.30	25.40	53.30	81.00
2	160	9.46	7.23	12.39	<LOD	114.70	4.10	11.60	26.30	44.20	46.70
3+	83	9.48	6.79	13.23	<LOD	156.80	4.10	10.30	20.40	51.00	70.70

Table 17: Concentration of mono-benzyl phthalate µg/L found in urine and Helpings of Vegetables per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	47	6.89	3.29	14.41	<LOD	156.80	3.10	7.50	15.00	18.20	156.80
1	257	9.81	6.53	14.75	<LOD	1921.00	3.70	9.50	24.30	51.00	71.20
2	201	9.67	6.63	14.12	<LOD	164.60	4.10	11.50	23.80	42.50	50.30
3+	67	9.81	6.40	15.04	<LOD	113.50	4.80	11.20	25.40	45.30	70.70

Table 18: Concentration of mono-benzyl phthalate µg/L found in urine and Helpings of Bread/grain per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	36	10.29	5.54	19.11	<LOD	112.90	4.80	9.30	20.40	38.80	112.90
1	191	11.16	7.70	16.18	<LOD	1921.00	3.70	11.60	30.30	67.20	89.20
2	172	9.07	6.52	12.62	<LOD	284.10	4.10	11.20	23.40	44.20	51.00
3+	111	7.50	4.93	11.40	<LOD	69.80	3.80	7.10	18.80	34.20	47.10

Table 19: Concentration of mono-benzyl phthalate µg/L found in urine and Servings of Beans per month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	278	20.64	15.37	27.71	<LOD	1109.80	8.60	20.50	45.40	116.30	183.50
1 to 5	1061	14.95	13.37	16.72	<LOD	1009.40	6.80	15.70	37.40	73.10	109.70
6 to 10	546	13.28	10.73	16.43	<LOD	627.50	6.00	14.40	38.00	77.10	131.20
11 to 15	311	16.40	12.22	22.00	<LOD	721.90	7.50	14.90	39.20	101.70	174.80
15+	496	13.26	11.34	15.49	<LOD	413.40	5.80	15.00	34.10	62.90	98.60

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Table 20: Concentration of mono-benzyl phthalate µg/L found in urine and Fish Consumed in Past Month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	1519	12.95	11.53	14.55	<LOD	1921.00	5.80	14.60	30.80	55.30	90.40
No	916	20.03	16.93	23.70	<LOD	1685.00	9.40	21.30	43.30	85.80	128.90

Table 21: 2,4- D and Shellfish Consumed in Past Month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	1003	13.14	11.50	15.00	<LOD	1274.30	5.90	14.50	30.60	58.50	99.20
No	1436	16.44	14.02	19.29	<LOD	1921.00	8.00	19.10	39.40	68.80	105.40

Table 22: Concentration of mono-benzyl phthalate µg/L found in urine and Body Mass Index Category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Under Weight	94	18.24	13.03	25.52	<LOD	270.90	9.50	20.60	45.00	92.90	116.00
Healthy Weight	2197	15.08	13.76	16.52	<LOD	1921.00	6.50	16.10	37.30	81.30	123.20
Over Weight	2900	14.72	13.42	16.14	<LOD	1009.40	6.80	15.70	34.50	65.90	103.10

Table 23: Concentration of mono-benzyl phthalate µg/L found in urine and Ever told you have Weak/Failing Kidneys

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	48	12.36	7.79	19.60	<LOD	331.90	6.60	13.00	29.30	46.30	52.10
No	1409	12.25	10.68	14.04	<LOD	1921.00	5.60	13.30	28.50	51.30	82.40

Table 24: Concentration of mono-benzyl phthalate µg/L found in urine and total number of beers consumed per month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	948	12.29	10.84	13.93	<LOD	1921.00	5.60	13.30	28.90	51.30	88.70
0-5	289	13.22	10.04	17.40	<LOD	257.60	6.70	15.30	30.00	49.70	87.20
6 to 10	78	8.45	5.47	13.05	<LOD	414.80	3.40	9.10	22.80	51.00	63.80
11 to 15	40	13.12	8.13	21.19	<LOD	86.30	6.10	12.50	35.50	45.30	86.30
16+	106	12.43	9.71	15.93	<LOD	461.70	5.60	12.80	22.60	54.70	67.20

Table 25: Concentration of mono-benzyl phthalate µg/L found in urine and Water (gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0 to 896	2305	16.72	15.37	18.19	<LOD	1921.00	8.10	18.90	38.40	77.10	121.00
897-1792g	1273	12.25	10.85	13.83	<LOD	1685.00	5.30	13.10	29.90	59.50	92.40
>1792g	882	13.04	11.70	14.54	<LOD	1197.60	5.80	13.40	34.30	70.70	102.30

Table 26: Concentration of mono-benzyl phthalate µg/L found in urine and Alcohol (gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	4080	15.80	14.54	17.18	<LOD	1921.00	7.00	17.10	39.10	80.00	121.00
0-28	667	11.82	10.21	13.69	<LOD	516.10	5.30	12.50	27.40	56.80	92.40
>28	346	14.00	11.34	17.29	<LOD	414.80	8.00	15.40	30.60	57.10	86.30

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Table 27: Concentration of mono-benzyl phthalate µg/L found in urine and Caffeine(gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	995	18.92	17.35	20.65	<LOD	1685.00	8.50	22.40	46.30	86.60	128.90
0-400	3825	14.88	13.82	16.01	<LOD	1921.00	6.80	15.60	34.90	71.30	116.30
400+	273	10.80	9.42	12.37	<LOD	851.40	4.70	12.00	26.80	52.00	74.10

Table 28: Concentration of mono-benzyl phthalate µg/L found in urine and Fiber (gm) /day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0g	10	11.00	5.12	23.63	4.90	40.90	10.00	12.30	14.00	21.00	21.00
1 to 10	1775	18.99	17.01	21.21	<LOD	1921.00	8.90	20.00	44.40	90.30	142.80
11 to 24	2668	13.71	12.59	14.93	<LOD	1685.00	6.30	14.70	32.80	62.50	103.10
25+	640	11.40	9.36	13.87	<LOD	1274.30	5.00	12.10	30.80	56.80	94.90

Table 29: Concentration of mono-benzyl phthalate µg/L found in urine and Breastfeeding Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Currently Breastfeeding	41	16.67	12.56	22.13	<LOD	237.80	6.20	16.60	41.70	54.80	100.90
Not currently Breastfeeding	99	24.33	14.92	39.68	<LOD	239.80	11.60	30.00	51.30	99.70	151.70

Table 30: Concentration of mono-benzyl phthalate µg/L found in urine and Liver Conditions

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Ever had a liver condition	87	9.80	7.41	12.97	<LOD	270.90	5.30	10.80	21.00	45.00	78.40
Never had a liver condition	3014	12.51	11.62	13.47	<LOD	1921.00	5.70	13.70	30.10	55.30	91.60

Table 31: Concentration of mono-benzyl phthalate µg/L found in urine and Anyone Smoke in the Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	1137	19.49	17.52	21.68	<LOD	1009.40	10.00	20.20	42.40	94.80	142.00
No	4129	13.88	12.95	14.89	<LOD	1921.00	6.10	14.90	34.00	67.30	102.70

Table 32: Concentration of mono-benzyl phthalate µg/L found in urine and Ever told that you have Diabetes?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	280	11.85	9.83	14.29	<LOD	331.90	5.70	12.90	27.50	52.60	85.40
No	4997	15.22	14.27	16.24	<LOD	1921.00	6.80	16.50	36.60	74.10	115.90

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Table 33: Concentration of mono-benzyl phthalate µg/L found in urine by Currently Taking Birth Control Pills?

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	151	17.86	14.93	21.36	<LOD	174.40	9.80	19.20	32.60	59.50	102.70
No	429	14.06	11.88	16.64	<LOD	1009.40	6.20	14.80	33.10	74.10	107.00

Table 34: Concentration of mono-benzyl phthalate µg/L found in urine and Now Use Depo-Provera Injectables

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	44	26.63	21.71	32.65	1.10	303.00	19.70	32.60	54.60	105.20	105.20
No	153	21.05	15.44	28.71	<LOD	342.80	12.30	24.20	51.30	90.30	141.50

Table 35: Concentration of mono-benzyl phthalate µg/L found in urine and Currently Taking Estrogen Only Pills

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	125	11.08	8.17	15.03	<LOD	380.20	5.20	13.80	21.20	43.50	56.50
No	131	10.84	8.66	13.58	<LOD	851.40	4.20	10.70	26.40	57.90	90.30

Table 36: Concentration of mono-benzyl phthalate µg/L found in urine and Currently Taking Projestin Only Pills

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	28	8.15	5.39	12.34	<LOD	113.00	2.80	9.60	17.90	37.80	113.00
No	52	8.10	5.44	12.06	<LOD	122.20	3.10	11.30	22.10	43.00	75.30

Table 37: Concentration of mono-benzyl phthalate µg/L found in urine and Currently Taking Estrogen-Projestin Pills

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	46	7.93	6.21	10.12	<LOD	75.30	3.50	11.40	19.80	27.10	32.90
No	29	6.36	4.88	8.30	<LOD	113.00	1.80	9.30	14.80	41.20	113.00

Table 38: Concentration of mono-benzyl phthalate µg/L found in urine and Number of Prescription Medications Taken

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	3228	16.94	15.53	18.48	<LOD	1685.00	7.90	17.90	39.50	84.00	128.90
1	830	14.63	13.07	16.37	<LOD	1009.40	6.10	15.90	37.50	81.00	103.60
2	446	14.23	12.47	16.24	<LOD	1109.80	5.80	14.50	36.10	70.70	113.00
3	333	10.79	9.28	12.55	<LOD	1921.00	5.20	11.40	26.20	44.20	62.80
4	159	11.63	9.65	14.02	<LOD	284.10	5.70	14.40	26.00	55.30	82.80
5	115	9.97	7.52	13.22	<LOD	186.30	4.70	11.00	23.40	45.30	80.80
6+	212	11.80	9.55	14.57	<LOD	380.20	5.10	14.70	31.90	46.70	75.50

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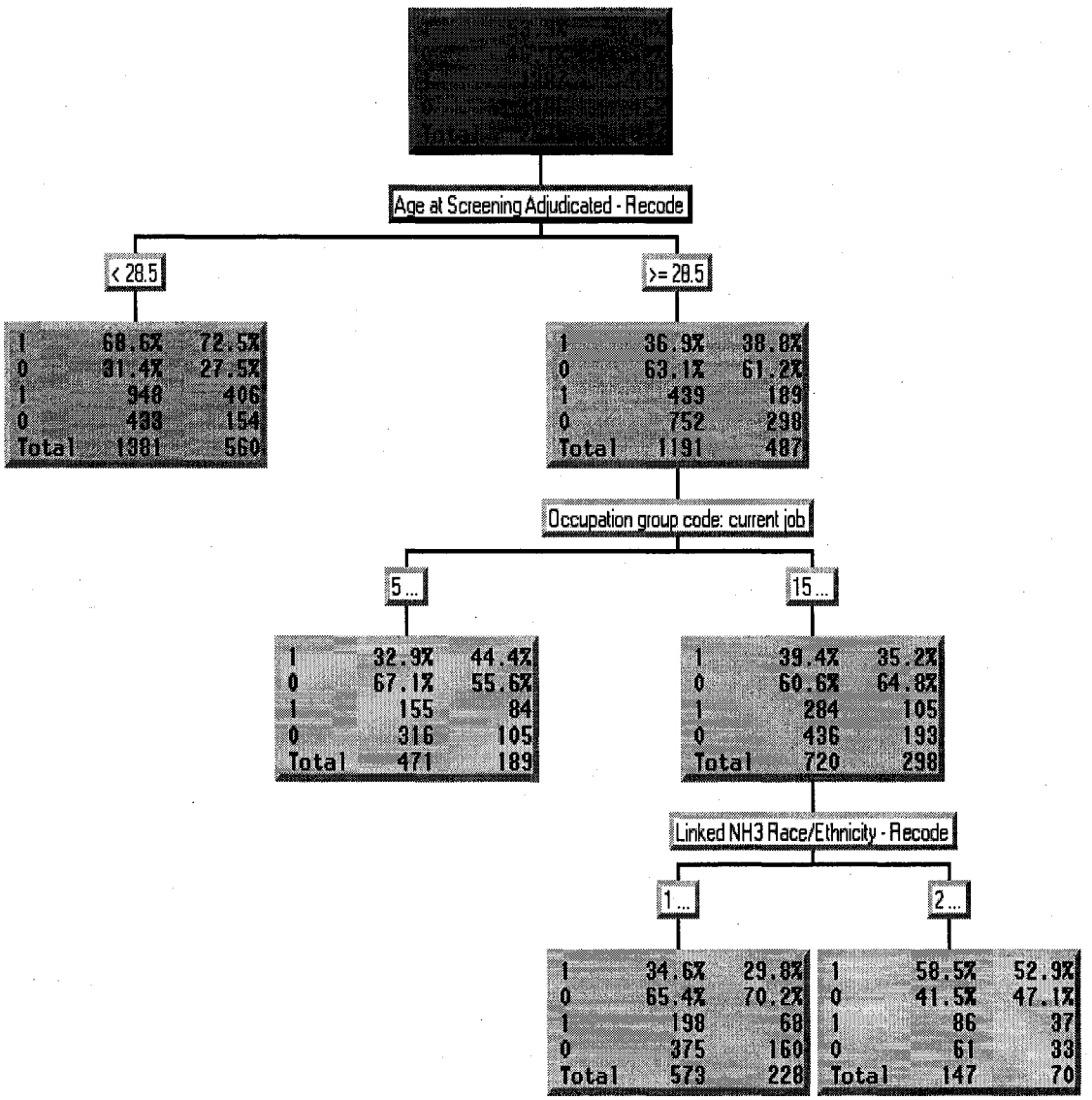
Classification and Regression Tree for mono-benzyl phthalate



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APPENDIX 23: MONO-2-ETHYLHEXYL PHTHALATE

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Table 1: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine by age category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Age 5-11	721	4.71	4.31	5.15	<LOD	314.30	2.10	4.90	10.20	19.00	35.30
Age 12-19	1494	4.17	3.77	4.61	<LOD	549.20	1.70	4.10	9.60	20.20	29.10
Age 20-40	1205	4.70	4.25	5.20	<LOD	615.60	1.70	4.80	10.80	23.70	40.10
Age 41-55	759	3.43	3.02	3.90	<LOD	615.10	1.30	3.40	7.70	15.30	26.50
Age 55+	1144	2.62	2.27	3.02	<LOD	204.20	<LOD	2.40	5.40	13.30	20.70

Table 2: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Occupation

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Executive, Administrators, & Managers	143	3.67	2.84	4.74	<LOD	602.20	1.20	3.10	9.10	25.10	38.30
Management Related	51	2.99	2.11	4.24	<LOD	185.30	<LOD	3.10	7.10	15.30	31.50
Engineers, Architects, and Scientists	54	5.15	4.29	6.17	<LOD	80.40	2.20	6.00	10.80	29.80	39.50
Health Diagnosing, Assessing & Treating	43	2.51	2.15	2.94	<LOD	106.50	1.20	2.20	6.10	8.40	33.90
Teachers	80	4.17	2.97	5.87	<LOD	106.10	1.50	3.40	11.00	23.50	35.10
Writers, Artists, Entertainers & Athletes	39	3.34	2.52	4.41	<LOD	77.30	1.30	2.80	7.50	14.90	27.80
Other Professional Speciality	54	4.01	2.82	5.70	<LOD	401.10	1.40	3.70	8.00	19.10	42.80
Technicians and Related Supported	55	4.47	3.09	6.48	<LOD	57.70	1.70	4.10	13.60	19.60	22.70
Supervisors and Proprietors, Sales	41	4.20	2.76	6.38	<LOD	130.10	<LOD	3.90	10.20	55.40	74.10
Sales Representatives,finance,business,commodities	59	3.48	2.35	5.17	<LOD	615.60	<LOD	3.10	8.90	13.60	38.90
Sales Workers, retail & personal services	147	4.22	3.28	5.43	<LOD	280.70	1.90	4.00	10.60	17.10	29.80
Secretaries, Stenographers, and typists	33	4.51	3.48	5.86	<LOD	60.80	2.30	3.60	7.50	8.90	60.80
Information Clerks	31	3.50	2.01	6.11	<LOD	107.40	<LOD	4.40	9.10	17.30	19.20
Records Processing	65	3.26	2.49	4.26	<LOD	150.10	1.40	3.10	6.00	11.70	41.90
Material Recording, Scheduling,distributing clerks	35	3.88	2.55	5.91	<LOD	204.20	1.80	3.80	9.60	13.10	17.60
Miscellaneous administrative support	132	4.62	3.67	5.81	<LOD	131.70	2.20	5.10	8.70	14.50	28.40
Private Household	18	3.68	2.62	5.19	<LOD	78.00	1.60	3.10	8.60	32.10	78.00
Protective Service	34	3.55	2.16	5.84	<LOD	32.70	<LOD	4.20	9.20	11.80	18.60
Waiters and Waitresses	43	5.77	4.78	6.97	<LOD	22.10	3.50	6.00	10.00	14.50	16.20
Cooks	58	3.63	2.49	5.29	<LOD	116.60	<LOD	3.60	8.00	25.60	33.40
Miscellaneous food preparation and service	61	5.77	3.84	8.66	<LOD	61.60	2.40	7.80	15.90	24.90	25.00
Health Service Occupation	52	5.01	3.89	6.45	<LOD	563.80	2.00	5.80	12.90	13.20	24.10
Cleaning and Building Service	71	5.56	4.33	7.16	<LOD	311.50	2.40	5.00	10.70	42.50	62.90
Personal Service	54	3.47	2.32	5.19	<LOD	191.90	1.20	4.10	8.20	16.00	18.00
Farm Operators, Managers and Supervisors	8	4.47	.	.	<LOD	42.50	1.20	4.50	13.70	13.70	13.70
Farm and Nursery Workers	31	2.63	2.12	3.27	<LOD	23.40	1.30	3.00	4.60	7.00	7.00
Related Agricultural, Forestry and Fishing	47	3.22	2.64	3.92	<LOD	392.50	<LOD	2.70	5.20	14.90	23.00
Vehicle and Mobile Equipment Mechanics, Repairs	28	4.22	2.27	7.83	<LOD	63.90	2.30	4.80	8.00	8.20	26.40
Other Mechanics and repairers	38	4.30	2.96	6.24	<LOD	26.70	2.20	4.50	8.10	14.80	15.30
Construction traders	127	3.78	2.71	5.28	<LOD	177.90	1.40	3.50	9.50	16.10	38.40
Extractive and Precision Production	48	6.81	4.48	10.34	<LOD	122.30	3.20	5.90	13.70	25.10	31.70
Textile, apparel and furnishings machine operators	19	6.36	4.31	9.39	<LOD	39.30	2.90	8.80	16.80	24.00	28.20
Machine Operators, Assorted Materials	66	3.91	2.80	5.47	<LOD	68.00	1.70	5.10	8.20	16.10	17.00
Fabricators, Assemblers, Inspectors, and Samplers	51	4.13	2.67	6.38	<LOD	46.10	2.00	3.70	8.10	22.60	34.70
Motor vehicle operators	70	4.85	3.52	6.67	<LOD	374.00	2.20	4.40	10.50	31.80	33.40
Other transportation and material moving	21	2.53	1.81	3.54	<LOD	73.30	1.20	2.10	4.90	10.60	25.30
Construction laborers	29	5.05	2.84	8.98	<LOD	57.10	1.70	5.40	16.80	30.80	57.10
Laborers, except constuction	6	2.65	.	.	<LOD	17.10	1.30	2.90	3.00	17.10	17.10
Frieght, Stock, and Material Movers, hand	44	3.99	2.12	7.50	<LOD	50.00	1.40	4.50	8.60	18.70	50.00
Other helpers, equipment cleaners, hand packages and laborers	27	3.56	1.69	7.49	<LOD	56.80	<LOD	2.30	9.40	27.20	44.80

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Table 3: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Employment Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Working at a Job or Business	1071	4.43	3.90	5.03	<LOD	602.20	1.80	4.40	9.60	23.00	38.90
With a Job but not at Work	53	4.54	2.84	7.27	<LOD	60.80	1.60	4.10	15.70	34.20	46.10
Looking for Work	56	4.33	3.11	6.01	<LOD	122.70	1.90	4.20	9.10	25.60	49.60
Not working at a job or Business	823	3.74	2.97	4.72	<LOD	615.10	<LOD	3.60	9.70	20.60	37.20

Table 4: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Income

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
$0-$4 999	118	5.42	3.40	8.63	<LOD	117.40	2.10	4.80	11.50	36.20	117.40
$ 5000-$9 999	314	4.54	2.84	7.27	<LOD	60.80	1.60	4.10	15.70	34.20	46.10
$10 000-$14 999	408	4.33	3.11	6.01	<LOD	122.70	1.90	4.20	9.10	25.60	49.60
$15 000-$19 999	417	3.74	2.97	4.72	<LOD	615.10	<LOD	3.60	9.70	20.60	37.20
$20 000-$24 999	384	3.98	3.29	4.82	<LOD	196.30	1.20	4.00	10.70	23.70	32.60
$25 000-$34 999	623	3.73	3.23	4.31	<LOD	401.10	<LOD	3.60	9.10	23.60	31.70
$35 000-$44 999	489	4.03	3.50	4.63	<LOD	374.00	1.70	3.90	9.10	20.50	29.80
$45 000-$54 999	407	3.78	3.15	4.53	<LOD	148.20	1.50	3.50	9.20	15.00	27.90
$55 000-$64 999	325	3.96	3.35	4.69	<LOD	602.20	1.70	4.10	7.70	18.70	36.70
$65 000-$74 999	243	3.43	2.95	4.00	<LOD	392.50	1.30	3.10	7.60	15.60	29.90
$75 000 and over	890	3.73	3.29	4.22	<LOD	615.60	1.40	3.70	8.20	17.00	29.80

Table 5: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Race/Ethnicity

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Non-Hispanic White	2128	3.47	3.19	3.77	<LOD	615.60	1.20	3.20	8.00	17.10	29.90
Non-Hispanic Black	1306	5.61	5.12	6.15	<LOD	615.10	2.60	5.60	12.40	25.80	41.20
Mexican American	1491	3.85	3.56	4.15	<LOD	196.30	1.60	3.90	8.30	16.80	26.00
Other Race-Including MultiRacial	135	3.47	2.93	4.12	<LOD	100.50	1.70	4.00	6.00	10.80	17.10
Other Hispanic	263	4.94	4.07	5.98	<LOD	229.60	2.30	4.70	11.60	25.30	35.70

Table 6: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Gender

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Male	2586	3.96	3.67	4.28	<LOD	615.60	1.50	3.80	8.70	18.30	31.80
Female	2737	3.65	3.35	3.98	<LOD	563.80	1.30	3.60	8.30	18.40	29.40

Table 7: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Education

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Less than High School	3066	4.16	3.82	4.53	<LOD	615.10	1.70	4.20	9.10	20.20	31.40
High School Diploma	825	3.68	3.22	4.21	<LOD	374.00	1.30	3.40	8.20	18.90	29.40
More than High School	1424	3.56	3.24	3.90	<LOD	615.60	1.20	3.40	8.20	16.50	31.70

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Table 8: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Marital Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Married	1738	3.41	3.11	3.73	<LOD	615.60	1.20	3.20	7.70	16.20	30.70
Widowed	267	2.52	2.00	3.19	<LOD	117.30	<LOD	2.20	5.10	13.80	21.20
Divorced	272	3.56	2.83	4.48	<LOD	172.00	<LOD	3.70	8.00	18.50	27.40
Separated	112	5.39	4.17	6.97	<LOD	563.80	2.40	4.20	12.70	25.80	45.90
Never Married	1481	4.63	4.20	5.11	<LOD	602.20	1.80	4.70	11.00	23.00	38.50
Living with Partner	161	4.21	3.50	5.08	<LOD	615.10	1.60	4.20	8.70	19.60	33.40

Table 9: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Country of Birth

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Born in the US	4259	3.79	3.50	4.10	<LOD	615.60	1.40	3.70	8.50	18.30	31.70
Born in Mexico	646	3.55	3.22	3.92	<LOD	177.90	1.50	3.60	7.40	15.00	24.90
Born Elsewhere	384	4.02	3.47	4.65	<LOD	185.30	1.70	4.10	8.10	18.90	30.70

Table 10: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Pregnancy Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Pregnant	222	4.90	3.95	6.06	<LOD	306.90	2.10	4.40	9.60	23.60	34.40
Not Pregnant	1358	3.93	3.59	4.31	<LOD	563.80	1.40	3.90	8.90	19.70	30.70

Table 11: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Type of Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
A Mobile Home or Trailer	425	3.25	2.86	3.69	<LOD	280.70	<LOD	2.90	7.30	18.60	29.10
A detached single family home	3216	3.60	3.30	3.92	<LOD	615.60	1.30	3.50	8.20	17.30	29.90
Attached Single Family Home	420	4.51	3.57	5.69	<LOD	615.10	1.70	4.60	8.90	17.50	35.70
An Apartment	1130	4.52	4.01	5.09	<LOD	314.30	1.80	4.40	10.70	22.70	35.70
Something Else	51	4.64	3.79	5.67	<LOD	122.70	2.80	4.20	8.00	16.20	20.70
Dormitory	22	4.37	.	.	<LOD	43.40	1.30	4.90	8.20	24.50	26.10

Table 12: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Year Home Built

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
1990-present	714	3.88	3.44	4.37	<LOD	615.60	1.30	3.70	8.60	20.20	38.40
1978-1989	872	3.67	3.27	4.12	<LOD	374.00	1.50	3.60	8.00	17.30	29.90
1960-1977	938	3.35	2.98	3.76	<LOD	602.20	1.20	3.00	7.60	17.00	26.00
1950-1959	516	3.67	3.11	4.34	<LOD	549.20	1.40	3.80	7.70	17.00	28.20
1940-1949	281	3.50	2.80	4.37	<LOD	93.40	1.20	3.50	7.90	16.20	27.60
before 1940	595	3.62	3.07	4.26	<LOD	204.20	1.30	3.60	8.10	14.90	24.70

Table 13: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Water Source

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Private-Public Water Company	4714	3.81	3.55	4.09	<LOD	615.60	1.40	3.70	8.40	18.50	30.90
Private Public Well	484	3.56	2.92	4.34	<LOD	220.80	1.30	3.50	8.70	16.30	28.20
Some other Water Source	26	5.88	4.92	7.03	<LOD	64.20	2.00	5.90	12.10	64.20	64.20

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Table 14: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Helpings of Protein per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	15	4.34	<LOD	21.74	<LOD	36.90	<LOD	5.10	17.40	17.40	36.90
1	191	2.05	1.64	2.58	<LOD	45.00	<LOD	1.90	3.60	9.00	16.80
2	201	2.14	1.80	2.54	<LOD	204.20	<LOD	2.00	4.20	7.50	11.40
3+	102	1.89	1.67	2.14	<LOD	27.40	<LOD	1.60	4.10	6.30	7.70

Table 15: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Helpings of Milk/Dairy per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	77	1.60	1.28	1.98	<LOD	17.60	<LOD	1.30	2.80	4.90	7.70
1	236	1.92	1.66	2.22	<LOD	38.80	<LOD	1.50	3.60	6.60	13.50
2	146	2.41	1.84	3.16	<LOD	45.00	<LOD	2.30	5.10	7.90	10.80
3+	52	2.80	1.75	4.49	<LOD	204.20	1.40	1.90	4.50	20.00	21.20

Table 16: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Helpings of Fruit per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	52	2.51	1.31	4.83	<LOD	45.00	<LOD	1.50	6.40	20.50	21.20
1	215	2.08	1.77	2.46	<LOD	38.80	<LOD	1.70	4.20	8.80	16.50
2	160	2.11	1.76	2.53	<LOD	27.40	<LOD	2.30	4.10	6.70	8.50
3+	83	1.89	1.54	2.33	<LOD	204.20	<LOD	1.90	3.40	6.10	7.40

Table 17: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Helpings of Vegetables per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	47	1.92	1.42	2.58	<LOD	45.00	<LOD	1.80	3.80	5.10	11.40
1	257	2.03	1.67	2.46	<LOD	38.80	<LOD	1.60	4.40	8.60	16.50
2	201	2.14	1.80	2.54	<LOD	204.20	<LOD	2.00	4.20	7.50	11.40
3+	67	2.02	1.54	2.64	<LOD	16.80	<LOD	1.60	4.30	6.80	7.40

Table 18: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Helpings of Bread/grain per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	36	2.48	1.64	3.75	<LOD	17.40	1.30	2.30	4.20	7.60	17.40
1	191	2.27	1.89	2.72	<LOD	45.00	<LOD	2.00	4.40	9.10	17.60
2	172	2.08	1.83	2.36	<LOD	204.20	<LOD	1.90	3.90	7.90	13.50
3+	111	1.75	1.36	2.25	<LOD	24.10	<LOD	1.40	4.30	5.90	6.60

Table 19: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Servings of Beans per month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	278	4.54	3.26	6.33	<LOD	563.80	1.90	4.20	10.90	24.00	35.70
1 to 5	1061	4.27	3.68	4.96	<LOD	615.10	1.60	4.10	9.70	26.40	44.20
6 to 10	546	4.24	3.42	5.25	<LOD	549.20	1.50	4.20	10.60	23.00	37.10
11 to 15	311	4.00	3.17	5.04	<LOD	220.80	1.60	5.00	8.10	17.70	24.90
15+	496	4.04	3.39	4.82	<LOD	392.50	1.30	3.60	9.70	22.30	48.20

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Table 20: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Fish Consumed in Past Month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	1519	3.19	2.88	3.53	<LOD	615.60	1.20	2.90	7.10	13.70	22.70
No	916	3.79	3.25	4.42	<LOD	306.90	1.50	3.80	8.50	16.90	25.30

Table 21: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Shellfish Consumed in Past Month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	1003	3.30	2.94	3.70	<LOD	615.60	1.20	3.00	7.50	14.90	24.40
No	1436	3.42	3.10	3.78	<LOD	274.80	1.40	3.30	7.40	14.70	23.70

Table 22: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Body Mass Index Category

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Under Weight	94	3.96	3.15	4.96	<LOD	157.10	1.60	4.00	8.30	15.00	29.20
Healthy Weight	2197	3.90	3.64	4.18	<LOD	549.20	1.50	3.90	8.80	18.40	34.10
Over Weight	2900	3.68	3.34	4.05	<LOD	615.60	1.30	3.50	8.20	18.30	30.00

Table 23: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Ever told you have Weak/Failing Kidneys

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	48	2.25	1.52	3.35	<LOD	24.10	<LOD	2.30	4.10	6.90	7.40
No	1409	3.18	2.91	3.49	<LOD	615.60	1.20	3.00	7.20	14.50	22.70

Table 24: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and total number of beers consumed per month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	948	2.96	2.74	3.21	<LOD	311.50	<LOD	2.80	6.80	12.60	21.20
0-5	289	3.30	2.58	4.22	<LOD	615.60	1.30	2.80	7.30	15.40	22.40
6 to 10	78	3.83	3.12	4.71	<LOD	185.30	2.00	3.80	8.10	14.60	17.40
11 to 15	40	5.55	3.87	7.96	<LOD	52.00	2.70	5.60	12.20	30.50	42.50
16+	106	2.99	2.35	3.82	<LOD	41.90	<LOD	2.80	8.00	13.60	17.10

Table 25: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Water (gm)/day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0 to 896	2305	4.17	3.80	4.58	<LOD	615.60	1.60	3.90	9.20	20.50	35.30
897-1792g	1273	3.31	2.96	3.69	<LOD	602.20	<LOD	3.30	7.60	14.60	26.00
>1792g	882	3.45	3.10	3.84	<LOD	204.20	1.20	3.20	8.00	18.70	28.30

Table 26: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Alcohol (gm)/day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	4080	3.76	3.45	4.10	<LOD	615.60	1.40	3.70	8.30	18.10	29.90
0-28	667	3.41	2.98	3.91	<LOD	140.20	1.20	3.10	7.60	17.10	30.50
>28	346	4.34	3.70	5.07	<LOD	615.10	1.40	4.20	11.00	22.30	41.90

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Table 27: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Caffeine(gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	995	4.42	3.82	5.12	<LOD	615.10	1.80	4.50	9.70	21.00	34.50
0-400	3825	3.70	3.44	3.97	<LOD	615.60	1.30	3.60	8.40	17.50	29.10
400+	273	3.36	2.71	4.17	<LOD	392.50	1.20	2.60	7.60	18.10	37.90

Table 28: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Fiber (gm) /day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0g	10	2.45	<LOD	11.16	<LOD	14.00	1.40	3.10	4.50	4.50	9.60
1 to 10	1775	4.11	3.80	4.44	<LOD	615.60	1.50	3.90	9.20	22.30	35.30
11 to 24	2668	3.63	3.31	3.98	<LOD	563.80	1.30	3.70	8.30	17.00	28.40
25+	640	3.48	3.00	4.04	<LOD	602.20	1.50	3.20	7.70	15.60	25.30

Table 29: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Breastfeeding Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Currently Breastfeeding	41	2.71	2.05	3.57	<LOD	60.30	<LOD	2.70	7.50	13.10	20.10
Not currently Breastfeeding	99	6.32	3.56	11.21	<LOD	306.90	2.50	7.00	13.60	53.70	117.40

Table 30: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Liver Conditions

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Ever had a liver condition	87	3.44	2.38	4.96	<LOD	615.10	1.20	3.40	9.00	16.80	21.60
Never had a liver condition	3014	3.65	3.35	3.97	<LOD	615.60	1.30	3.50	8.20	18.00	30.70

Table 31: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Anyone Smoke in the Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	1137	4.21	3.81	4.66	<LOD	549.20	1.40	4.20	10.00	20.50	31.40
No	4129	3.68	3.39	4.00	<LOD	615.60	1.40	3.60	8.20	17.60	30.70

Table 32: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Ever told that you have Diabetes?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	280	3.67	2.94	4.58	<LOD	563.80	1.20	3.70	7.50	18.70	31.00
No	4997	3.83	3.56	4.11	<LOD	615.60	1.40	3.70	8.50	18.40	31.20
Borderline Diabetic	44	2.21	1.62	3.00	<LOD	38.40	<LOD	1.30	5.40	14.50	27.40

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Table 33: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine by Currently Taking Birth Control Pills?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	151	5.94	4.35	8.10	<LOD	117.40	2.70	7.00	12.90	23.70	34.60
No	429	4.14	3.56	4.82	<LOD	563.80	1.50	4.00	9.10	21.10	39.30

Table 34: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Now Use Depo-Provera Injectables

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	44	3.62	2.57	5.08	<LOD	87.00	<LOD	3.20	9.20	20.10	32.80
No	153	6.54	5.40	7.93	<LOD	274.80	3.10	7.00	13.00	23.70	32.30

Table 35: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Currently Taking Estrogen Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	125	3.44	2.67	4.42	<LOD	95.80	1.40	3.10	6.90	27.80	34.70
No	131	2.47	1.91	3.19	<LOD	145.60	<LOD	2.40	5.10	11.00	20.50

Table 36: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Currently Taking Projestin Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	28	3.42	2.20	5.31	<LOD	392.50	<LOD	2.80	5.00	33.90	95.80
No	52	3.73	2.03	6.83	<LOD	145.60	1.50	3.20	7.40	34.70	46.70

Table 37: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Currently Taking Estrogen-Projestin Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	46	2.50	2.04	3.06	<LOD	16.50	<LOD	2.60	5.10	8.90	12.90
No	29	1.82	1.30	2.56	<LOD	7.80	<LOD	1.80	3.40	4.10	7.00

Table 38: Concentration of mono-2-ethylhexyl phthalate µg/L found in urine and Number of Prescription Medications Taken

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	3228	4.09	3.78	4.42	<LOD	615.60	1.60	4.10	9.00	18.60	30.70
1	830	3.61	3.15	4.14	<LOD	177.50	1.20	3.20	8.30	18.90	33.40
2	446	3.83	3.21	4.58	<LOD	151.10	1.50	3.50	8.30	21.20	33.90
3	333	3.12	2.58	3.77	<LOD	107.70	<LOD	3.10	7.60	13.90	21.10
4	159	3.23	2.39	4.36	<LOD	392.50	1.30	3.00	6.40	13.40	34.70
5	115	2.94	2.23	3.86	<LOD	615.10	<LOD	2.20	7.20	16.90	29.90
6+	212	3.52	2.87	4.31	<LOD	64.20	<LOD	3.40	7.90	20.90	37.90

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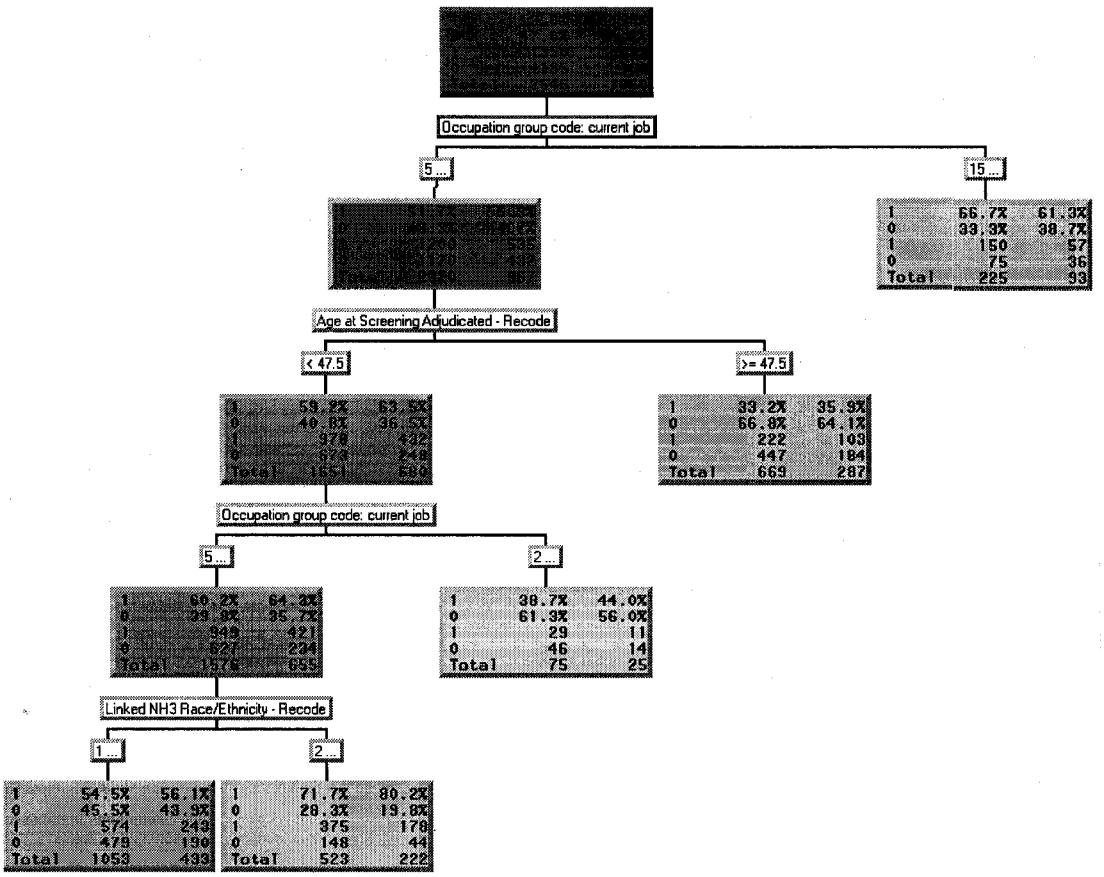
Classification and Regression Tree for mono-2-ethylhexyl phthalate



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APPENDIX 24: MONO-METHYL PHTHALATE

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Table 1: Concentration of mono-methyl phthalate µg/L found in urine by age category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Age 5-11	393	1.45	1.13	1.87	<LOD	236.80	0.60	1.90	4.00	7.20	11.80
Age 12-19	742	1.59	1.28	1.96	<LOD	355.20	0.80	2.10	3.90	8.50	13.00
Age 20-40	639	1.10	0.90	1.34	<LOD	791.40	0.40	1.50	3.20	5.80	9.10
Age 41-55	438	1.00	0.80	1.25	<LOD	177.80	0.30	1.20	3.00	5.40	10.30
Age 55+	570	1.08	0.91	1.27	<LOD	689.70	0.50	1.40	2.80	5.30	9.30

Table 2: Concentration of mono-methyl phthalate µg/L found in urine and Occupation

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Executive, Administrators, & Managers	85	1.05	0.71	1.56	<LOD	119.00	0.70	1.60	2.70	4.00	4.50
Management Related	25	0.94	0.53	1.69	<LOD	16.70	<LOD	1.10	2.40	6.30	6.30
Engineers, Architects, and Scientists	34	1.07	0.51	2.24	<LOD	35.60	0.50	1.30	3.50	4.50	5.40
Health Diagnosing, Assessing & Treating	29	0.73	0.49	1.08	<LOD	10.40	<LOD	1.20	2.20	6.40	9.10
Teachers	49	0.88	0.30	2.57	<LOD	110.60	<LOD	0.90	3.30	6.60	8.60
Writers, Artists, Entertainers & Athletes	18	1.23	0.38	3.93	<LOD	6.10	0.70	2.00	2.90	5.10	6.10
Other Professional Speciality	29	0.81	0.66	1.00	<LOD	177.80	<LOD	0.90	2.50	5.40	177.80
Technicians and Related Supported	29	0.71	0.31	1.60	<LOD	14.00	<LOD	0.90	2.70	4.80	7.00
Supervisors and Proprietors, Sales	24	1.56	0.99	2.46	<LOD	56.60	1.00	1.40	2.80	6.10	11.80
Sales Representatives,finance,business,commodities	30	1.17	0.71	1.94	<LOD	14.00	0.70	1.30	2.30	5.70	9.20
Sales Workers, retail & personal services	79	1.13	0.79	1.60	<LOD	30.50	0.50	1.40	2.90	4.40	9.30
Secretaries, Stenographers, and typists	17	0.82	<LOD	9.54	<LOD	529.10	0.40	0.80	1.10	3.20	529.10
Information Clerks	15	0.56	<LOD	1.82	<LOD	16.90	<LOD	0.80	1.30	2.60	7.10
Records Processing	37	0.94	0.56	1.59	<LOD	7.80	0.40	1.30	3.10	3.70	5.00
Material Recording, Scheduling,distributing clerks	20	1.15	0.58	2.29	<LOD	13.90	1.00	1.20	2.80	3.50	6.30
Miscellaneous administrative support	69	1.16	0.77	1.74	<LOD	219.10	0.40	1.50	3.00	6.00	17.20
Private Household	8	0.82	<LOD	9.87	<LOD	64.70	<LOD	0.50	3.70	64.70	64.70
Protective Service	18	1.07	0.24	4.73	<LOD	27.70	0.70	1.20	2.50	3.80	5.40
Waiters and Waitresses	23	1.16	0.72	1.88	<LOD	24.30	0.40	1.50	3.50	7.10	7.10
Cooks	24	0.63	0.23	1.73	<LOD	16.80	<LOD	0.80	2.10	3.60	3.60
Miscellaneous food preparation and service	34	0.88	0.56	1.38	<LOD	8.80	<LOD	1.60	2.40	4.80	4.80
Health Service Occupation	28	1.37	0.90	2.08	<LOD	9.50	0.80	1.90	3.90	7.60	7.80
Cleaning and Building Service	41	1.78	1.18	2.67	<LOD	39.90	1.20	2.10	4.40	8.60	19.90
Personal Service	29	1.66	0.61	4.52	<LOD	23.10	1.30	2.10	4.20	16.20	20.40
Farm Operators, Managers and Supervisors	2	0.23	.	.	<LOD	1.00	<LOD	<LOD	1.00	1.00	1.00
Farm and Nursery Workers	10	3.45	.	.	<LOD	23.90	1.30	3.50	23.90	23.90	23.90
Related Agricultural, Forestry and Fishing	24	1.52	0.89	2.60	<LOD	4.90	0.90	2.30	2.90	3.40	3.40
Vehicle and Mobile Equipment Mechanics, Repairs	14	0.79	<LOD	42.14	<LOD	5.90	<LOD	1.10	1.70	5.90	5.90
Other Mechanics and repairers	18	0.86	0.65	1.15	<LOD	9.70	0.20	1.60	2.20	3.00	9.70
Construction traders	69	0.64	0.39	1.03	<LOD	22.60	<LOD	0.80	2.60	5.30	10.50
Extractive and Precision Production	24	1.79	0.93	3.47	<LOD	150.60	1.30	2.70	3.20	4.80	4.80
Textile, apparel and furnishings machine operators	10	0.62	0.53	0.73	<LOD	47.40	<LOD	<LOD	1.40	47.40	47.40
Machine Operators, Assorted Materials	31	2.04	1.01	4.12	<LOD	791.40	0.50	2.40	4.40	7.70	19.00
Fabricators, Assemblers, Inspectors, and Samplers	24	1.23	1.10	1.38	<LOD	33.00	0.30	1.90	3.70	4.50	8.00
Motor vehicle operators	36	1.93	0.93	4.01	<LOD	320.30	0.90	1.40	4.80	7.90	12.70
Other transportation and material moving	12	0.78	0.25	2.48	<LOD	8.30	0.30	0.90	2.30	8.30	8.30
Construction laborers	15	1.51	1.28	1.78	<LOD	8.00	0.40	1.80	4.90	8.00	8.00
Laborers, except construction	3	0.50	.	.	<LOD	1.70	<LOD	0.80	1.70	1.70	1.70
Freight, Stock, and Material Movers, hand	20	1.26	0.50	3.15	<LOD	10.40	0.60	2.10	3.30	7.90	8.10
Other helpers, equipment cleaners, hand packages and laborers	17	1.27	0.31	5.24	<LOD	9.90	0.40	1.50	4.50	6.80	8.10

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Table 3: Concentration of mono-methyl phthalate µg/L found in urine and Employment Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Working at a Job or Business	1071	1.05	0.86	1.29	<LOD	791.40	0.30	1.40	3.10	5.40	8.90
With a Job but not at Work	53	1.59	0.93	2.73	<LOD	177.80	0.80	1.30	3.10	8.00	10.40
Looking for Work	56	1.46	0.89	2.39	<LOD	28.80	1.30	2.20	3.00	5.00	13.50
Not working at a job or Business	823	1.14	0.97	1.34	<LOD	689.70	0.40	1.40	3.30	6.20	10.30

Table 4: Concentration of mono-methyl phthalate µg/L found in urine and Income

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
$0-$4 999	59	1.88	0.99	3.58	<LOD	25.10	0.80	2.80	5.70	10.50	15.30
$ 5000-$9 999	147	1.59	0.93	2.73	<LOD	177.80	0.80	1.30	3.10	8.00	10.40
$10 000-$14 999	199	1.46	0.89	2.39	<LOD	28.80	1.30	2.20	3.00	5.00	13.50
$15 000-$19 999	211	1.14	0.97	1.34	<LOD	689.70	0.40	1.40	3.30	6.20	10.30
$20 000-$24 999	195	1.01	0.70	1.46	<LOD	56.60	0.40	1.40	2.70	6.10	10.00
$25 000-$34 999	326	0.96	0.70	1.30	<LOD	689.70	<LOD	1.20	2.90	6.00	10.30
$35 000-$44 999	260	1.20	0.80	1.79	<LOD	177.80	0.50	1.30	3.40	6.50	10.40
$45 000-$54 999	240	1.18	0.87	1.60	<LOD	320.30	0.40	1.70	3.40	6.90	9.20
$55 000-$64 999	197	1.21	0.90	1.63	<LOD	92.40	0.50	1.50	3.50	5.50	8.00
$65 000-$74 999	141	0.95	0.56	1.61	<LOD	53.20	0.30	1.30	2.60	4.50	7.80
$75 000 and over	566	1.12	0.88	1.43	<LOD	529.10	0.30	1.50	3.10	5.70	11.80

Table 5: Concentration of mono-methyl phthalate µg/L found in urine and Race/Ethnicity

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Non-Hispanic White	1216	1.08	0.91	1.29	<LOD	529.10	0.40	1.40	3.20	5.60	9.70
Non-Hispanic Black	703	1.64	1.37	1.98	<LOD	689.70	0.90	2.10	4.40	8.30	11.00
Mexican American	677	1.21	1.07	1.38	<LOD	791.40	0.50	1.60	3.30	5.60	8.60
Other Race-Including MultiRacial	77	1.14	0.84	1.55	<LOD	58.00	0.60	1.50	3.20	4.80	7.60
Other Hispanic	109	1.08	0.70	1.67	<LOD	64.70	<LOD	1.70	4.00	7.80	11.40

Table 6: Concentration of mono-methyl phthalate µg/L found in urine and Gender

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Male	1371	1.17	0.96	1.43	<LOD	791.40	0.50	1.50	3.30	5.90	9.20
Female	1411	1.13	0.97	1.31	<LOD	529.10	0.40	1.40	3.30	6.40	10.30

Table 7: Concentration of mono-methyl phthalate µg/L found in urine and Education

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Less than High School	1533	1.35	1.11	1.65	<LOD	689.70	0.60	1.70	3.70	7.80	13.70
High School Diploma	433	1.24	0.95	1.61	<LOD	791.40	0.60	1.50	3.40	6.10	9.30
More than High School	814	0.98	0.81	1.18	<LOD	529.10	0.30	1.30	2.80	4.80	8.10

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Table 8: Concentration of mono-methyl phthalate µg/L found in urine and Marital Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Married	975	0.99	0.81	1.20	<LOD	791.40	0.30	1.30	2.80	4.80	8.30
Widowed	137	0.89	0.66	1.21	<LOD	689.70	<LOD	1.10	2.80	5.10	6.90
Divorced	146	1.08	0.72	1.60	<LOD	320.30	0.30	1.20	2.60	5.60	17.20
Separated	57	1.68	0.88	3.20	<LOD	418.80	0.50	2.40	5.30	20.40	64.70
Never Married	776	1.40	1.15	1.70	<LOD	291.10	0.60	1.90	3.50	7.10	10.40
Living with Partner	103	1.24	0.93	1.66	<LOD	56.00	0.60	1.40	3.50	6.10	9.50

Table 9: Concentration of mono-methyl phthalate µg/L found in urine and Country of Birth

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Born in the US	2308	1.14	0.96	1.35	<LOD	689.70	0.40	1.50	3.30	5.90	9.50
Born in Mexico	296	1.21	0.94	1.55	<LOD	791.40	0.50	1.40	3.20	6.40	13.70
Born Elsewhere	171	1.29	1.06	1.57	<LOD	99.30	0.50	1.90	4.00	9.20	10.50

Table 10: Concentration of mono-methyl phthalate µg/L found in urine and Pregnancy Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Pregnant	112	1.32	0.92	1.90	<LOD	56.60	0.70	2.50	3.70	6.30	8.30
Not Pregnant	872	1.12	0.93	1.34	<LOD	355.20	0.40	1.40	3.20	6.60	10.30

Table 11: Concentration of mono-methyl phthalate µg/L found in urine and Type of Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
A Mobile Home or Trailer	223	0.90	0.66	1.23	<LOD	119.00	<LOD	1.30	3.00	4.40	6.30
A detached single family home	1687	1.12	0.96	1.31	<LOD	689.70	0.40	1.40	3.20	5.50	9.20
Attached Single Family Home	228	1.34	0.79	2.26	<LOD	529.10	0.50	1.80	3.80	7.80	11.40
An Apartment	570	1.30	1.06	1.61	<LOD	791.40	0.40	1.80	4.10	8.40	15.30
Something Else	32	1.11	0.41	3.05	<LOD	11.40	0.30	1.90	3.00	5.00	6.20
Dormitory	15	0.85	.	.	<LOD	9.70	<LOD	1.10	3.30	5.10	5.90

Table 12: Concentration of mono-methyl phthalate µg/L found in urine and Year Home Built

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
1990-present	434	0.99	0.79	1.24	<LOD	177.80	0.30	1.50	3.10	5.30	7.80
1978-1989	415	1.15	0.88	1.49	<LOD	529.10	0.40	1.40	3.30	6.10	10.30
1960-1977	505	1.08	0.86	1.34	<LOD	168.30	0.50	1.30	3.00	5.20	9.20
1950-1959	252	1.25	1.00	1.55	<LOD	320.30	0.50	1.30	3.20	7.00	19.30
1940-1949	140	1.10	0.68	1.77	<LOD	43.90	0.50	1.40	2.90	5.70	7.20
before 1940	299	1.20	0.94	1.53	<LOD	355.20	0.50	1.50	3.40	7.30	9.40

Table 13: Concentration of mono-methyl phthalate µg/L found in urine and Water Source

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Private-Public Water Company	2497	1.16	0.99	1.36	<LOD	791.40	0.40	1.50	3.30	6.00	10.00
Private Public Well	226	1.03	0.80	1.32	<LOD	291.10	0.30	1.50	3.00	5.30	8.30
Some other Water Source	10	0.76	.	.	<LOD	5.10	<LOD	2.10	4.00	4.00	4.00

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Table 14: Concentration of mono-methyl phthalate µg/L found in urine and Servings of Beans per month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	278	0.99	0.72	1.36	<LOD	529.10	<LOD	1.30	3.20	5.70	12.30
1 to 5	1061	1.19	0.99	1.43	<LOD	689.70	0.50	1.50	3.30	6.00	8.80
6 to 10	546	1.14	0.95	1.37	<LOD	236.80	0.30	1.50	3.50	6.80	10.30
11 to 15	311	1.16	0.81	1.67	<LOD	110.60	0.40	1.50	3.20	6.40	9.30
15+	496	1.19	0.96	1.48	<LOD	791.40	0.50	1.40	3.20	5.10	9.40

Table 15: Concentration of mono-methyl phthalate µg/L found in urine and Body Mass Index Category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Under Weight	51	1.64	1.01	2.65	<LOD	168.30	0.50	2.00	4.40	9.20	16.80
Healthy Weight	1142	1.11	0.93	1.32	<LOD	689.70	0.30	1.40	3.30	6.40	10.40
Over Weight	1485	1.16	0.98	1.37	<LOD	791.40	0.50	1.50	3.10	5.70	9.20

Table 16: Concentration of mono-methyl phthalate µg/L found in urine and Water (gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0 to 896	1218	1.33	1.13	1.57	<LOD	529.10	0.60	1.80	3.50	6.90	10.40
897-1792g	678	1.03	0.81	1.29	<LOD	791.40	0.30	1.30	2.90	5.20	7.80
>1792g	463	0.90	0.76	1.08	<LOD	99.30	0.20	1.20	2.90	4.80	7.80

Table 17: Concentration of mono-methyl phthalate µg/L found in urine and Alcohol (gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	2209	1.13	0.96	1.33	<LOD	791.40	0.40	1.50	3.30	5.90	9.60
0-28	253	1.17	0.91	1.51	<LOD	689.70	0.60	1.30	2.70	5.80	16.20
>28	192	1.28	0.96	1.71	<LOD	150.60	0.40	1.90	3.50	6.10	9.20

Table 18: Concentration of mono-methyl phthalate µg/L found in urine and Caffeine(gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	512	1.60	1.33	1.91	<LOD	355.20	0.80	2.30	3.90	7.30	11.40
0-400	2031	1.11	0.95	1.30	<LOD	791.40	0.40	1.40	3.20	5.40	9.70
400+	111	0.88	0.55	1.42	<LOD	47.40	<LOD	0.90	3.80	7.80	9.20

Table 19: Concentration of mono-methyl phthalate µg/L found in urine and Fiber (gm) /day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0g	4	2.52	<LOD	482.89	0.60	9.20	0.60	2.60	9.20	9.20	9.20
1 to 10	861	1.24	0.97	1.58	<LOD	418.80	0.50	1.60	3.40	6.40	9.80
11 to 24	1457	1.09	0.94	1.26	<LOD	791.40	0.40	1.40	3.20	5.60	9.40
25+	332	1.22	0.92	1.61	<LOD	177.80	0.40	1.50	3.70	6.30	10.30

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Table 20: Concentration of mono-methyl phthalate µg/L found in urine and Breastfeeding Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Currently Breastfeeding	21	1.78	1.22	2.59	<LOD	5.80	1.30	2.00	3.20	3.70	5.80
Not currently Breastfeeding	48	1.03	0.33	3.27	<LOD	10.80	<LOD	1.60	2.90	5.70	5.70

Table 21: Concentration of mono-methyl phthalate µg/L found in urine and Liver Conditions

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Ever had a liver condition	48	1.07	0.70	1.63	<LOD	8.00	0.80	1.50	3.10	4.40	5.30
Never had a liver condition	1596	1.06	0.90	1.26	<LOD	791.40	0.40	1.30	3.10	5.70	9.40

Table 22: Concentration of mono-methyl phthalate µg/L found in urine and Anyone Smoke in the Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	575	1.18	0.95	1.47	<LOD	689.70	0.40	1.50	3.40	6.50	10.10
No	2180	1.13	0.96	1.34	<LOD	791.40	0.40	1.50	3.30	5.80	9.70

Table 23:Concentration of mono-methyl phthalate µg/L found in urine and Ever told that you have Diabetes?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	146	1.19	0.84	1.69	<LOD	99.30	0.50	1.60	3.50	5.60	13.90
No	2609	1.15	0.99	1.35	<LOD	791.40	0.40	1.50	3.30	6.00	9.70

Table 24: Concentration of mono-methyl phthalate µg/L found in urine by Currently Taking Birth Control Pills?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	79	1.78	1.26	2.53	<LOD	110.60	0.70	2.10	4.00	9.20	30.50
No	230	0.92	0.73	1.16	<LOD	20.40	0.30	1.30	2.70	4.00	5.10

Table 25: Concentration of mono-methyl phthalate µg/L found in urine and Now Use Depo-Provera Injectables

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	30	1.92	1.09	3.38	<LOD	291.10	1.00	1.50	2.40	5.10	108.50
No	81	1.35	0.93	1.96	<LOD	56.60	0.70	1.90	3.50	5.30	7.80

Table 26: Concentration of mono-methyl phthalate µg/L found in urine and Currently Taking Estrogen Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	68	1.08	0.75	1.55	<LOD	529.10	0.30	1.50	2.50	6.90	10.30
No	63	1.06	0.67	1.69	<LOD	177.80	<LOD	1.00	4.50	22.60	58.20

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Table 27: Concentration of mono-methyl phthalate µg/L found in urine and Currently Taking Projestin Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	12	1.30	<LOD	78.74	<LOD	529.10	0.40	1.40	3.30	4.00	529.10
No	31	1.21	0.31	4.78	<LOD	177.80	<LOD	1.50	3.70	10.30	177.80

Table 28: Concentration of mono-methyl phthalate µg/L found in urine and Currently Taking Estrogen-Projestin Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	26	0.58	0.40	0.85	<LOD	11.20	<LOD	1.00	1.50	2.40	2.50
No	19	0.90	0.66	1.23	<LOD	5.90	0.30	1.00	3.70	4.20	5.90

Table 29: Concentration of mono-methyl phthalate µg/L found in urine and Number of Prescription Medications Taken

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	1674	1.16	0.97	1.38	<LOD	791.40	0.50	1.50	3.30	6.00	9.40
1	425	1.14	0.91	1.43	<LOD	689.70	0.40	1.40	3.30	5.70	9.20
2	238	0.94	0.63	1.41	<LOD	110.60	<LOD	1.10	2.40	7.30	13.40
3	172	1.26	0.90	1.76	<LOD	418.80	0.40	1.50	3.70	5.50	10.40
4	90	0.96	0.62	1.49	<LOD	529.10	0.30	1.30	2.60	5.20	10.50
5	63	1.65	1.13	2.41	<LOD	21.70	1.00	2.10	3.30	6.80	8.30
6+	120	1.44	1.01	2.05	<LOD	99.30	0.60	1.70	3.70	10.60	20.40

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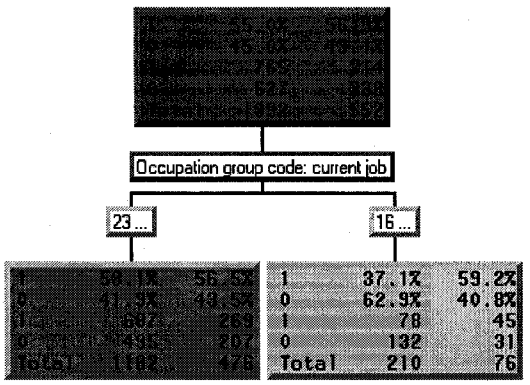
Classification and Regression Tree for mono-methyl phthalate



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APPENDIX 25: MONO-ISOBUTYL PHTHALATE

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Table 1: Concentration of mono-isobutyl phthalate µg/L found in urine by age category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Age 5-11	393	4.22	3.28	5.43	<LOD	87.60	1.90	4.40	10.70	18.60	23.40
Age 12-19	742	3.48	2.90	4.17	<LOD	137.20	1.50	3.80	7.40	14.50	22.30
Age 20-40	639	2.95	2.61	3.33	<LOD	125.10	<LOD	3.10	6.10	12.20	18.30
Age 41-55	438	2.31	2.03	2.62	<LOD	94.80	<LOD	2.20	4.70	9.80	17.10
Age 55+	570	1.93	1.72	2.16	<LOD	200.00	<LOD	1.70	4.10	6.90	11.30

Table 2: Concentration of mono-isobutyl phthalate µg/L found in urine and Occupation

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Executive, Administrators, & Managers	85	2.14	1.56	2.93	<LOD	94.80	<LOD	2.10	4.70	9.10	10.90
Management Related	25	3.54	2.80	4.48	<LOD	31.30	2.20	3.10	6.10	6.70	14.80
Engineers, Architects, and Scientists	34	2.39	1.73	3.30	<LOD	38.00	<LOD	1.50	5.50	23.70	35.80
Health Diagnosing, Assessing & Treating	29	1.79	1.39	2.31	<LOD	10.70	<LOD	1.40	4.10	5.30	6.50
Teachers	49	2.44	1.47	4.05	<LOD	18.90	<LOD	2.50	5.30	8.30	17.60
Writers, Artists, Entertainers & Athletes	18	2.15	1.39	3.33	<LOD	10.80	<LOD	2.50	4.40	6.50	10.80
Other Professional Speciality	29	3.33	2.70	4.11	<LOD	32.50	1.20	4.30	7.00	17.40	32.50
Technicians and Related Supported	29	2.16	1.35	3.47	<LOD	75.00	<LOD	2.00	4.10	8.30	12.30
Supervisors and Proprietors, Sales	24	2.44	1.62	3.67	<LOD	23.30	1.40	2.40	5.30	6.10	12.60
Sales Representatives,finance,business,commodities	30	2.43	1.52	3.89	<LOD	15.10	<LOD	3.20	5.20	9.20	10.80
Sales Workers, retail & personal services	79	3.42	2.58	4.54	<LOD	44.00	1.60	4.60	6.50	12.40	26.90
Secretaries, Stenographers, and typists	17	1.85	1.39	2.46	<LOD	6.20	<LOD	1.60	5.10	5.80	5.80
Information Clerks	15	1.29	1.01	1.67	<LOD	8.70	<LOD	<LOD	2.70	3.40	7.10
Records Processing	37	2.11	1.71	2.59	<LOD	48.80	<LOD	1.80	7.30	11.90	12.00
Material Recording, Scheduling,distributing clerks	20	1.79	1.07	2.99	<LOD	32.30	<LOD	1.90	3.20	4.80	5.10
Miscellaneous administrative support	69	3.29	2.29	4.71	<LOD	49.50	1.30	4.40	5.80	12.00	14.30
Private Household	8	2.96	1.31	6.67	<LOD	20.00	1.30	2.40	17.90	17.90	17.90
Protective Service	18	1.94	1.18	3.22	<LOD	10.20	<LOD	2.30	5.20	6.80	7.40
Waiters and Waitresses	23	3.32	2.42	4.54	<LOD	60.00	1.60	2.70	5.50	8.90	60.00
Cooks	24	2.31	1.22	4.38	<LOD	20.10	<LOD	3.10	5.30	9.80	13.00
Miscellaneous food preparation and service	34	2.83	2.35	3.40	<LOD	31.50	<LOD	2.20	6.70	31.50	31.50
Health Service Occupation	28	3.51	2.06	6.00	<LOD	31.10	1.10	2.50	8.90	16.40	23.30
Cleaning and Building Service	41	2.96	2.18	4.02	<LOD	61.40	1.10	3.40	6.80	8.30	11.80
Personal Service	29	2.89	1.33	6.25	<LOD	45.50	<LOD	2.00	7.60	24.00	25.20
Farm Operators, Managers and Supervisors	2	3.29	.	.	<LOD	7.80	<LOD	7.80	7.80	7.80	7.80
Farm and Nursery Workers	10	1.12	.	.	<LOD	4.40	<LOD	<LOD	1.80	2.40	4.40
Related Agricultural, Forestry and Fishing	24	3.54	2.32	5.41	<LOD	74.10	1.10	2.80	5.30	49.50	49.50
Vehicle and Mobile Equipment Mechanics, Repairs	14	2.60	<LOD	12.49	<LOD	10.10	1.20	3.00	6.70	10.10	10.10
Other Mechanics and repairers	18	2.51	1.20	5.24	<LOD	13.60	<LOD	2.70	7.30	13.60	13.60
Construction traders	69	2.25	1.67	3.04	<LOD	50.50	<LOD	2.70	4.30	7.30	13.70
Extractive and Precision Production	24	2.81	1.72	4.56	<LOD	17.10	2.00	3.10	4.30	6.00	9.30
Textile, apparel and furnishings machine operators	10	8.40	5.91	11.92	<LOD	200.00	5.80	5.90	20.50	200.00	200.00
Machine Operators, Assorted Materials	31	2.56	1.97	3.33	<LOD	51.90	<LOD	2.40	5.70	18.30	44.30
Fabricators, Assemblers, Inspectors, and Samplers	24	2.57	1.33	4.96	<LOD	34.10	<LOD	2.50	5.90	11.20	19.70
Motor vehicle operators	36	2.26	1.49	3.43	<LOD	18.80	<LOD	3.10	5.20	9.30	11.40
Other transportation and material moving	12	2.53	1.32	4.85	<LOD	12.30	<LOD	2.40	9.60	12.30	12.30
Construction laborers	15	2.74	<LOD	9.17	<LOD	23.80	<LOD	2.60	4.50	12.20	23.80
Laborers, except constuction	3	1.36	.	.	<LOD	2.00	<LOD	1.90	2.00	2.00	2.00
Frieght, Stock, and Material Movers, hand	20	2.54	1.35	4.80	<LOD	125.10	<LOD	2.30	3.80	9.60	10.60
Other helpers, equipment cleaners, hand packages and laborers	17	3.63	1.78	7.40	<LOD	18.50	1.80	3.90	8.40	11.70	18.50

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Table 3: Concentration of mono-isobutyl phthalate µg/L found in urine and Employment Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Working at a Job or Business	1071	2.58	2.35	2.84	<LOD	200.00	<LOD	2.60	5.30	10.80	16.00
With a Job but not at Work	53	2.15	1.60	2.88	<LOD	38.00	<LOD	2.20	4.60	8.30	9.20
Looking for Work	56	2.51	1.79	3.53	<LOD	137.20	<LOD	2.90	5.30	11.00	14.30
Not working at a job or Business	823	2.46	2.23	2.71	<LOD	101.50	<LOD	2.40	5.00	12.10	17.40

Table 4: Concentration of mono-isobutyl phthalate µg/L found in urine and Income

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
$0-$4 999	59	5.58	2.56	12.16	<LOD	48.00	2.70	4.90	17.10	39.10	39.10
$ 5000-$9 999	147	2.15	1.60	2.88	<LOD	38.00	<LOD	2.20	4.60	8.30	9.20
$10 000-$14 999	199	2.51	1.79	3.53	<LOD	137.20	<LOD	2.90	5.30	11.00	14.30
$15 000-$19 999	211	2.46	2.23	2.71	<LOD	101.50	<LOD	2.40	5.00	12.10	17.40
$20 000-$24 999	195	3.28	2.61	4.12	<LOD	75.00	1.20	3.50	8.40	17.60	25.70
$25 000-$34 999	326	2.58	2.24	2.96	<LOD	200.00	<LOD	2.50	5.20	10.00	13.60
$35 000-$44 999	260	2.87	2.22	3.71	<LOD	89.80	<LOD	2.80	6.30	13.90	18.50
$45 000-$54 999	240	2.57	2.04	3.24	<LOD	63.50	1.10	2.60	5.60	10.50	13.30
$55 000-$64 999	197	2.80	2.01	3.89	<LOD	74.10	<LOD	2.80	5.80	12.10	19.80
$65 000-$74 999	141	2.58	2.13	3.13	<LOD	23.00	<LOD	2.90	5.30	10.10	12.20
$75 000 and over	566	2.35	1.99	2.77	<LOD	94.80	<LOD	2.40	4.80	9.60	17.40

Table 5: Concentration of mono-isobutyl phthalate µg/L found in urine and Race/Ethnicity

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Non-Hispanic White	1216	2.33	2.09	2.59	<LOD	200.00	<LOD	2.30	4.90	9.60	15.60
Non-Hispanic Black	703	4.90	4.47	5.37	<LOD	94.80	2.40	5.30	10.70	18.30	25.50
Mexican American	677	3.26	2.73	3.89	<LOD	137.20	1.30	3.40	7.20	12.20	18.40
Other Race-Including MultiRacial	77	2.77	1.89	4.06	<LOD	38.00	1.10	2.70	6.10	13.40	17.80
Other Hispanic	109	3.65	2.99	4.45	<LOD	44.00	1.80	3.80	7.20	12.50	17.90

Table 6: Concentration of mono-isobutyl phthalate µg/L found in urine and Gender

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Male	1371	2.73	2.50	2.97	<LOD	200.00	<LOD	2.80	5.60	11.60	16.60
Female	1411	2.68	2.44	2.96	<LOD	137.20	<LOD	2.60	5.80	12.60	18.70

Table 7: Concentration of mono-isobutyl phthalate µg/L found in urine and Education

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Less than High School	1533	3.46	3.04	3.95	<LOD	200.00	1.40	3.60	8.30	15.40	21.90
High School Diploma	433	2.67	2.35	3.04	<LOD	73.00	<LOD	2.80	5.30	12.00	14.90
More than High School	814	2.25	1.95	2.60	<LOD	137.20	<LOD	2.20	4.80	8.80	14.80

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Table 8: Concentration of mono-isobutyl phthalate µg/L found in urine and Marital Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Married	975	2.32	2.15	2.51	<LOD	125.10	<LOD	2.30	4.80	9.40	13.50
Widowed	137	1.96	1.39	2.76	<LOD	80.10	<LOD	1.70	4.20	9.40	14.20
Divorced	146	2.17	1.64	2.87	<LOD	101.50	<LOD	1.80	4.50	10.80	19.70
Separated	57	4.71	3.24	6.86	<LOD	35.50	2.10	6.30	12.60	18.40	25.50
Never Married	776	3.22	2.69	3.86	<LOD	137.20	1.20	3.40	6.60	14.40	25.50
Living with Partner	103	2.85	2.38	3.41	<LOD	200.00	1.10	2.80	5.30	10.20	13.60

Table 9: Concentration of mono-isobutyl phthalate µg/L found in urine and Country of Birth

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Born in the US	2308	2.63	2.43	2.84	<LOD	200.00	<LOD	2.70	5.40	11.60	16.90
Born in Mexico	296	3.22	2.58	4.01	<LOD	125.10	1.20	3.50	7.30	12.20	18.20
Born Elsewhere	171	3.48	2.54	4.76	<LOD	101.50	1.20	3.50	8.80	18.10	29.40

Table 10: Concentration of mono-isobutyl phthalate µg/L found in urine and Pregnancy Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Pregnant	112	2.49	1.74	3.55	<LOD	32.80	<LOD	2.00	5.40	12.00	24.70
Not Pregnant	872	2.84	2.56	3.14	<LOD	137.20	<LOD	2.70	6.00	13.80	20.70

Table 11: Concentration of mono-isobutyl phthalate µg/L found in urine and Type of Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
A Mobile Home or Trailer	223	2.60	2.08	3.26	<LOD	137.20	<LOD	2.70	5.60	11.40	16.60
A detached single family home	1687	2.39	2.15	2.67	<LOD	94.80	<LOD	2.40	4.90	10.40	16.10
Attached Single Family Home	228	3.51	2.44	5.04	<LOD	89.80	1.50	3.90	7.20	13.40	22.00
An Apartment	570	3.73	3.35	4.15	<LOD	200.00	1.60	4.30	8.30	15.10	20.50
Something Else	32	2.93	1.20	7.15	<LOD	44.00	<LOD	2.80	6.90	14.30	40.80
Dormitory	15	8.52	.	.	<LOD	35.80	2.70	18.60	30.70	35.80	35.80

Table 12: Concentration of mono-isobutyl phthalate µg/L found in urine and Year Home Built

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
1990-present	434	2.39	1.99	2.86	<LOD	74.10	<LOD	2.20	4.80	11.40	18.60
1978-1989	415	2.51	2.26	2.79	<LOD	74.20	<LOD	2.50	5.30	11.10	17.40
1960-1977	505	2.46	2.10	2.88	<LOD	137.20	<LOD	2.70	4.80	9.60	17.10
1950-1959	252	2.50	1.98	3.16	<LOD	62.00	<LOD	2.60	6.20	12.00	14.40
1940-1949	140	3.18	2.59	3.91	<LOD	61.40	1.70	3.10	5.40	10.60	21.90
before 1940	299	2.61	2.08	3.29	<LOD	75.30	1.10	2.50	6.00	10.10	15.40

Table 13: Concentration of mono-isobutyl phthalate µg/L found in urine and Water Source

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Private-Public Water Company	2497	2.74	2.51	2.99	<LOD	200.00	<LOD	2.70	5.80	12.10	18.30
Private Public Well	226	2.36	1.81	3.08	<LOD	73.00	<LOD	2.10	4.80	9.60	15.70
Some other Water Source	10	2.08	.	.	<LOD	8.20	<LOD	2.10	5.30	6.50	6.50

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Table 14: Concentration of mono-isobutyl phthalate µg/L found in urine and Servings of Beans per month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	278	3.20	2.69	3.81	<LOD	200.00	1.10	3.00	7.70	16.90	34.00
1 to 5	1061	2.64	2.35	2.98	<LOD	137.20	<LOD	2.70	5.60	10.80	16.40
6 to 10	546	2.65	2.28	3.09	<LOD	51.20	<LOD	2.70	5.30	11.40	15.60
11 to 15	311	2.68	2.37	3.05	<LOD	80.10	<LOD	2.60	5.20	12.70	18.30
15+	496	2.60	2.20	3.07	<LOD	75.00	<LOD	2.40	6.10	12.20	17.90

Table 15: Concentration of mono-isobutyl phthalate µg/L found in urine and Body Mass Index Category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Under Weight	51	2.63	2.02	3.42	<LOD	33.40	<LOD	2.40	4.60	11.80	22.50
Healthy Weight	1142	2.66	2.32	3.04	<LOD	137.20	<LOD	2.60	5.80	11.90	18.30
Over Weight	1485	2.75	2.54	2.97	<LOD	200.00	<LOD	2.80	5.70	12.20	17.60

Table 16: Concentration of mono-isobutyl phthalate µg/L found in urine and Water (gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0 to 896	1218	3.08	2.71	3.49	<LOD	200.00	1.30	3.10	6.30	12.10	18.30
897-1792g	678	2.31	2.02	2.64	<LOD	137.20	<LOD	2.20	4.90	9.80	14.30
>1792g	463	2.36	2.10	2.66	<LOD	80.10	<LOD	2.40	5.00	11.50	18.90

Table 17: Concentration of mono-isobutyl phthalate µg/L found in urine and Alcohol (gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	2209	2.72	2.46	3.01	<LOD	200.00	<LOD	2.70	5.80	12.20	18.30
0-28	253	2.37	1.99	2.82	<LOD	49.50	<LOD	2.40	4.90	8.30	15.30
>28	192	2.92	2.41	3.53	<LOD	94.80	1.10	3.10	6.00	12.00	17.60

Table 18: Concentration of mono-isobutyl phthalate µg/L found in urine and Caffeine(gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	512	3.39	2.85	4.02	<LOD	101.50	1.40	3.60	7.40	14.70	27.80
0-400	2031	2.63	2.34	2.94	<LOD	137.20	<LOD	2.60	5.60	11.70	17.30
400+	111	2.25	1.72	2.95	<LOD	200.00	<LOD	2.10	4.60	10.30	17.40

Table 19: Concentration of mono-isobutyl phthalate µg/L found in urine and Fiber (gm) /day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0g	4	2.49	<LOD	46.34	1.10	125.10	1.10	2.20	2.80	2.80	125.10
1 to 10	861	3.21	2.89	3.56	<LOD	200.00	1.10	3.40	6.90	14.40	21.10
11 to 24	1457	2.51	2.23	2.83	<LOD	137.20	<LOD	2.50	5.20	10.30	16.40
25+	332	2.40	1.97	2.93	<LOD	101.50	<LOD	2.30	5.40	11.50	15.10

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Table 20: Concentration of mono-isobutyl phthalate µg/L found in urine and Breastfeeding Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Currently Breastfeeding	21	2.97	2.10	4.20	<LOD	38.00	1.40	2.50	6.10	12.80	15.30
Not currently Breastfeeding	48	4.36	1.93	9.87	<LOD	75.00	1.80	4.20	10.00	39.10	39.10

Table 21: Concentration of mono-isobutyl phthalate µg/L found in urine and Liver Conditions

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Ever had a liver condition	48	2.51	1.61	3.92	<LOD	33.40	<LOD	2.30	6.70	13.70	19.70
Never had a liver condition	1596	2.46	2.30	2.63	<LOD	200.00	<LOD	2.40	5.10	10.60	16.00

Table 22: Concentration of mono-isobutyl phthalate µg/L found in urine and Anyone Smoke in the Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	575	3.32	2.91	3.79	<LOD	200.00	1.20	3.50	7.10	16.30	24.00
No	2180	2.56	2.30	2.84	<LOD	125.10	<LOD	2.50	5.30	11.40	16.90

Table 23: Concentration of mono-isobutyl phthalate µg/L found in urine and Ever told that you have Diabetes?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	146	2.32	1.77	3.03	<LOD	200.00	<LOD	2.30	4.40	9.90	14.30
No	2609	2.75	2.52	2.99	<LOD	137.20	<LOD	2.70	5.80	12.10	18.20
Borderline Diabetic	27	1.42	1.19	1.69	<LOD	7.90	<LOD	1.10	2.80	4.00	4.00

Table 24: Concentration of mono-isobutyl phthalate µg/L found in urine by Currently Taking Birth Control Pills?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	79	2.80	2.10	3.71	<LOD	61.40	1.30	2.40	5.20	17.60	31.70
No	230	3.04	2.41	3.84	<LOD	137.20	1.10	3.10	6.40	14.70	22.60

Table 25: Concentration of mono-isobutyl phthalate µg/L found in urine and Now Use Depo-Provera Injectables

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	30	2.47	1.54	3.97	<LOD	89.80	<LOD	2.80	6.40	9.00	20.20
No	81	3.81	2.82	5.17	<LOD	75.00	2.40	3.70	6.00	14.70	24.70

Table 26: Concentration of mono-isobutyl phthalate µg/L found in urine and Currently Taking Estrogen Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	68	1.89	1.54	2.31	<LOD	14.20	<LOD	1.50	4.70	6.50	7.30
No	63	1.86	1.39	2.48	<LOD	19.30	<LOD	1.40	4.40	11.30	17.40

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Table 27: Concentration of mono-isobutyl phthalate µg/L found in urine and Currently Taking Projestin Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	12	1.93	<LOD	35.57	<LOD	12.70	<LOD	2.30	5.00	6.50	6.50
No	31	1.47	<LOD	2.33	<LOD	14.30	<LOD	<LOD	3.20	8.90	14.30

Table 28: Concentration of mono-isobutyl phthalate µg/L found in urine and Currently Taking Estrogen-Projestin Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	26	1.97	1.48	2.62	<LOD	17.40	<LOD	1.50	4.20	14.30	17.40
No	19	1.70	1.02	2.81	<LOD	13.80	<LOD	1.30	3.70	4.50	13.80

Table 29: Concentration of mono-isobutyl phthalate µg/L found in urine and Number of Prescription Medications Taken

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	1674	3.08	2.77	3.42	<LOD	137.20	1.20	3.20	6.50	12.90	19.40
1	425	2.37	2.11	2.67	<LOD	87.60	<LOD	2.40	5.10	9.60	17.80
2	238	2.39	1.94	2.95	<LOD	101.50	<LOD	2.20	4.80	10.90	16.90
3	172	1.84	1.60	2.13	<LOD	45.10	<LOD	1.50	4.40	8.50	11.90
4	90	2.30	1.80	2.95	<LOD	94.80	<LOD	2.30	4.30	8.20	12.10
5	63	3.01	2.39	3.78	<LOD	52.80	1.20	2.90	6.20	13.00	14.20
6+	120	2.72	2.19	3.39	<LOD	200.00	<LOD	2.60	5.20	16.10	25.20

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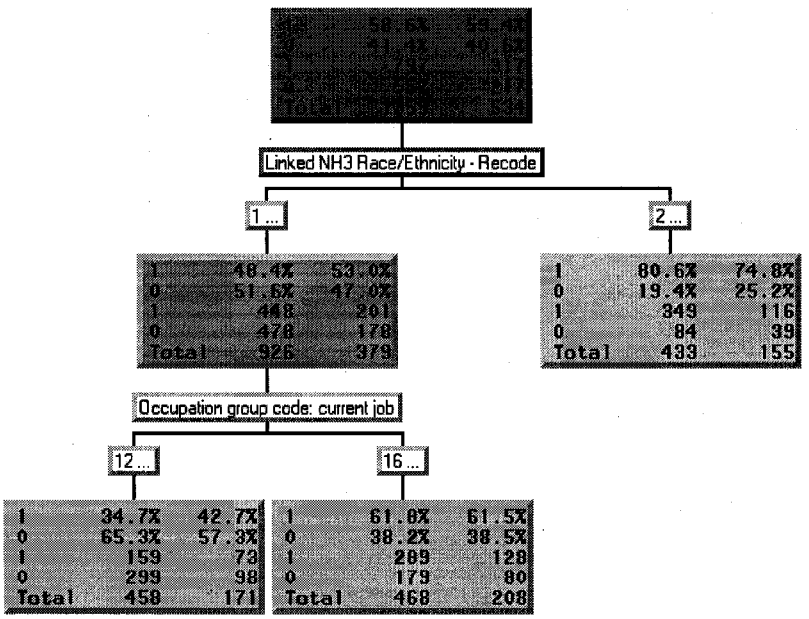
Classification and Regression Tree for mono-isobutyl phthalate



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APPENDIX 26: MONO-P-(2-ETHYL-5-HYDROXYL) PHTHALATE

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Table 1: Concentration of mono-(2-ethyl-5-hydroxyl) phthalate µg/L found in urine by age category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Age 5-11	393	33.58	29.73	37.93	<LOD	1278.90	16.80	32.90	66.90	126.80	215.90
Age 12-19	742	24.89	21.30	29.09	<LOD	2118.30	12.50	25.30	50.60	106.70	215.60
Age 20-40	639	22.63	17.81	28.77	<LOD	1826.20	10.50	22.10	47.60	107.40	361.70
Age 41-55	438	16.47	14.14	19.18	<LOD	3236.10	7.20	17.00	32.90	66.30	98.80
Age 55+	570	13.83	11.22	17.04	<LOD	2227.50	6.30	13.40	28.90	70.10	144.10

Table 2: Concentration of mono-(2-ethyl-5-hydroxyl) phthalate µg/L found in urine and Occupation

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Executive, Administrators, & Managers	85	18.69	11.82	29.55	<LOD	1604.80	6.80	17.00	37.90	169.80	316.20
Management Related	25	20.51	15.96	26.36	3.40	290.10	9.10	19.20	37.20	92.30	93.40
Engineers, Architects, and Scientists	34	23.74	16.58	33.98	2.40	996.00	11.30	22.70	44.90	133.70	227.90
Health Diagnosing, Assessing & Treating	29	12.03	9.60	15.09	1.00	126.20	4.10	12.30	34.30	49.30	70.70
Teachers	49	13.21	7.12	24.52	<LOD	467.40	5.20	13.80	35.50	98.80	130.20
Writers, Artists, Entertainers & Athletes	18	19.63	11.23	34.31	4.10	1009.30	8.80	21.60	32.90	53.60	575.60
Other Professional Speciality	29	15.80	7.89	31.67	<LOD	1184.50	6.30	13.70	32.80	96.30	194.80
Technicians and Related Supported	29	23.09	10.40	51.26	<LOD	242.80	11.30	26.00	41.90	199.10	199.10
Supervisors and Proprietors, Sales	24	15.64	9.27	26.40	<LOD	920.00	6.10	17.80	30.70	42.00	920.00
Sales Representatives,finance,business,commodities	30	22.26	12.10	40.97	2.00	841.50	13.70	19.10	40.60	80.80	224.30
Sales Workers, retail & personal services	79	24.49	18.63	32.19	1.10	1579.80	12.00	20.70	40.40	101.50	391.60
Secretaries, Stenographers, and typists	17	19.01	9.32	38.77	<LOD	733.90	4.40	18.70	31.30	733.90	733.90
Information Clerks	15	22.05	19.03	25.56	5.00	145.00	12.70	13.40	45.80	56.70	145.00
Records Processing	37	15.17	10.73	21.45	1.70	493.70	4.50	13.00	43.50	55.90	100.00
Material Recording, Scheduling,distributing clerks	20	10.31	2.63	40.34	<LOD	112.20	5.90	10.50	19.50	53.80	53.80
Miscellaneous administrative support	69	24.38	16.14	36.81	1.90	530.90	13.80	22.50	50.90	86.20	121.10
Private Household	8	20.57	<LOD	858.63	<LOD	313.50	4.50	24.00	33.60	272.70	272.70
Protective Service	18	15.94	8.79	28.89	<LOD	64.70	8.30	21.20	39.30	64.70	64.70
Waiters and Waitresses	23	19.64	13.96	27.64	<LOD	103.20	11.20	23.50	57.50	75.60	87.40
Cooks	24	15.15	5.04	45.56	1.00	389.90	6.30	20.50	40.90	173.50	173.50
Miscellaneous food preparation and service	34	24.66	18.34	33.17	<LOD	187.50	9.90	29.10	53.60	97.90	97.90
Health Service Occupation	28	32.25	23.86	43.58	<LOD	1523.60	24.80	33.60	52.30	83.30	86.10
Cleaning and Building Service	41	39.20	29.26	52.52	<LOD	864.00	14.60	30.60	80.50	438.30	754.00
Personal Service	29	17.19	9.76	30.31	2.90	76.20	6.80	23.40	41.50	47.00	76.20
Farm Operators, Managers and Supervisors	2	19.06	.	.	2.90	54.40	2.90	54.40	54.40	54.40	54.40
Farm and Nursery Workers	10	6.00	.	.	2.70	50.30	2.70	5.00	6.90	42.90	50.30
Related Agricultural, Forestry and Fishing	24	12.59	10.62	14.92	1.00	100.10	3.70	17.40	21.40	96.30	96.30
Vehicle and Mobile Equipment Mechanics, Repairs	14	20.75	10.49	41.07	<LOD	182.00	8.70	20.50	30.40	77.60	182.00
Other Mechanics and repairers	18	21.90	6.00	79.92	6.10	75.10	12.40	21.10	39.50	75.10	75.10
Construction traders	69	17.65	12.01	25.96	<LOD	299.20	10.70	20.80	43.70	107.40	117.30
Extractive and Precision Production	24	41.48	19.18	89.70	8.10	1490.80	15.40	25.80	74.40	221.80	1490.80
Textile, apparel and furnishings machine operators	10	24.72	7.38	82.73	<LOD	117.40	23.00	25.10	67.40	111.40	111.40
Machine Operators, Assorted Materials	31	28.47	16.72	48.48	4.80	435.70	11.70	20.30	74.10	126.00	435.70
Fabricators, Assemblers, Inspectors, and Samplers	24	14.31	10.14	20.21	2.70	133.80	4.10	9.90	40.50	74.70	124.00
Motor vehicle operators	36	41.39	25.84	66.32	3.00	1599.30	13.40	39.20	92.80	245.00	1521.40
Other transportation and material moving	12	12.91	6.43	25.92	2.10	52.70	9.20	12.80	18.20	52.70	52.70
Construction laborers	15	16.93	11.32	25.34	2.50	57.70	11.10	20.00	24.30	35.50	57.70
Laborers, except construction	3	39.63	.	.	20.70	89.50	20.70	32.70	89.50	89.50	89.50
Frieght, Stock, and Material Movers, hand	20	13.89	8.02	24.05	1.20	75.00	7.10	14.20	47.20	56.90	75.00
Other helpers, equipment cleaners, hand packages and laborers	17	16.71	2.26	123.60	<LOD	552.10	1.50	41.40	62.80	69.10	552.10

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Table 3: Concentration of mono-(2-ethyl-5-hydroxyl) phthalate µg/L found in urine and Employment Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Working at a Job or Business	1071	19.70	16.56	23.43	<LOD	1604.80	9.00	20.20	43.60	91.00	175.10
With a Job but not at Work	53	23.13	13.40	39.90	2.40	733.90	8.90	19.80	53.00	130.20	224.30
Looking for Work	56	19.36	11.85	31.64	<LOD	1826.20	7.30	17.20	42.90	117.60	485.20
Not working at a job or Business	823	16.09	13.90	18.63	<LOD	3236.10	7.20	14.70	34.10	79.20	170.30

Table 4: Concentration of mono-(2-ethyl-5-hydroxyl) phthalate µg/L found in urine and Income

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
$0-$4 999	59	29.64	9.54	92.08	<LOD	630.60	10.50	25.80	64.00	529.90	529.90
$ 5000-$9 999	147	23.13	13.40	39.90	2.40	733.90	8.90	19.80	53.00	130.20	224.30
$10 000-$14 999	199	19.36	11.85	31.64	<LOD	1826.20	7.30	17.20	42.90	117.60	485.20
$15 000-$19 999	211	16.09	13.90	18.63	<LOD	3236.10	7.20	14.70	34.10	79.20	170.30
$20 000-$24 999	195	22.03	17.82	27.23	<LOD	575.60	10.50	21.60	47.20	87.40	141.90
$25 000-$34 999	326	19.69	15.13	25.62	<LOD	2227.50	8.80	18.10	44.70	97.00	215.60
$35 000-$44 999	260	21.40	16.96	27.00	<LOD	1599.30	9.80	20.30	47.50	90.90	199.10
$45 000-$54 999	240	22.17	16.18	30.38	<LOD	1826.20	9.90	21.20	46.00	103.20	242.50
$55 000-$64 999	197	22.85	16.64	31.36	<LOD	1604.80	8.80	20.70	56.90	109.90	210.90
$65 000-$74 999	141	16.91	12.49	22.89	<LOD	550.40	8.10	18.40	32.80	70.70	126.20
$75 000 and over	566	18.43	14.75	23.04	<LOD	2118.30	8.30	19.80	38.00	91.10	211.70

Table 5: Concentration of mono-(2-ethyl-5-hydroxyl) phthalate µg/L found in urine and Race/Ethnicity

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Non-Hispanic White	1216	19.13	16.70	21.91	<LOD	2227.50	8.20	19.20	41.70	91.10	211.70
Non-Hispanic Black	703	29.84	26.07	34.14	<LOD	3236.10	13.70	30.90	61.90	126.20	275.60
Mexican American	677	18.50	16.26	21.06	<LOD	679.60	8.60	19.10	36.30	79.90	122.60
Other Race-Including MultiRacial	77	13.52	9.99	18.28	<LOD	361.70	8.80	13.00	23.10	64.30	83.30
Other Hispanic	109	21.72	17.62	26.76	<LOD	852.60	12.40	24.00	42.10	76.40	98.70

Table 6: Concentration of mono-(2-ethyl-5-hydroxyl) phthalate µg/L found in urine and Gender

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Male	1371	21.95	19.54	24.67	<LOD	3236.10	10.70	21.20	48.00	94.20	211.70
Female	1411	18.33	15.66	21.45	<LOD	2227.50	7.70	18.20	39.80	86.00	169.80

Table 7: Concentration of mono-(2-ethyl-5-hydroxyl) phthalate µg/L found in urine and Education

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Less than High School	1533	23.47	21.06	26.15	<LOD	3236.10	11.00	24.30	49.60	100.10	186.20
High School Diploma	433	21.85	19.21	24.87	<LOD	1826.20	9.50	19.90	45.00	96.90	393.40
More than High School	814	16.99	14.00	20.61	<LOD	2227.50	7.50	16.90	39.20	80.80	144.10

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Table 8: Concentration of mono-(2-ethyl-5-hydroxyl) phthalate µg/L found in urine and Marital Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Married	975	16.64	14.54	19.04	<LOD	2227.50	7.20	16.20	33.20	75.10	133.70
Widowed	137	13.26	9.09	19.36	<LOD	864.00	5.30	13.10	27.70	72.60	147.00
Divorced	146	18.04	12.10	26.90	<LOD	385.80	7.60	19.80	51.30	86.90	124.00
Separated	57	17.55	11.59	26.57	<LOD	1523.60	7.50	19.20	34.60	70.70	81.90
Never Married	776	24.55	21.17	28.48	<LOD	2118.30	11.70	24.90	53.30	126.20	246.10
Living with Partner	103	25.39	18.12	35.57	<LOD	3236.10	12.00	23.00	48.70	111.40	391.60

Table 9: Concentration of mono-(2-ethyl-5-hydroxyl) phthalate µg/L found in urine and Country of Birth

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Born in the US	2308	20.79	18.54	23.31	<LOD	3236.10	9.50	21.10	45.40	95.60	211.70
Born in Mexico	296	15.18	12.28	18.75	<LOD	622.70	7.40	15.60	31.50	62.50	93.90
Born Elsewhere	171	15.37	12.31	19.20	<LOD	387.90	7.90	16.70	30.80	61.90	130.70

Table 10: Concentration of mono-(2-ethyl-5-hydroxyl) phthalate µg/L found in urine and Pregnancy Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Pregnant	112	19.22	13.75	26.86	<LOD	344.90	10.00	20.00	45.40	61.90	66.40
Not Pregnant	872	18.97	15.80	22.78	<LOD	2118.30	8.00	19.80	40.20	86.20	151.40

Table 11: Concentration of mono-(2-ethyl-5-hydroxyl) phthalate µg/L found in urine and Type of Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
A Mobile Home or Trailer	223	18.87	14.52	24.53	<LOD	1579.80	7.60	20.80	44.70	85.80	163.60
A detached single family home	1687	18.49	16.19	21.11	<LOD	2118.30	8.30	18.40	39.20	85.80	151.40
Attached Single Family Home	228	28.68	18.75	43.86	<LOD	3236.10	12.30	31.70	66.90	120.70	493.70
An Apartment	570	21.81	18.31	25.98	<LOD	1009.30	10.70	22.00	47.30	101.50	199.10
Something Else	32	31.49	25.70	38.58	5.10	977.00	16.30	22.10	68.50	147.00	451.30
Dormitory	15	40.85	.	.	8.10	145.00	25.30	44.90	84.30	96.90	145.00

Table 12: Concentration of mono-(2-ethyl-5-hydroxyl) phthalate µg/L found in urine and Year Home Built

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
1990-present	434	18.84	16.45	21.56	<LOD	1579.80	7.60	18.40	41.50	94.20	206.80
1978-1989	415	18.33	15.30	21.96	<LOD	2227.50	8.30	17.80	37.30	92.30	184.40
1960-1977	505	17.44	14.73	20.64	<LOD	1604.80	8.10	17.30	35.10	71.60	130.10
1950-1959	252	20.72	16.27	26.39	<LOD	2118.30	9.00	21.30	53.60	86.10	194.80
1940-1949	140	19.60	14.06	27.31	<LOD	733.90	9.20	21.40	37.90	69.20	151.40
before 1940	299	23.35	17.20	31.72	<LOD	1521.40	12.30	20.80	45.80	96.30	169.80

Table 13: Concentration of mono-(2-ethyl-5-hydroxyl) phthalate µg/L found in urine and Water Source

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Private-Public Water Company	2497	19.52	17.24	22.10	<LOD	3236.10	8.80	20.00	42.60	87.40	184.40
Private Public Well	226	22.94	18.41	28.58	<LOD	1035.10	10.80	20.20	46.00	109.70	245.00
Some other Water Source	10	20.49	.	.	5.70	97.00	8.80	11.70	54.20	54.20	54.20

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Table 14: Concentration of mono-(2-ethyl-5-hydroxyl) phthalate µg/L found in urine and Breastfeeding Status

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Currently Breastfeeding	21	22.22	19.38	25.48	2.60	462.00	13.30	14.70	26.10	62.60	462.00
Not currently Breastfeeding	48	23.86	5.72	99.47	<LOD	529.90	7.30	23.30	75.90	529.90	529.90

Table 15: Concentration of mono-(2-ethyl-5-hydroxyl) phthalate µg/L found in urine and Liver Conditions

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Ever had a liver condition	48	15.15	8.97	25.59	<LOD	3236.10	6.00	16.20	34.50	80.80	93.00
Never had a liver condition	1596	18.25	15.84	21.03	<LOD	2227.50	8.00	17.90	39.80	86.20	187.50

Table 16: Concentration of mono-(2-ethyl-5-hydroxyl) phthalate µg/L found in urine and Anyone Smoke in the Home

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	575	24.08	20.32	28.53	<LOD	2118.30	10.50	23.60	51.30	117.30	244.60
No	2180	18.93	16.56	21.65	<LOD	3236.10	8.60	19.30	41.30	86.20	163.60

Table 17: Concentration of mono-(2-ethyl-5-hydroxyl) phthalate µg/L found in urine and Ever told that you have Diabetes?

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	146	16.22	12.33	21.35	<LOD	1523.60	8.80	15.70	31.60	73.80	163.60
No	2609	20.22	17.99	22.73	<LOD	3236.10	9.10	20.50	44.30	92.80	191.70

Table 18: Concentration of mono-(2-ethyl-5-hydroxyl) phthalate µg/L found in urine by Currently Taking Birth Control Pills?

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	79	25.92	15.79	42.55	<LOD	1009.30	9.60	28.70	41.90	136.90	529.90
No	230	19.69	13.54	28.62	<LOD	1523.60	8.80	20.20	46.00	96.90	261.30

Table 19: Concentration of mono-(2-ethyl-5-hydroxyl) phthalate µg/L found in urine and Now Use Depo-Provera Injectables

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	30	22.21	15.18	32.51	6.10	181.80	6.80	20.90	55.20	86.60	95.60
No	81	25.82	17.00	39.21	<LOD	1009.30	17.50	35.50	60.70	98.80	111.40

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Table 20: Concentration of mono-(2-ethyl-5-hydroxyl) phthalate µg/L found in urine and Currently Taking Estrogen Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	68	16.45	10.32	26.23	<LOD	864.00	6.70	19.30	39.80	144.10	173.50
No	63	12.79	7.86	20.81	<LOD	2227.50	5.80	12.30	21.80	86.90	103.70

Table 21: Concentration of mono-(2-ethyl-5-hydroxyl) phthalate µg/L found in urine and Currently Taking Projestin Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	12	20.51	3.15	133.69	4.10	261.30	6.20	21.40	66.60	261.30	261.30
No	31	12.85	5.20	31.77	<LOD	2227.50	4.30	12.80	21.80	47.30	272.70

Table 22: Concentration of mono-(2-ethyl-5-hydroxyl) phthalate µg/L found in urine and Currently Taking Estrogen-Projestin Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	26	13.0011	9.1058	18.5627	1.4	80.4	7	14.3	23.8	37.8	48.4
No	19	9.616	4.104	22.5311	1	91.1	3.2	7.9	26	66.6	91.1

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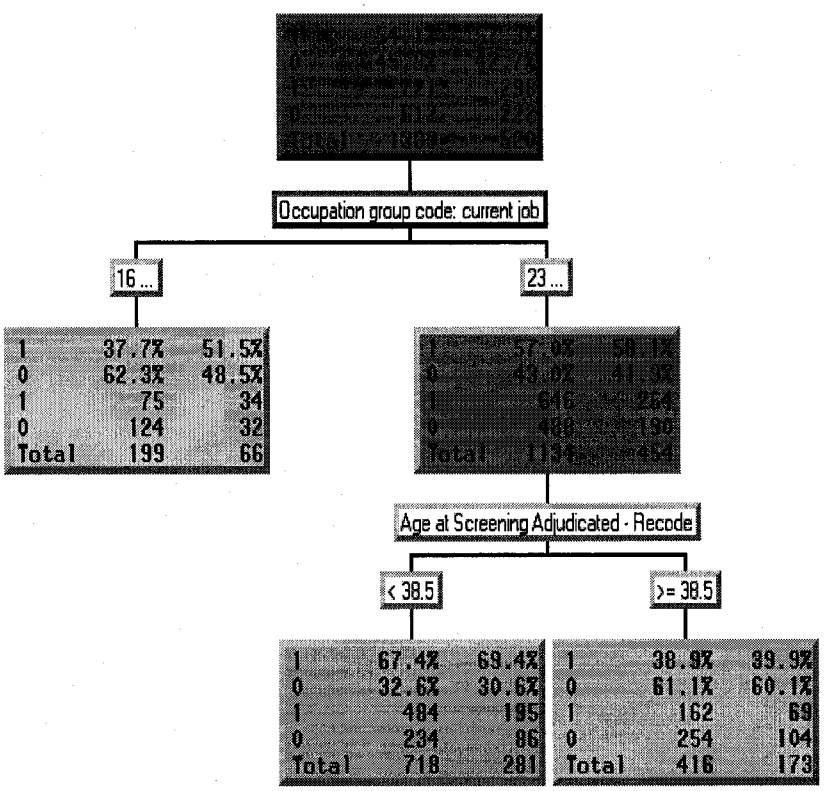
Classification and Regression Tree for mono-(2-ethyl-5-hydroxyl) phthalate



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APPENDIX 27: MONO-(2-ETHYL-5-OXOHEXYL) PHTHALATE

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Table 1: Concentration of mono-(2-ethyl-5-oxohexyl) phthalate µg/L found in urine by age category

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Age 5-11	393	23.32	20.86	26.08	<LOD	807.10	11.80	22.90	46.50	81.60	142.30
Age 12-19	742	17.51	15.07	20.33	<LOD	1380.10	8.90	18.60	35.00	70.70	118.10
Age 20-40	639	15.20	12.14	19.02	<LOD	926.70	6.60	15.10	33.20	64.90	227.50
Age 41-55	438	10.57	8.98	12.45	<LOD	914.20	4.70	11.60	22.70	37.50	68.30
Age 55+	570	9.48	7.66	11.73	<LOD	1026.40	4.20	9.30	19.90	47.10	87.20

Table 2: Concentration of mono-(2-ethyl-5-oxohexyl) phthalate µg/L found in urine and Occupation

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Executive, Administrators, & Managers	85	12.17	7.92	18.70	<LOD	862.50	5.40	12.50	22.10	100.00	182.00
Management Related	25	13.76	10.49	18.05	2.40	171.90	7.10	11.10	29.20	59.10	70.80
Engineers, Architects, and Scientists	34	15.84	11.26	22.29	1.70	766.90	6.40	16.00	34.40	77.20	160.30
Health Diagnosing, Assessing & Treating	29	8.28	6.80	10.08	<LOD	72.30	3.00	13.00	22.00	37.30	48.80
Teachers	49	8.99	5.31	15.22	<LOD	334.90	3.40	8.00	19.90	68.30	78.10
Writers, Artists, Entertainers & Athletes	18	12.81	7.57	21.67	3.00	694.30	5.70	13.70	19.70	28.50	345.90
Other Professional Speciality	29	11.55	5.96	22.38	<LOD	717.90	4.90	11.60	22.70	61.20	149.10
Technicians and Related Supported	29	15.34	7.11	33.08	<LOD	149.40	6.90	14.80	33.80	125.90	139.50
Supervisors and Proprietors, Sales	24	10.25	6.05	17.38	<LOD	367.40	4.60	9.20	18.20	28.30	367.40
Sales Representatives,finance,business,commodities	30	15.29	8.60	27.19	1.70	560.10	9.40	13.20	23.40	49.70	146.10
Sales Workers, retail & personal services	79	17.27	13.22	22.57	<LOD	903.00	9.50	16.10	31.30	59.20	241.20
Secretaries, Stenographers, and typists	17	15.07	8.64	26.28	<LOD	471.30	3.20	14.30	25.10	471.30	471.30
Information Clerks	15	15.52	12.97	18.58	2.60	107.10	10.00	12.10	32.10	38.30	107.10
Records Processing	37	9.59	6.72	13.70	1.20	264.50	3.00	8.90	28.50	35.50	74.30
Material Recording, Scheduling,distributing clerks	20	7.27	2.11	25.00	<LOD	81.00	4.50	7.50	11.90	33.40	33.40
Miscellaneous administrative support	69	16.00	10.90	23.50	1.60	327.60	8.20	14.10	29.40	57.50	70.30
Private Household	8	14.65	<LOD	400.01	<LOD	241.20	2.00	20.30	30.20	160.20	160.20
Protective Service	18	10.77	6.70	17.32	<LOD	37.80	5.40	12.50	31.60	35.70	37.80
Waiters and Waitresses	23	13.98	10.15	19.25	<LOD	64.30	8.80	18.00	34.20	51.50	55.50
Cooks	24	9.74	3.58	26.52	<LOD	215.70	3.70	13.10	20.30	116.10	116.10
Miscellaneous food preparation and service	34	17.02	12.64	22.91	<LOD	139.70	7.60	18.70	38.70	74.90	74.90
Health Service Occupation	28	22.74	17.19	30.08	<LOD	851.10	18.60	27.40	33.20	53.60	66.80
Cleaning and Building Service	41	22.80	15.82	32.85	<LOD	566.90	9.90	24.80	46.80	303.40	446.90
Personal Service	29	11.83	6.98	20.07	2.00	50.60	3.70	17.90	34.00	34.80	50.60
Farm Operators, Managers and Supervisors	2	15.46	.	.	3.70	34.30	3.70	34.30	34.30	34.30	34.30
Farm and Nursery Workers	10	4.20	.	.	1.50	37.10	1.50	4.10	4.80	21.20	37.10
Related Agricultural, Forestry and Fishing	24	8.83	8.22	9.49	<LOD	68.20	3.50	12.10	17.90	57.40	57.40
Vehicle and Mobile Equipment Mechanics, Repairs	14	12.76	7.42	21.92	<LOD	80.80	4.70	13.30	20.20	43.60	80.80
Other Mechanics and repairers	18	15.32	5.06	46.40	4.10	49.80	7.80	16.10	26.30	49.80	49.80
Construction traders	69	11.39	8.09	16.06	<LOD	155.30	5.80	13.60	28.20	59.90	77.30
Extractive and Precision Production	24	26.29	12.44	55.53	5.20	863.10	11.20	14.90	48.00	109.40	863.10
Textile, apparel and furnishings machine operators	10	18.53	5.59	61.38	<LOD	75.20	19.10	20.10	45.80	72.70	72.70
Machine Operators, Assorted Materials	31	17.66	10.71	29.12	3.10	324.00	6.50	13.40	40.10	71.40	324.00
Fabricators, Assemblers, Inspectors, and Samplers	24	8.72	6.45	11.78	1.70	88.50	2.40	7.60	30.80	40.60	84.40
Motor vehicle operators	36	24.86	16.06	38.49	1.90	914.20	8.70	21.80	50.90	131.20	677.80
Other transportation and material moving	12	9.16	4.53	18.53	1.60	34.10	5.80	9.20	13.30	34.10	34.10
Construction laborers	15	9.07	4.26	19.29	1.70	41.20	5.10	9.00	17.40	32.20	41.20
Laborers, except constuction	3	24.12	.	.	12.20	60.70	12.20	18.20	60.70	60.70	60.70
Frieght, Stock, and Material Movers, hand	20	8.12	4.75	13.86	<LOD	36.30	5.10	7.00	25.60	32.00	36.30
Other helpers, equipment cleaners, hand packages and laborers	17	11.34	1.83	70.43	<LOD	283.10	1.30	20.50	34.40	68.00	283.10

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Table 3: Concentration of *mono*-(2-ethyl-5-oxohexyl) phthalate µg/L found in urine and Employment Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Working at a Job or Business	1071	13.09	11.08	15.45	<LOD	914.20	5.70	13.80	29.70	56.10	111.00
With a Job but not at Work	53	15.70	9.20	26.79	2.00	471.30	7.50	14.90	31.60	87.20	146.10
Looking for Work	56	13.17	8.54	20.32	<LOD	926.70	5.00	14.60	24.60	69.90	180.60
Not working at a job or Business	823	10.79	9.29	12.54	<LOD	1380.10	5.00	10.60	22.60	50.40	120.10

Table 4: Concentration of *mono*-(2-ethyl-5-oxohexyl) phthalate µg/L found in urine and Income

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
$0-$4 999	59	21.35	6.75	67.51	<LOD	417.30	7.90	20.20	39.60	409.10	409.10
$ 5000-$9 999	147	15.70	9.20	26.79	2.00	471.30	7.50	14.90	31.60	87.20	146.10
$10 000-$14 999	199	13.17	8.54	20.32	<LOD	926.70	5.00	14.60	24.60	69.90	180.60
$15 000-$19 999	211	10.79	9.29	12.54	<LOD	1380.10	5.00	10.60	22.60	50.40	120.10
$20 000-$24 999	195	13.91	11.59	16.70	<LOD	345.90	5.20	14.80	32.20	65.40	94.30
$25 000-$34 999	326	13.18	10.23	16.98	<LOD	1026.40	5.50	11.60	30.10	61.40	133.60
$35 000-$44 999	260	13.99	10.86	18.03	<LOD	710.50	6.90	14.60	32.50	59.80	124.00
$45 000-$54 999	240	14.72	10.55	20.54	<LOD	926.70	7.00	14.50	30.30	63.40	169.30
$55 000-$64 999	197	15.41	11.59	20.47	<LOD	862.50	6.50	15.50	36.00	71.90	142.60
$65 000-$74 999	141	11.72	8.63	15.93	<LOD	324.00	5.90	13.20	25.60	42.00	84.20
$75 000 and over	566	12.50	10.09	15.50	<LOD	1380.10	5.50	13.80	26.00	59.10	130.50

Table 5: Concentration of *mono*-(2-ethyl-5-oxohexyl) phthalate µg/L found in urine and Race/Ethnicity

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Non-Hispanic White	1216	12.80	11.19	14.64	<LOD	1026.40	5.50	13.20	28.50	58.60	125.90
Non-Hispanic Black	703	19.62	17.13	22.47	<LOD	1380.10	9.40	20.10	39.00	80.50	152.70
Mexican American	677	13.15	11.60	14.90	<LOD	417.30	6.40	13.40	25.50	56.60	77.30
Other Race-Including MultiRacial	77	9.52	7.12	12.74	<LOD	191.80	5.90	9.80	15.10	38.10	63.50
Other Hispanic	109	14.58	11.97	17.76	<LOD	618.40	8.20	17.00	28.70	50.90	71.70

Table 6: Concentration of *mono*-(2-ethyl-5-oxohexyl) phthalate µg/L found in urine and Gender

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Male	1371	14.49	12.96	16.21	<LOD	926.70	6.90	14.60	31.60	60.40	129.30
Female	1411	12.54	10.79	14.59	<LOD	1380.10	5.20	13.10	28.10	57.50	115.40

Table 7: Concentration of *mono*-(2-ethyl-5-oxohexyl) phthalate µg/L found in urine and Education

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Less than High School	1533	16.27	14.66	18.06	<LOD	1380.10	7.70	17.60	35.20	68.00	118.10
High School Diploma	433	14.30	12.52	16.33	<LOD	926.70	5.90	14.20	28.80	62.40	266.20
More than High School	814	11.30	9.40	13.59	<LOD	1026.40	5.00	11.60	25.80	49.80	100.00

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Table 8: Concentration of mono-(2-ethyl-5-oxohexyl) phthalate µg/L found in urine and Marital Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Married	975	11.08	9.69	12.68	<LOD	1026.40	4.70	11.50	23.40	48.00	85.00
Widowed	137	8.73	5.90	12.92	<LOD	618.40	3.20	9.10	18.80	39.60	106.60
Divorced	146	11.51	7.74	17.12	<LOD	237.10	4.70	14.10	29.20	50.90	88.50
Separated	57	12.06	8.18	17.78	<LOD	851.10	5.90	14.10	20.90	44.20	59.90
Never Married	776	16.78	14.36	19.60	<LOD	1380.10	8.20	17.10	35.00	79.60	158.30
Living with Partner	103	17.14	12.72	23.10	<LOD	658.70	7.40	17.00	35.50	72.70	241.20

Table 9: Concentration of mono-(2-ethyl-5-oxohexyl) phthalate µg/L found in urine and Country of Birth

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Born in the US	2308	13.93	12.45	15.59	<LOD	1380.10	6.10	14.40	30.70	61.30	126.40
Born in Mexico	296	10.80	8.90	13.10	<LOD	351.60	5.30	11.50	22.10	40.60	68.00
Born Elsewhere	171	10.47	8.48	12.93	<LOD	320.80	5.60	10.40	23.40	38.00	86.70

Table 10: Concentration of mono-(2-ethyl-5-oxohexyl) phthalate µg/L found in urine and Pregnancy Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Pregnant	112	15.64	11.44	21.37	<LOD	252.60	10.00	18.20	36.00	46.80	51.80
Not Pregnant	872	12.91	10.77	15.47	<LOD	1380.10	5.40	14.00	28.50	58.10	101.80

Table 11: Concentration of mono-(2-ethyl-5-oxohexyl) phthalate µg/L found in urine and Type of Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
A Mobile Home or Trailer	223	12.72	9.93	16.30	<LOD	903.00	5.00	14.90	28.50	57.30	109.50
A detached single family home	1687	12.40	10.79	14.25	<LOD	1380.10	5.60	12.90	26.00	52.60	107.40
Attached Single Family Home	228	18.74	12.51	28.06	<LOD	1026.40	7.80	22.70	45.70	76.50	264.50
An Apartment	570	15.00	12.79	17.59	<LOD	694.30	7.00	15.20	31.60	65.40	125.90
Something Else	32	20.87	15.66	27.82	3.80	607.10	9.90	14.60	49.30	106.60	270.30
Dormitory	15	27.70	.	.	6.60	86.30	16.30	31.20	34.40	70.70	86.30

Table 12: Concentration of mono-(2-ethyl-5-oxohexyl) phthalate µg/L found in urine and Year Home Built

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
1990-present	434	12.97	11.32	14.87	<LOD	903.00	5.10	13.80	30.10	59.90	130.70
1978-1989	415	12.31	10.38	14.59	<LOD	1026.40	5.70	12.40	25.40	56.10	133.60
1960-1977	505	11.65	9.93	13.67	<LOD	862.50	5.70	12.20	24.90	46.50	79.60
1950-1959	252	13.64	10.92	17.04	<LOD	1380.10	5.40	14.30	31.70	49.80	126.50
1940-1949	140	13.78	9.97	19.06	<LOD	471.30	6.60	13.30	25.10	46.50	98.40
before 1940	299	15.12	11.51	19.87	<LOD	914.20	7.50	14.90	31.10	64.90	108.40

Table 13: Concentration of mono-(2-ethyl-5-oxohexyl) phthalate µg/L found in urine and Water Source

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Private-Public Water Company	2497	13.14	11.67	14.79	<LOD	1380.10	5.80	13.90	28.70	58.60	118.10
Private Public Well	226	15.35	12.25	19.24	<LOD	710.50	7.30	13.90	31.10	63.40	131.20
Some other Water Source	10	12.72	.	.	3.70	61.40	5.60	6.90	31.50	34.80	34.80

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Table 14: Concentration of mono-(2-ethyl-5-oxohexyl) phthalate µg/L found in urine and Servings of Beans per month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	278	16.51	12.01	22.70	<LOD	851.10	8.60	17.60	34.40	64.90	188.30
1 to 5	1061	14.03	11.94	16.50	<LOD	903.00	6.40	14.10	30.00	61.20	139.50
6 to 10	546	13.03	10.80	15.73	<LOD	1380.10	5.50	13.90	30.70	55.80	125.90
11 to 15	311	12.17	10.17	14.56	<LOD	560.10	5.30	13.70	25.60	43.30	77.60
15+	496	12.10	10.57	13.86	<LOD	1026.40	5.40	13.00	28.20	61.00	101.80

Table 15: Concentration of mono-(2-ethyl-5-oxohexyl) phthalate µg/L found in urine and Body Mass Index Category

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Under Weight	51	11.72	9.63	14.25	<LOD	372.10	3.40	16.60	34.60	42.00	56.00
Healthy Weight	1142	12.35	10.78	14.15	<LOD	1380.10	5.40	13.90	28.80	53.90	109.40
Over Weight	1485	14.33	12.62	16.27	<LOD	1026.40	6.30	14.10	30.10	63.40	139.50

Table 16: Concentration of mono-(2-ethyl-5-oxohexyl) phthalate µg/L found in urine and Water (gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0 to 896	1218	15.92	14.01	18.09	<LOD	1380.10	7.10	16.00	31.60	68.30	152.70
897-1792g	678	11.60	9.34	14.42	<LOD	914.20	4.90	12.00	27.80	49.20	87.20
>1792g	463	11.20	9.65	13.01	<LOD	766.90	4.70	11.90	29.10	52.00	118.10

Table 17: Concentration of mono-(2-ethyl-5-oxohexyl) phthalate µg/L found in urine and Alcohol (gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	2209	13.36	11.88	15.03	<LOD	1380.10	5.90	13.90	29.20	57.30	118.10
0-28	253	11.64	8.60	15.77	<LOD	863.10	5.40	11.60	23.40	49.70	108.40
>28	192	16.66	13.64	20.34	<LOD	926.70	6.90	16.90	40.10	79.60	158.30

Table 18: Concentration of mono-(2-ethyl-5-oxohexyl) phthalate µg/L found in urine and Caffeine(gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	512	16.87	13.68	20.79	<LOD	694.30	7.70	17.40	35.50	78.10	170.20
0-400	2031	12.99	11.65	14.48	<LOD	1380.10	5.90	13.50	28.40	55.80	109.40
400+	111	12.34	9.15	16.64	<LOD	863.10	5.50	11.90	24.60	54.70	125.90

Table 19: Concentration of mono-(2-ethyl-5-oxohexyl) phthalate µg/L found in urine and Fiber (gm) /day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0g	4	4.17	<LOD	#########	1.60	28.00	1.60	2.20	14.90	14.90	28.00
1 to 10	861	15.92	13.77	18.39	<LOD	1380.10	7.40	15.40	32.60	73.70	230.40
11 to 24	1457	12.93	11.37	14.71	<LOD	926.70	5.80	13.60	29.20	57.40	95.30
25+	332	10.74	8.82	13.10	<LOD	862.50	4.20	9.70	28.40	52.00	93.80

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Table 20: Concentration of mono-(2-ethyl-5-oxohexyl) phthalate µg/L found in urine and Breastfeeding Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Currently Breastfeeding	21	12.34	6.56	23.22	<LOD	327.60	7.90	10.60	14.90	49.30	327.60
Not currently Breastfeeding	48	17.03	3.96	73.32	<LOD	409.10	5.00	16.80	62.90	409.10	409.10

Table 21: Concentration of mono-(2-ethyl-5-oxohexyl) phthalate µg/L found in urine and Liver Conditions

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Ever had a liver condition	48	9.64	5.68	16.37	<LOD	658.70	3.90	9.90	23.00	54.70	60.30
Never had a liver condition	1596	12.15	10.61	13.91	<LOD	1026.40	5.40	12.50	26.20	52.30	120.10

Table 22: Concentration of mono-(2-ethyl-5-oxohexyl) phthalate µg/L found in urine and Anyone Smoke in the Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	575	15.72	13.28	18.61	<LOD	1380.10	6.60	16.90	32.60	77.30	155.60
No	2180	12.83	11.29	14.57	<LOD	1026.40	5.80	13.30	28.30	57.30	102.20

Table 23: Concentration of mono-(2-ethyl-5-oxohexyl) phthalate µg/L found in urine and Ever told that you have Diabetes?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	146	10.46	7.77	14.08	<LOD	851.10	5.60	11.40	20.60	38.60	102.70
No	2609	13.64	12.22	15.23	<LOD	1380.10	6.00	14.10	30.10	59.90	119.40

Table 24: Concentration of mono-(2-ethyl-5-oxohexyl) phthalate µg/L found in urine by Currently Taking Birth Control Pills?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	79	20.11	12.50	32.35	<LOD	694.30	7.30	22.40	34.00	101.80	409.10
No	230	12.95	8.87	18.91	<LOD	914.20	5.50	14.40	32.10	63.40	160.20

Table 25: Concentration of mono-(2-ethyl-5-oxohexyl) phthalate µg/L found in urine and Now Use Depo-Provera Injectables

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	30	15.94	10.83	23.45	3.60	139.70	6.30	15.70	32.40	64.40	70.70
No	81	18.46	12.25	27.81	<LOD	694.30	11.80	23.50	39.00	68.30	72.70

Table 26: Concentration of mono-(2-ethyl-5-oxohexyl) phthalate µg/L found in urine and Currently Taking Estrogen Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	68	11.34	7.06	18.22	<LOD	566.90	4.50	11.30	21.40	78.10	122.40
No	63	7.86	4.92	12.56	<LOD	1026.40	3.20	8.20	14.00	26.00	71.40

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Table 27: Concentration of mono-(2-ethyl-5-oxohexyl) phthalate µg/L found in urine and Currently Taking Projestin Only Pills

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	12	13.89	<LOD	204.45	2.00	182.00	3.70	17.90	48.80	182.00	182.00
No	31	8.21	3.37	20.03	<LOD	1026.40	2.70	8.50	13.30	25.00	160.20

Table 28: Concentration of mono-(2-ethyl-5-oxohexyl) phthalate µg/L found in urine and Currently Taking Estrogen-Projestin Pills

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	26	8.91	5.90	13.45	1.20	43.50	5.70	11.00	16.90	23.40	29.00
No	19	6.21	2.60	14.83	<LOD	51.90	2.20	5.00	19.10	35.90	35.90

Table 29: Concentration of mono-(2-ethyl-5-oxohexyl) phthalate µg/L found in urine and Number of Prescription Medications Taken

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	1674	15.01	13.00	17.33	<LOD	1380.10	6.80	14.90	33.20	64.90	129.30
1	425	12.63	10.57	15.10	<LOD	1026.40	5.10	13.70	30.20	54.70	112.80
2	238	12.03	9.64	15.01	<LOD	645.10	5.50	12.00	22.50	50.60	125.10
3	172	10.64	7.99	14.17	<LOD	766.90	4.70	11.20	25.30	41.20	115.30
4	90	8.71	6.50	11.68	<LOD	287.80	4.50	10.80	18.20	32.10	61.20
5	63	18.30	11.34	29.53	<LOD	851.10	6.20	12.20	34.70	283.10	658.70
6+	120	11.74	9.00	15.32	<LOD	266.20	6.00	13.10	23.00	45.70	59.90

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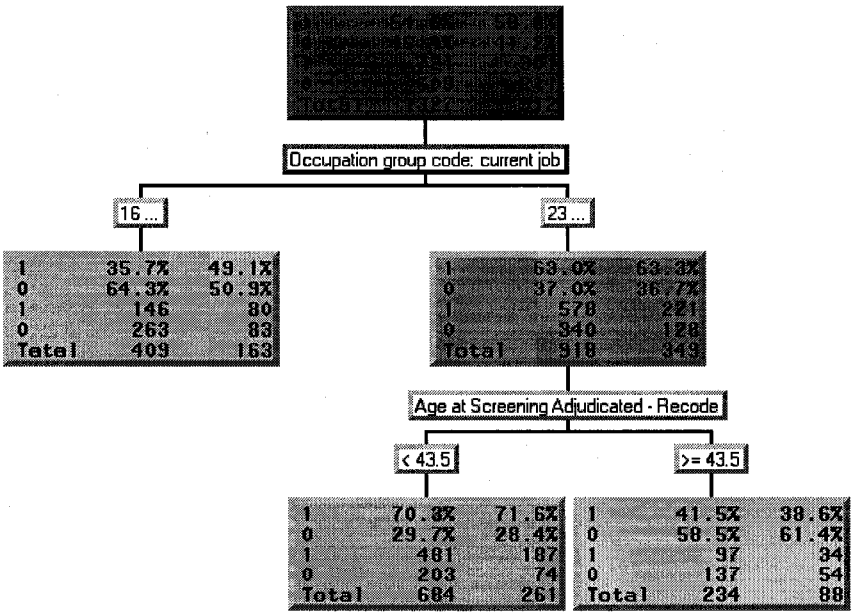
Classification and Regression Tree for mono-(2-ethyl-5-oxohexyl) phthalate



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APPENDIX 28: MONO-(3-CARBOXYPROPYL) PHTHALATE

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Table 1: Concentration of mono-(3-carboxypropyl)- phthalate µg/L found in urine by age category

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Age 5-11	393	6.11	5.46	6.84	<LOD	109.60	3.40	6.70	11.80	20.10	24.70
Age 12-19	742	3.71	3.18	4.33	<LOD	66.00	2.20	4.00	7.10	11.50	14.10
Age 20-40	639	2.59	2.21	3.03	<LOD	181.80	1.30	3.10	5.30	8.70	11.50
Age 41-55	438	2.27	1.89	2.72	<LOD	204.20	1.00	2.40	4.70	7.80	11.60
Age 55+	570	2.15	1.91	2.42	<LOD	217.40	1.10	2.20	4.10	7.30	13.30

Table 2: Concentration of mono-(3-carboxypropyl)- phthalate µg/L found in urine and Occupation

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Executive, Administrators, & Managers	85	2.08	1.74	2.49	<LOD	34.40	1.10	2.20	4.00	6.30	7.20
Management Related	25	2.91	1.73	4.89	<LOD	168.20	1.70	3.00	4.10	7.20	30.00
Engineers, Architects, and Scientists	34	2.51	1.91	3.29	0.40	9.50	1.10	3.50	5.80	6.90	9.50
Health Diagnosing, Assessing & Treating	29	1.51	1.33	1.71	<LOD	13.30	0.40	2.00	4.20	5.70	6.50
Teachers	49	1.72	1.02	2.91	<LOD	46.70	0.90	1.90	3.90	7.30	14.70
Writers, Artists, Entertainers & Athletes	18	2.87	2.05	4.02	<LOD	10.70	1.70	3.00	5.00	7.20	7.20
Other Professional Speciality	29	1.91	1.22	2.98	<LOD	9.80	0.60	2.70	4.70	5.20	8.10
Technicians and Related Supported	29	2.09	1.16	3.75	<LOD	31.00	0.90	1.90	6.30	7.20	8.40
Supervisors and Proprietors, Sales	24	1.86	0.99	3.50	<LOD	16.80	0.80	2.10	3.70	7.30	16.80
Sales Representatives,finance,business,commodities	30	2.28	1.44	3.62	<LOD	12.40	1.30	2.40	6.90	8.10	11.00
Sales Workers, retail & personal services	79	2.89	2.22	3.76	<LOD	24.20	1.50	3.40	6.10	8.80	10.30
Secretaries, Stenographers, and typists	17	3.06	2.09	4.49	<LOD	8.40	1.50	4.10	7.90	8.40	8.40
Information Clerks	15	4.05	1.66	9.85	0.80	30.60	2.90	3.40	6.80	30.60	30.60
Records Processing	37	1.52	1.12	2.06	<LOD	15.10	0.70	1.80	3.00	4.00	8.60
Material Recording, Scheduling,distributing clerks	20	1.83	0.98	3.39	<LOD	14.20	1.00	1.50	3.60	10.20	10.20
Miscellaneous administrative support	69	2.43	2.09	2.84	<LOD	17.20	1.50	2.60	4.10	6.40	7.20
Private Household	8	2.23	0.42	11.89	0.40	9.60	0.50	3.70	4.80	9.60	9.60
Protective Service	18	1.94	0.94	3.99	<LOD	10.50	0.80	2.80	4.30	5.20	7.40
Waiters and Waitresses	23	2.87	2.31	3.56	<LOD	11.90	2.10	3.50	4.60	6.20	6.30
Cooks	24	1.26	0.62	2.56	<LOD	33.20	<LOD	1.80	3.60	4.60	12.50
Miscellaneous food preparation and service	34	2.18	1.13	4.20	<LOD	18.80	0.70	2.60	6.00	11.50	11.50
Health Service Occupation	28	3.75	3.08	4.56	<LOD	21.80	2.50	4.80	6.00	7.80	8.40
Cleaning and Building Service	41	2.79	1.72	4.52	<LOD	24.30	1.50	3.20	3.80	15.90	22.30
Personal Service	29	2.67	1.10	6.47	<LOD	141.10	0.90	2.60	6.00	11.20	141.10
Farm Operators, Managers and Supervisors	2	5.01	.	.	0.80	13.90	0.80	13.90	13.90	13.90	13.90
Farm and Nursery Workers	10	0.99	.	.	<LOD	4.30	0.60	0.80	1.50	2.50	4.30
Related Agricultural, Forestry and Fishing	24	2.50	1.96	3.19	<LOD	23.30	0.90	3.00	7.80	11.60	11.60
Vehicle and Mobile Equipment Mechanics, Repairs	14	2.45	1.11	5.41	<LOD	8.00	1.50	2.80	5.30	8.00	8.00
Other Mechanics and repairers	18	3.51	1.82	6.78	<LOD	25.50	1.60	4.20	8.90	23.90	25.50
Construction traders	69	2.22	1.42	3.47	<LOD	66.70	1.00	2.80	5.30	8.80	12.90
Extractive and Precision Production	24	3.42	2.09	5.61	0.40	11.50	2.50	3.80	5.30	9.10	9.10
Textile, apparel and furnishings machine operators	10	4.38	1.44	13.30	<LOD	181.80	3.40	3.70	5.50	181.80	181.80
Machine Operators, Assorted Materials	31	2.77	1.65	4.67	<LOD	24.50	1.60	3.00	5.40	9.20	14.20
Fabricators, Assemblers, Inspectors, and Samplers	24	2.97	0.78	11.27	<LOD	100.40	1.20	3.00	5.60	14.80	100.40
Motor vehicle operators	36	2.96	2.13	4.11	<LOD	32.60	1.80	3.20	6.00	7.70	9.60
Other transportation and material moving	12	2.33	0.95	5.71	0.40	18.00	1.20	2.50	4.40	18.00	18.00
Construction laborers	15	6.08	2.97	12.46	0.90	167.90	1.50	5.60	12.50	167.90	167.90
Laborers, except construction	3	4.44	.	.	1.70	9.80	1.70	6.00	9.80	9.80	9.80
Frieght, Stock, and Material Movers, hand	20	1.50	1.19	1.88	0.70	9.10	0.90	1.00	2.20	4.50	5.00
Other helpers, equipment cleaners, hand packages and laborers	17	2.27	0.61	8.52	<LOD	13.40	0.40	5.10	7.90	9.80	13.40

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Table 3: Concentration of mono-(3-carboxypropyl)- phthalate µg/L found in urine and Employment Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Working at a Job or Business	1071	2.34	2.10	2.61	<LOD	181.80	1.10	2.70	4.80	7.70	11.50
With a Job but not at Work	53	2.92	1.98	4.30	0.40	25.50	1.50	3.10	6.40	7.90	10.30
Looking for Work	56	2.56	1.80	3.64	<LOD	24.50	1.20	3.10	5.10	7.70	8.10
Not working at a job or Business	823	2.55	2.17	3.00	<LOD	217.40	1.20	2.70	5.10	10.00	16.00

Table 4: Concentration of mono-(3-carboxypropyl)- phthalate µg/L found in urine and Income

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
$0-$4 999	59	3.26	1.81	5.84	<LOD	67.10	1.50	3.90	8.20	10.80	13.50
$ 5000-$9 999	147	2.92	1.98	4.30	0.40	25.50	1.50	3.10	6.40	7.90	10.30
$10 000-$14 999	199	2.56	1.80	3.64	<LOD	24.50	1.20	3.10	5.10	7.70	8.10
$15 000-$19 999	211	2.55	2.17	3.00	<LOD	217.40	1.20	2.70	5.10	10.00	16.00
$20 000-$24 999	195	2.96	2.50	3.51	<LOD	181.80	1.30	2.90	6.30	11.50	28.60
$25 000-$34 999	326	2.39	2.00	2.85	<LOD	217.40	1.20	3.00	5.00	7.70	10.10
$35 000-$44 999	260	2.72	2.13	3.46	<LOD	43.40	1.50	3.20	5.10	10.20	12.90
$45 000-$54 999	240	2.92	2.16	3.95	<LOD	167.90	1.30	3.20	5.60	12.00	20.00
$55 000-$64 999	197	3.04	2.51	3.69	<LOD	141.10	1.40	3.20	5.80	12.70	15.90
$65 000-$74 999	141	2.74	2.16	3.47	<LOD	23.20	1.50	3.30	6.60	8.30	14.20
$75 000 and over	566	2.39	2.05	2.79	<LOD	100.40	1.20	2.80	5.10	8.10	13.30

Table 5: Concentration of mono-(3-carboxypropyl)- phthalate µg/L found in urine and Race/Ethnicity

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Non-Hispanic White	1216	2.72	2.40	3.08	<LOD	217.40	1.20	3.00	5.80	10.30	15.80
Non-Hispanic Black	703	3.09	2.81	3.40	<LOD	181.80	1.60	3.30	6.30	10.90	15.10
Mexican American	677	2.67	2.27	3.15	<LOD	67.10	1.40	3.00	5.30	9.20	13.60
Other Race-Including MultiRacial	77	1.80	1.41	2.30	<LOD	23.20	0.90	1.90	3.80	7.40	8.40
Other Hispanic	109	3.32	2.87	3.83	<LOD	24.30	2.10	4.10	6.00	8.50	10.80

Table 6: Concentration of mono-(3-carboxypropyl)- phthalate µg/L found in urine and Gender

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Male	1371	2.89	2.64	3.17	<LOD	217.40	1.50	3.10	5.70	9.90	14.20
Female	1411	2.62	2.29	2.99	<LOD	204.20	1.20	3.00	5.70	10.00	14.70

Table 7: Concentration of mono-(3-carboxypropyl)- phthalate µg/L found in urine and Education

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Less than High School	1533	3.79	3.39	4.23	<LOD	181.80	2.10	4.00	7.60	13.40	21.10
High School Diploma	433	2.69	2.26	3.21	<LOD	204.20	1.40	3.20	5.10	8.10	10.80
More than High School	814	2.17	1.85	2.54	<LOD	217.40	1.00	2.40	4.60	7.70	11.30

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Table 8: Concentration of mono-(3-carboxypropyl)- phthalate µg/L found in urine and Marital Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Married	975	2.22	1.98	2.48	<LOD	204.20	1.10	2.40	4.50	7.40	11.60
Widowed	137	2.15	1.71	2.70	<LOD	43.60	1.20	2.00	4.70	9.00	10.00
Divorced	146	2.75	1.86	4.06	<LOD	217.40	1.10	2.90	6.60	11.60	33.00
Separated	57	3.31	2.50	4.38	<LOD	168.20	1.40	3.50	6.00	10.00	13.90
Never Married	776	2.86	2.46	3.32	<LOD	67.10	1.60	3.20	5.50	9.30	11.90
Living with Partner	103	3.09	2.55	3.76	<LOD	181.80	1.70	3.10	5.30	8.20	14.70

Table 9: Concentration of mono-(3-carboxypropyl)- phthalate µg/L found in urine and Country of Birth

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Born in the US	2308	2.84	2.56	3.15	<LOD	217.40	1.40	3.20	6.00	10.30	14.90
Born in Mexico	296	2.29	1.90	2.75	<LOD	66.70	1.30	2.50	4.50	8.20	12.40
Born Elsewhere	171	2.10	1.75	2.53	<LOD	168.20	1.10	2.20	4.50	6.90	9.50

Table 10: Concentration of mono-(3-carboxypropyl)- phthalate µg/L found in urine and Pregnancy Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Pregnant	112	2.66	1.87	3.79	<LOD	168.20	1.30	3.10	4.60	6.70	8.90
Not Pregnant	872	2.61	2.22	3.07	<LOD	204.20	1.20	3.10	6.00	10.00	13.80

Table 11: Concentration of mono-(3-carboxypropyl)- phthalate µg/L found in urine and Type of Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
A Mobile Home or Trailer	223	3.02	2.27	4.02	<LOD	109.60	1.40	3.30	7.30	12.40	16.40
A detached single family home	1687	2.61	2.29	2.98	<LOD	217.40	1.20	2.90	5.40	9.90	14.70
Attached Single Family Home	228	2.82	2.23	3.57	<LOD	69.90	1.50	3.20	5.20	8.80	13.30
An Apartment	570	3.03	2.54	3.60	<LOD	181.80	1.60	3.20	6.20	9.80	13.80
Something Else	32	3.66	3.22	4.16	0.60	42.50	2.70	3.60	9.00	11.20	12.40
Dormitory	15	5.07	.	.	1.40	22.30	2.90	6.10	9.50	10.00	22.30

Table 12: Concentration of mono-(3-carboxypropyl)- phthalate µg/L found in urine and Year Home Built

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
1990-present	434	2.69	2.36	3.06	<LOD	75.40	1.30	3.10	5.80	9.60	12.90
1978-1989	415	2.59	2.15	3.11	<LOD	204.20	1.20	2.80	5.30	10.30	17.30
1960-1977	505	2.53	2.04	3.15	<LOD	100.40	1.30	2.90	5.10	9.20	14.70
1950-1959	252	2.65	2.19	3.20	<LOD	217.40	1.30	2.70	5.50	10.00	14.50
1940-1949	140	3.32	2.44	4.52	<LOD	42.50	1.70	3.30	6.70	12.00	16.80
before 1940	299	2.96	2.39	3.65	<LOD	181.80	1.60	3.20	6.00	11.10	13.90

Table 13: Concentration of mono-(3-carboxypropyl)- phthalate µg/L found in urine and Water Source

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Private-Public Water Company	2497	2.67	2.42	2.94	<LOD	181.80	1.30	3.00	5.50	9.80	14.70
Private Public Well	226	3.34	2.69	4.16	<LOD	217.40	1.80	3.70	6.50	10.30	14.60
Some other Water Source	10	4.50	.	.	1.70	11.20	2.20	6.90	8.70	11.20	11.20

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Table 14: Concentration of mono-(3-carboxypropyl)- phthalate µg/L found in urine and Breastfeeding Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Currently Breastfeeding	21	3.05	2.36	3.94	<LOD	10.10	3.30	3.70	4.80	6.60	6.80
Not currently Breastfeeding	48	2.80	1.25	6.25	<LOD	20.30	1.10	3.70	7.20	10.80	10.80

Table 15: Concentration of mono-(3-carboxypropyl)- phthalate µg/L found in urine and Liver Conditions

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Ever had a liver condition	48	2.23	1.31	3.77	<LOD	13.90	0.50	4.00	5.40	6.20	10.00
Never had a liver condition	1596	2.38	2.13	2.66	<LOD	217.40	1.20	2.60	4.80	8.10	12.00

Table 16: Concentration of mono-(3-carboxypropyl)- phthalate µg/L found in urine and Anyone Smoke in the Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	575	3.19	2.60	3.91	<LOD	181.80	1.60	3.40	6.50	11.50	19.50
No	2180	2.64	2.41	2.90	<LOD	217.40	1.30	2.90	5.40	9.40	13.90

Table 17: Concentration of mono-(3-carboxypropyl)- phthalate µg/L found in urine and Ever told that you have Diabetes?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	146	1.94	1.54	2.43	<LOD	217.40	1.10	2.10	3.80	6.50	13.20
No	2609	2.81	2.54	3.12	<LOD	204.20	1.40	3.10	5.90	10.20	14.70

Table 18: Concentration of mono-(3-carboxypropyl)- phthalate µg/L found in urine by Currently Taking Birth Control Pills?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	79	3.51	2.62	4.72	<LOD	168.20	1.40	3.30	6.30	10.80	29.40
No	230	2.40	1.78	3.22	<LOD	181.80	1.00	3.20	5.90	8.60	11.50

Table 19: Concentration of mono-(3-carboxypropyl)- phthalate µg/L found in urine and Now Use Depo-Provera Injectables

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	30	4.22	2.87	6.21	1.10	22.30	1.70	3.70	7.30	15.90	15.90
No	81	3.66	2.00	6.68	<LOD	204.20	2.00	3.90	6.40	8.60	21.30

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Table 20: Concentration of mono-(3-carboxypropyl)- phthalate µg/L found in urine and Currently Taking Estrogen Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	68	2.45	1.72	3.48	<LOD	87.80	1.50	2.60	4.30	8.80	14.70
No	63	2.00	1.50	2.66	<LOD	204.20	0.90	1.50	4.00	7.10	36.40

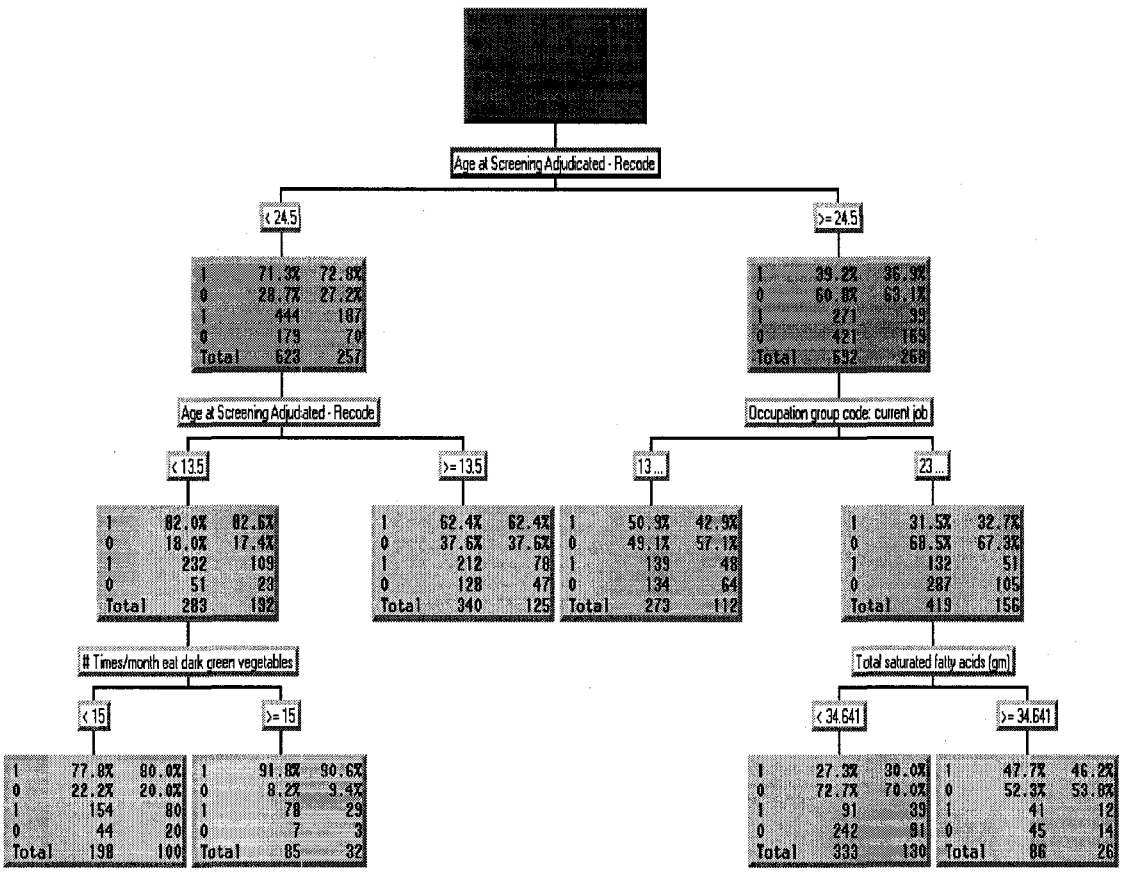
Table 21: Concentration of mono-(3-carboxypropyl)- phthalate µg/L found in urine and Currently Taking Projestin Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	12	1.90	<LOD	16.13	0.60	8.80	0.70	2.70	3.20	6.50	6.50
No	31	1.39	0.88	2.18	<LOD	12.00	0.80	1.20	2.90	5.00	10.70

Table 22: Concentration of mono-(3-carboxypropyl)- phthalate µg/L found in urine and Currently Taking Estrogen-Projestin Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	26	1.98	1.38	2.83	0.40	8.10	1.10	1.50	4.00	4.60	8.10
No	19	1.22	0.49	3.01	<LOD	51.50	0.40	0.90	3.60	4.90	7.20

Classification and Regression Tree for mono-(3-carboxypropyl) phthalate



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APPENDIX 29: 2-HYDROXYFLUORENE

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Table 1: Concentration of 2-Hydroxyfluorene in ng/L found in urine by age category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Age 5-11	693	268.09	217.33	330.72	<LOD	85466.20	139.30	265.00	516.00	1141.40	1805.80
Age 12-19	1427	364.25	294.39	450.68	<LOD	36394.00	163.90	319.00	836.00	2198.70	3559.00
Age 20-40	1156	450.40	351.98	576.35	<LOD	63558.80	159.80	402.00	1224.50	3102.60	4895.70
Age 41-55	708	372.54	307.26	451.70	<LOD	33732.30	134.00	314.00	1056.00	2810.00	4676.00
Age 55+	1076	287.47	234.93	351.77	<LOD	22596.80	113.00	267.70	697.50	1804.30	3225.00

Table 2: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Occupation

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Executive, Administrators, & Managers	139	241.18	186.27	312.27	<LOD	17276.70	129.80	204.00	442.70	1183.10	2514.00
Management Related	50	311.20	253.60	381.88	38.00	15250.10	134.00	313.10	632.60	1147.00	1524.00
Engineers, Architects, and Scientists	51	263.46	209.05	332.05	<LOD	3225.00	129.00	227.00	543.00	1204.80	2175.40
Health Diagnosing, Assessing & Treating	41	197.95	153.63	255.05	<LOD	2810.00	82.00	173.00	390.00	913.90	1333.90
Teachers	72	181.72	131.25	251.58	13.30	2783.70	79.00	186.00	357.00	932.00	1221.80
Writers, Artists, Entertainers & Athletes	37	265.23	173.72	404.94	<LOD	4204.00	166.00	233.00	532.00	1405.40	2159.00
Other Professional Speciality	52	215.22	127.27	363.94	<LOD	14511.40	92.10	196.80	391.00	2312.00	5750.40
Technicians and Related Supported	54	366.92	283.16	475.46	25.70	3677.00	137.00	357.00	857.40	2287.30	2696.60
Supervisors and Proprietors, Sales	40	387.14	215.51	695.46	<LOD	9474.90	208.00	307.00	1329.40	2805.00	4895.70
Sales Representatives,finance,business,commodities	56	265.15	184.47	381.13	<LOD	19269.80	123.00	294.20	485.00	884.20	4001.60
Sales Workers, retail & personal services	141	332.89	258.01	429.49	<LOD	36394.00	145.60	322.00	644.50	2520.00	3321.00
Secretaries, Stenographers, and typists	31	301.41	81.30	1117.43	<LOD	3102.60	100.00	459.90	684.00	3102.60	3102.60
Information Clerks	28	531.10	208.11	1355.38	35.80	4258.20	323.40	444.00	1362.00	3200.40	4258.20
Records Processing	63	460.63	305.48	694.58	31.00	11874.20	121.00	343.00	1144.00	6088.90	10859.60
Material Recording, Scheduling,distributing clerks	33	349.90	181.07	676.16	<LOD	10977.50	154.50	515.00	866.40	1531.10	4282.60
Miscellaneous administrative support	125	415.81	290.69	594.77	11.00	29875.80	181.00	375.00	1019.00	2540.00	4777.00
Private Household	18	243.95	182.22	326.59	36.00	2542.10	138.00	283.00	598.70	811.00	811.00
Protective Service	33	413.05	178.20	957.40	34.30	17838.00	199.00	261.00	643.00	6214.70	6214.70
Waiters and Waitresses	39	528.02	361.98	770.21	46.10	10818.50	194.00	412.00	1236.00	2733.60	3659.00
Cooks	54	615.74	379.25	999.71	18.80	14665.70	193.00	456.40	1344.50	3829.40	14249.50
Miscellaneous food preparation and service	56	781.86	542.32	1127.21	12.60	21875.10	266.00	610.00	2177.00	5374.20	7315.00
Health Service Occupation	51	618.71	392.65	974.90	<LOD	11838.90	339.50	429.00	1776.50	2726.30	4733.00
Cleaning and Building Service	71	495.70	372.93	658.91	41.00	28407.20	169.00	348.80	1066.00	3727.00	7663.50
Personal Service	52	271.88	171.65	430.64	14.80	9042.90	126.00	227.00	525.00	2621.60	4398.60
Farm Operators, Managers and Supervisors	7	749.14	.	.	25.60	2903.30	297.00	1046.00	2597.30	2903.30	2903.30
Farm and Nursery Workers	27	455.66	280.46	740.29	32.00	7062.60	177.00	406.90	1055.10	1336.70	1336.70
Related Agricultural, Forestry and Fishing	44	454.51	232.58	888.24	<LOD	8037.20	161.00	482.00	1378.80	3747.00	8037.20
Vehicle and Mobile Equipment Mechanics, Repairs	27	864.01	580.98	1284.92	51.30	6708.20	361.00	826.30	1695.00	6084.60	6084.60
Other Mechanics and repairers	37	844.03	567.93	1254.35	39.80	7222.20	352.00	991.40	2357.80	4341.00	7222.20
Construction traders	117	774.76	561.29	1069.40	<LOD	33732.30	321.00	829.00	2520.00	4160.10	6453.30
Extractive and Precision Production	45	337.36	193.38	588.54	14.60	11279.00	163.00	267.30	536.80	889.60	9576.00
Textile, apparel and furnishings machine operators	17	390.65	201.04	759.12	13.00	8404.00	145.70	239.00	1334.00	8404.00	8404.00
Machine Operators, Assorted Materials	61	754.34	449.64	1265.52	13.70	63558.80	284.00	808.00	2080.90	4601.30	8380.50
Fabricators, Assemblers, Inspectors, and Samplers	46	429.42	318.84	578.35	29.80	5049.60	165.00	550.20	1126.00	2334.00	3519.00
Motor vehicle operators	65	728.03	387.09	1369.28	50.00	21097.70	329.00	498.00	2025.00	5144.00	13671.00
Other transportation and material moving	20	587.83	302.74	1141.42	57.00	4907.70	201.00	788.00	2224.00	3637.00	4907.70
Construction laborers	29	498.73	239.02	1040.66	74.00	3870.70	232.00	547.00	978.60	1726.30	2456.40
Laborers, except construction	5	4641.14	.	.	345.00	28834.10	987.00	1633.00	28834.10	28834.10	28834.10
Frieght, Stock, and Material Movers, hand	43	482.33	301.28	772.16	20.00	22642.10	192.50	633.00	1332.00	2509.00	3888.00
Other helpers, equipment cleaners, hand packages and laborers	26	454.65	154.07	1341.71	38.10	21409.60	148.00	447.20	1107.00	3448.00	4059.00

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Table 3: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Employment Status

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Working at a Job or Business	1056	335.18	293.11	383.29	<LOD	36394.00	151.00	322.00	684.00	1906.00	2965.00
With a Job but not at Work	52	312.06	199.82	487.34	<LOD	5024.00	183.00	262.00	559.00	1341.00	2202.00
Looking for Work	54	539.78	319.20	912.81	71.00	9263.00	128.00	608.00	1325.00	3113.00	4001.00
Not working at a job or Business	813	325.74	272.51	389.36	<LOD	15976.00	138.00	267.00	720.00	2028.00	3208.00

Table 4: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Income

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
$0-$4 999	111	487.54	344.35	690.26	<LOD	12370.00	212.70	401.60	1275.10	2761.00	2761.00
$ 5000-$9 999	294	312.06	199.82	487.34	<LOD	5024.00	183.00	262.00	559.00	1341.00	2202.00
$10 000-$14 999	388	539.78	319.20	912.81	71.00	9263.00	128.00	608.00	1325.00	3113.00	4001.00
$15 000-$19 999	390	325.74	272.51	389.36	<LOD	15976.00	138.00	267.00	720.00	2028.00	3208.00
$20 000-$24 999	370	508.79	338.93	763.79	<LOD	85466.20	174.00	387.00	1759.00	4346.20	10289.30
$25 000-$34 999	589	333.86	261.25	426.65	<LOD	27201.00	138.00	298.00	857.40	2542.00	4001.00
$35 000-$44 999	465	436.11	335.71	566.53	<LOD	33732.30	156.00	345.00	1229.00	3300.00	4752.50
$45 000-$54 999	392	371.82	282.55	489.29	<LOD	22642.10	166.00	348.80	817.00	2224.00	4313.10
$55 000-$64 999	308	316.40	239.88	417.33	<LOD	21097.70	111.00	279.00	829.00	2063.00	3079.90
$65 000-$74 999	234	327.45	248.34	431.77	<LOD	12511.90	116.00	309.00	811.20	2074.20	3747.00
$75 000 and over	863	257.91	207.08	321.20	<LOD	22596.80	121.00	237.30	527.00	1333.90	2312.00

Table 5: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Race/Ethnicity

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Non-Hispanic White	2049	347.88	273.74	442.10	<LOD	36394.00	137.00	317.60	884.20	2548.80	4280.30
Non-Hispanic Black	1226	533.08	416.83	681.76	<LOD	63558.80	196.00	477.00	1385.00	3465.00	6566.50
Mexican American	1412	281.82	235.17	337.71	<LOD	15976.00	124.00	271.00	606.00	1349.00	2206.00
Other Race-Including MultiRacial	132	258.13	190.99	348.89	<LOD	7908.90	121.00	224.00	434.00	1916.40	2435.80
Other Hispanic	241	469.79	311.54	708.43	17.00	85466.20	167.00	430.30	1159.60	2956.80	4872.00

Table 6: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Gender

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Male	2452	413.77	333.08	514.02	<LOD	63558.80	166.00	359.00	1021.00	2698.70	4313.10
Female	2608	321.10	264.81	389.35	<LOD	85466.20	124.00	298.00	823.30	2263.00	4148.10

Table 7: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Education

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Less than High School	2913	392.26	323.34	475.88	<LOD	85466.20	162.00	350.00	966.00	2419.70	3947.40
High School Diploma	778	492.33	381.18	635.89	<LOD	33732.30	181.00	435.00	1333.90	3251.00	5027.90
More than High School	1362	291.68	237.02	358.95	<LOD	22596.80	117.00	261.00	697.00	2034.00	3747.00

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Table 8: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Marital Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Married	1656	331.90	265.90	414.29	<LOD	33732.30	126.00	296.00	883.00	2357.80	4258.20
Widowed	253	314.77	248.33	398.99	12.00	18276.10	135.00	309.00	828.00	1504.00	2609.00
Divorced	245	571.20	417.06	782.30	<LOD	22596.80	191.00	590.00	1940.00	4637.60	6214.70
Separated	107	879.22	553.57	1396.42	21.80	23952.40	265.90	1100.00	3102.60	6000.00	9515.90
Never Married	1424	436.40	352.81	539.80	<LOD	28407.20	185.00	406.90	1043.00	2605.00	4056.00
Living with Partner	154	555.01	416.58	739.46	16.00	63558.80	245.00	426.00	1651.00	3448.00	5144.00

Table 9: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Country of Birth

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Born in the US	4060	370.73	299.92	458.26	<LOD	85466.20	146.00	329.50	945.90	2592.70	4313.10
Born in Mexico	613	299.05	246.56	362.70	<LOD	15976.00	137.30	289.50	590.00	1478.00	2316.60
Born Elsewhere	355	323.80	215.86	485.72	<LOD	18276.10	119.80	286.60	922.60	2312.00	4056.00

Table 10: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Pregnancy Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Pregnant	206	303.08	231.63	396.57	17.10	36394.00	158.00	262.00	497.00	1708.00	3137.00
Not Pregnant	1304	352.60	287.61	432.29	<LOD	29875.80	129.60	316.40	926.00	2763.10	4637.60

Table 11: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Type of Home

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
A Mobile Home or Trailer	403	501.73	385.68	652.72	<LOD	23952.40	184.00	459.00	1587.00	3102.60	4645.90
A detached single family home	3070	325.69	257.67	411.67	<LOD	85466.20	129.00	296.20	816.30	2176.00	3779.60
Attached Single Family Home	403	375.12	281.70	499.53	<LOD	18454.10	155.00	317.60	1124.10	2177.00	3225.00
An Apartment	1059	450.10	352.47	574.78	<LOD	36394.00	163.00	403.70	1275.10	3448.00	5546.00
Something Else	49	395.50	292.24	535.25	36.20	4771.00	201.70	380.00	769.00	2816.00	2816.00
Dormitory	22	560.64	.	.	61.00	2923.00	304.60	459.00	1547.90	2024.00	2923.00

Table 12: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Year Home Built

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
1990-present	684	291.30	240.28	353.15	<LOD	11874.20	119.00	250.00	670.00	1805.80	2761.00
1978-1989	833	352.44	288.10	431.15	<LOD	21875.10	130.00	300.00	892.60	2696.60	4160.10
1960-1977	906	342.58	264.55	443.62	<LOD	85466.20	135.10	314.00	958.00	2265.00	4001.00
1950-1959	478	329.03	249.35	434.17	<LOD	29875.80	128.10	322.00	788.00	2123.50	4054.00
1940-1949	271	401.98	280.46	576.15	<LOD	33732.30	162.00	358.30	938.10	3523.60	5024.00
before 1940	566	381.92	262.93	554.75	<LOD	28834.10	155.00	369.00	987.30	2422.30	3599.00

Table 13: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Water Source

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Private-Public Water Company	4475	354.82	289.28	435.20	<LOD	85466.20	140.00	317.60	887.00	2501.70	4280.30
Private Public Well	464	418.88	325.82	538.53	<LOD	19082.90	149.70	377.10	1100.00	2615.00	4148.10
Some other Water Source	27	238.13	163.36	347.12	13.40	6242.50	124.00	185.00	260.00	1535.90	3947.40

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Table 14: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Helpings of Protein per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	15	226.15	103.76	492.88	12.70	2150.60	156.60	206.60	311.00	986.50	2150.60
1	163	306.70	171.45	548.65	<LOD	21097.70	85.80	299.10	1228.00	2851.90	6335.70
2	181	342.25	237.09	494.07	<LOD	18276.10	130.20	393.20	851.00	1586.20	2493.00
3+	97	199.33	113.97	348.62	<LOD	22596.80	50.70	143.80	809.60	1804.30	2582.20

Table 15: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Helpings of Milk/Dairy per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	73	393.32	228.70	676.43	<LOD	18276.10	135.10	393.90	1320.90	2582.20	4645.90
1	210	290.24	170.35	494.50	<LOD	21097.70	88.80	322.60	986.50	1669.40	4752.50
2	126	275.19	179.78	421.26	<LOD	12511.90	93.10	248.30	935.20	2057.60	2851.90
3+	49	253.56	115.53	556.51	<LOD	22596.80	84.00	229.30	817.60	1674.70	2597.30

Table 16: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Helpings of Fruit per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	45	532.93	278.92	1018.29	<LOD	12511.90	215.40	670.50	1328.60	4752.50	7461.70
1	195	332.02	222.08	496.40	<LOD	21097.70	97.00	358.30	935.20	1942.20	4346.20
2	144	302.95	173.61	528.65	<LOD	7062.60	98.50	356.00	1124.10	2057.60	2726.30
3+	73	147.09	81.25	266.30	<LOD	22596.80	53.30	125.20	393.20	1028.10	1508.50

Table 17: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Helpings of Vegetables per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	42	260.41	109.39	619.88	<LOD	12511.90	86.50	383.50	987.50	3151.90	12511.90
1	229	376.74	246.20	576.50	<LOD	21097.70	116.90	410.80	1083.90	2247.00	4346.20
2	181	342.25	237.09	494.07	<LOD	18276.10	130.20	393.20	851.00	1586.20	2493.00
3+	60	192.03	81.02	455.14	<LOD	22596.80	68.40	150.60	475.60	1455.40	2597.30

Table 18: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Helpings of Bread/grain per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	34	186.73	76.45	456.08	<LOD	4128.70	87.90	202.40	569.80	1743.50	3690.80
1	160	361.60	214.43	609.80	<LOD	21097.70	114.20	394.00	1228.00	2150.60	5765.70
2	162	260.91	152.84	445.40	<LOD	22596.80	77.00	281.20	1018.10	2034.00	2726.30
3+	101	286.09	170.08	481.22	<LOD	12511.90	106.10	252.40	738.80	2145.60	4645.90

Table 19: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Servings of Beans per month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	275	318.79	244.95	414.90	<LOD	36394.00	150.00	280.00	601.00	1505.00	2761.00
1 to 5	1049	328.91	277.42	389.96	<LOD	17838.00	152.00	301.00	664.00	1587.00	2545.00
6 to 10	541	298.59	267.77	332.97	<LOD	15976.00	135.00	290.00	574.00	1600.00	3137.00
11 to 15	305	264.99	207.03	339.17	<LOD	5319.00	127.00	238.00	513.00	1159.00	2345.00
15+	486	321.99	248.48	417.23	<LOD	14890.00	152.00	284.00	593.00	1856.00	3659.00

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Table 20: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Fish Consumed in Past Month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	1377	378.98	236.59	607.07	<LOD	63558.80	116.90	356.80	1183.10	3084.70	5888.60
No	840	552.60	377.83	808.20	<LOD	85466.20	177.60	550.20	1790.40	4552.70	7222.20

Table 21: 2,4- D and Shellfish Consumed in Past Month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	916	366.30	229.92	583.58	<LOD	63558.80	111.90	332.30	1197.30	3079.90	6047.90
No	1303	487.00	327.24	724.74	<LOD	85466.20	158.80	496.30	1528.50	4128.70	6994.30

Table 22: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Body Mass Index Category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Under Weight	91	352.21	230.70	537.73	20.30	8380.50	137.00	288.00	1019.00	3137.00	5588.00
Healthy Weight	2113	336.52	268.40	421.93	<LOD	85466.20	129.00	303.00	853.00	2417.00	4128.70
Over Weight	2730	379.82	312.15	462.16	<LOD	63558.80	149.00	345.70	946.10	2605.00	4346.20

Table 23: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Ever told you have Weak/Failing Kidneys

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	41	490.19	211.29	1137.19	<LOD	12511.90	138.00	584.50	1735.80	3102.60	4258.20
No	1270	442.32	288.47	678.20	<LOD	63558.80	131.20	423.00	1405.40	4160.10	7222.20

Table 24: Concentration of 2-Hydroxyfluorene in ng/L found in urine and total number of beers consumed per month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	833	433.06	285.84	656.09	<LOD	63558.80	137.30	453.30	1329.40	3829.40	6088.90
0-5	276	483.72	272.10	859.90	<LOD	33732.30	130.50	459.90	2175.40	4601.30	7663.50
6 to 10	72	423.99	225.95	795.60	<LOD	19269.80	116.30	461.20	1310.20	3097.80	7272.50
11 to 15	37	578.71	281.28	1190.65	14.30	21409.60	148.30	569.80	1888.60	6084.60	7361.00
16+	97	390.82	267.75	570.45	<LOD	21097.70	126.10	238.20	1053.10	3311.90	7908.90

Table 25: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Water (gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0 to 896	2197	392.76	316.49	487.42	<LOD	85466.20	155.10	349.00	989.00	2609.00	4645.90
897-1792g	1203	283.81	237.10	339.74	<LOD	22642.10	117.00	261.10	623.00	1875.40	3396.10
>1792g	840	328.08	263.99	407.72	<LOD	63558.80	123.00	288.00	883.00	2356.00	3563.00

Table 26: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Alcohol (gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	3889	349.10	288.96	421.77	<LOD	36394.00	140.00	317.00	836.00	2435.80	3888.00
0-28	630	317.59	225.29	447.72	<LOD	85466.20	116.30	278.00	957.40	2353.70	5144.00
>28	325	578.64	443.83	754.39	<LOD	28407.20	208.20	543.00	1743.00	4059.00	5588.00

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Table 27: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Caffeine(gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	945	359.85	289.00	448.07	<LOD	63558.80	157.00	328.00	802.40	2406.10	3084.70
0-400	3647	339.63	279.09	413.29	<LOD	85466.20	135.10	312.40	833.00	2326.00	4054.00
400+	252	593.93	424.65	830.70	<LOD	33732.30	173.30	716.00	1888.60	4284.00	8404.00

Table 28: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Fiber (gm) /day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0g	9	811.03	262.81	2502.84	198.40	4393.40	592.00	670.00	973.30	1952.00	1952.00
1 to 10	1692	473.98	384.66	584.05	<LOD	63558.80	186.00	414.00	1275.10	3095.10	5251.80
11 to 24	2531	320.22	256.37	399.96	<LOD	85466.20	128.00	294.20	816.30	2178.00	3637.00
25+	612	292.85	241.66	354.87	<LOD	28407.20	124.00	245.00	687.00	1636.30	3312.70

Table 29: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Breastfeeding Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Currently Breastfeeding	38	234.42	177.52	309.56	<LOD	1860.00	114.00	302.00	357.00	912.00	1630.00
Not currently Breastfeeding	93	631.64	306.86	1300.16	25.60	21875.10	272.00	469.00	2360.40	5797.00	8380.50

Table 30: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Liver Conditions

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Ever had a liver condition	87	447.04	294.71	678.11	14.60	21409.60	126.00	528.00	1465.00	3783.40	4882.00
Never had a liver condition	2847	375.03	305.82	459.90	<LOD	63558.80	139.00	332.00	1011.50	2726.30	4481.40

Table 31: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Anyone Smoke in the Home

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	1067	926.60	718.99	1194.15	<LOD	63558.80	347.00	991.00	2681.40	5251.80	8380.50
No	3940	279.34	232.13	336.16	<LOD	85466.20	123.00	261.00	610.00	1514.90	2696.60

Table 32: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Ever told that you have Diabetes?

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	259	285.55	221.06	368.87	<LOD	18276.10	107.00	266.00	645.20	1674.70	3985.80
No	4756	368.20	301.04	450.34	<LOD	85466.20	143.30	328.50	946.10	2552.80	4280.30

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Table 33: Concentration of 2-Hydroxyfluorene in ng/L found in urine by Currently Taking Birth Control Pills?

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	149	501.77	374.69	671.95	<LOD	29875.80	191.00	398.00	1060.10	3084.70	10289.30
No	405	348.72	263.97	460.69	<LOD	21875.10	126.00	314.00	991.00	3037.30	5791.60

Table 34: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Now Use Depo-Provera Injectables

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	44	640.86	365.40	1123.98	24.00	14511.40	324.10	421.00	1661.60	2923.00	14511.40
No	147	595.14	356.56	993.36	21.50	17276.70	186.00	476.00	1952.00	4361.00	8380.50

Table 35: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Currently Taking Estrogen Only Pills

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	122	299.61	201.35	445.82	<LOD	22596.80	124.00	261.00	781.50	1718.00	4148.10
No	123	209.14	142.19	307.62	<LOD	16239.00	58.90	170.80	793.00	2631.10	4645.90

Table 36: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Currently Taking Projestin Only Pills

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	25	207.92	128.92	335.34	18.10	22596.80	87.80	214.00	390.00	840.50	3747.00
No	49	161.56	112.28	232.47	12.00	2540.00	58.90	170.80	339.00	1221.80	1669.40

Table 37: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Currently Taking Estrogen-Projestin Pills

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	40	252.70	217.88	293.09	10.30	2902.90	92.00	300.00	717.00	1989.00	2312.00
No	28	135.18	106.12	172.19	<LOD	4645.90	74.00	98.50	341.00	477.00	513.00

Table 48: Concentration of 2-Hydroxyfluorene in ng/L found in urine and Number of Prescription Medications Taken

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	3076	389.15	316.22	478.92	<LOD	63558.80	155.00	345.70	967.00	2696.60	4546.70
1	796	347.49	263.69	457.91	<LOD	85466.20	130.20	309.00	920.00	2677.30	3853.00
2	419	337.37	250.28	454.76	<LOD	23952.40	143.60	309.00	932.00	1989.00	3599.00
3	307	316.30	243.66	410.58	<LOD	22596.80	118.00	294.00	794.00	2091.40	4280.30
4	153	358.08	280.70	456.80	23.00	11838.90	123.00	296.20	996.00	2540.00	4626.60
5	109	272.28	182.76	405.64	<LOD	18276.10	106.10	302.00	716.00	1508.50	3640.00
6+	200	328.88	253.87	426.05	<LOD	27201.00	126.00	281.00	910.70	2939.80	5319.00

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Classification and Regression Tree Presented in the text

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APPENDIX 30: 3-HYDROXYFLUORENE

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Table 1: Concentration of 3-Hydroxyfluorene in ng/L found in urine by age category

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Age 5-11	693	106.28	89.13	126.74	<LOD	16112.00	57.20	98.80	200.00	373.00	639.00
Age 12-19	1425	154.36	124.25	191.78	<LOD	12804.80	68.00	136.40	334.00	1001.10	1663.00
Age 20-40	1155	188.48	147.83	240.31	<LOD	29328.30	64.00	150.90	543.50	1713.30	2906.00
Age 41-55	708	152.82	125.19	186.56	<LOD	26559.90	50.00	125.00	477.20	1540.90	2237.00
Age 55+	1076	104.96	86.64	127.14	<LOD	13615.90	38.00	91.00	239.90	866.20	1897.70

Table 2: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Occupation

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Executive, Administrators, & Managers	139	85.90	64.31	114.73	<LOD	6321.60	37.40	76.00	164.10	621.10	1063.00
Management Related	50	117.84	89.57	155.05	<LOD	11866.40	50.00	98.00	246.00	670.70	855.00
Engineers, Architects, and Scientists	51	110.68	85.22	143.73	<LOD	2103.00	49.70	104.10	213.00	461.20	742.60
Health Diagnosing, Assessing & Treating	41	69.21	54.32	88.17	<LOD	1656.00	35.00	81.00	129.00	283.90	398.10
Teachers	72	68.80	50.79	93.20	<LOD	1916.40	33.00	69.00	141.00	359.60	437.00
Writers, Artists, Entertainers & Athletes	37	118.63	73.69	190.97	<LOD	2492.10	62.00	111.00	246.20	647.00	1245.90
Other Professional Speciality	52	97.19	59.79	157.97	<LOD	6807.20	29.10	82.00	171.00	1385.80	2903.30
Technicians and Related Supported	54	161.33	121.09	214.96	<LOD	2380.00	50.00	169.00	412.00	1192.70	2007.40
Supervisors and Proprietors, Sales	40	160.05	95.69	267.69	<LOD	6243.90	60.00	130.20	474.10	1655.00	2291.20
Sales Representatives,finance,business,commodities	56	114.97	86.09	153.53	<LOD	5803.00	58.00	97.00	234.00	552.30	1923.30
Sales Workers, retail & personal services	141	135.03	103.79	175.66	<LOD	9471.00	49.00	129.00	361.00	908.40	1363.00
Secretaries, Stenographers, and typists	31	143.96	39.25	527.98	<LOD	1713.30	42.00	107.30	768.70	1713.30	1713.30
Information Clerks	28	189.78	61.82	582.65	<LOD	1626.10	77.00	145.00	832.10	1301.00	1626.10
Records Processing	63	153.87	95.04	249.12	<LOD	8055.50	34.00	127.00	567.40	2528.00	4196.90
Material Recording, Scheduling,distributing clerks	33	140.61	81.18	243.55	<LOD	5019.70	42.00	137.00	270.70	749.00	4726.80
Miscellaneous administrative support	124	170.68	122.20	238.40	<LOD	13208.80	55.90	143.00	449.00	1451.00	3315.00
Private Household	18	84.47	66.45	107.36	<LOD	1390.30	46.80	80.00	139.30	298.20	298.20
Protective Service	33	189.70	83.82	429.36	<LOD	4368.60	78.00	123.00	414.00	2414.00	3013.90
Waiters and Waitresses	39	256.60	159.36	413.17	<LOD	12804.80	92.00	147.00	811.00	1893.00	2262.00
Cooks	54	268.16	140.33	512.46	<LOD	8602.80	66.90	180.70	955.40	2549.60	8094.70
Miscellaneous food preparation and service	56	328.66	273.25	395.29	<LOD	12085.10	79.00	222.00	1220.00	3386.30	4803.00
Health Service Occupation	51	239.33	124.30	460.82	<LOD	6711.80	77.00	141.50	1003.00	1624.00	2320.00
Cleaning and Building Service	71	211.30	151.15	295.41	<LOD	11034.20	67.40	165.00	694.00	2701.90	4523.00
Personal Service	52	112.17	67.86	185.44	<LOD	2804.80	41.00	99.00	207.00	744.10	1678.60
Farm Operators, Managers and Supervisors	7	281.42	.	.	<LOD	1490.70	111.00	390.00	664.70	1490.70	1490.70
Farm and Nursery Workers	27	186.13	111.18	311.60	<LOD	1496.40	78.20	181.70	462.60	493.10	540.70
Related Agricultural, Forestry and Fishing	44	268.95	138.31	522.97	<LOD	4924.20	71.00	218.30	1152.90	4705.00	4924.20
Vehicle and Mobile Equipment Mechanics, Repairs	27	408.32	273.97	608.54	<LOD	5130.20	155.00	409.50	1463.00	3350.60	5130.20
Other Mechanics and repairers	37	300.94	161.76	559.88	<LOD	6062.70	108.80	311.90	888.10	2813.00	6062.70
Construction traders	117	343.30	240.79	489.45	<LOD	26559.90	90.80	414.00	1075.80	2241.80	4064.50
Extractive and Precision Production	45	123.92	71.41	215.02	<LOD	3745.00	58.00	122.00	278.60	562.00	1528.00
Textile, apparel and furnishings machine operators	17	140.37	63.09	312.34	<LOD	2743.00	41.60	115.00	391.60	2743.00	2743.00
Machine Operators, Assorted Materials	61	321.52	172.87	598.00	<LOD	29328.30	113.80	341.00	872.50	3261.00	4431.90
Fabricators, Assemblers, Inspectors, and Samplers	46	191.60	153.18	239.66	<LOD	2868.10	81.20	284.60	663.00	1321.00	1510.80
Motor vehicle operators	65	296.89	156.26	564.07	<LOD	11135.20	95.00	187.00	1463.00	2906.00	4677.90
Other transportation and material moving	20	218.92	111.11	431.34	23.00	2064.60	96.00	298.00	811.00	1927.00	2064.60
Construction laborers	29	271.09	92.37	795.55	25.00	6825.20	105.30	177.80	788.00	1659.00	6825.20
Laborers, except construction	5	2334.54	.	.	99.00	17553.90	542.00	673.00	17553.90	17553.90	17553.90
Frieght, Stock, and Material Movers, hand	43	291.32	208.51	407.03	<LOD	9748.90	129.70	286.00	584.70	1939.60	2492.60
Other helpers, equipment cleaners, hand packages and laborers	26	233.93	86.20	634.86	<LOD	11030.20	63.00	148.30	559.00	2608.00	4324.00

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Table 3: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Employment Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Working at a Job or Business	1056	141.00	122.45	162.35	<LOD	9471.00	62.00	122.00	291.00	1063.00	1655.00
With a Job but not at Work	52	134.55	68.10	265.86	<LOD	2900.00	64.00	103.00	292.00	916.00	1394.00
Looking for Work	54	290.96	163.18	518.79	<LOD	6199.00	81.00	355.00	920.00	1454.00	2279.00
Not working at a job or Business	813	132.62	112.02	157.01	<LOD	6556.00	53.00	100.00	321.00	1199.00	2047.00

Table 4: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Income

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
$0-$4 999	111	209.11	140.64	310.90	<LOD	8129.60	62.00	186.60	823.00	1508.40	1697.00
$ 5000-$9 999	294	134.55	68.10	265.86	<LOD	2900.00	64.00	103.00	292.00	916.00	1394.00
$10 000-$14 999	388	290.96	163.18	518.79	<LOD	6199.00	81.00	355.00	920.00	1454.00	2279.00
$15 000-$19 999	389	132.62	112.02	157.01	<LOD	6556.00	53.00	100.00	321.00	1199.00	2047.00
$20 000-$24 999	370	205.10	136.91	307.24	<LOD	29328.30	59.00	155.00	621.00	2868.10	4803.00
$25 000-$34 999	588	133.79	102.27	175.02	<LOD	12804.80	48.00	101.00	340.10	1484.00	2101.80
$35 000-$44 999	465	174.60	134.49	226.67	<LOD	26559.90	55.00	147.00	545.50	1420.00	2237.00
$45 000-$54 999	392	157.53	120.76	205.51	<LOD	10641.40	67.40	131.00	390.00	1247.30	2262.00
$55 000-$64 999	308	124.10	92.77	166.02	<LOD	11135.20	43.50	107.00	326.40	1001.10	1663.00
$65 000-$74 999	234	133.62	99.64	179.17	<LOD	6711.80	44.10	99.00	343.00	1058.00	1881.00
$75 000 and over	863	102.37	83.81	125.04	<LOD	13615.90	46.30	92.50	202.00	631.40	997.00

Table 5: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Race/Ethnicity

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Non-Hispanic White	2049	139.98	112.06	174.86	<LOD	26559.90	51.00	115.00	355.00	1279.00	2189.00
Non-Hispanic Black	1226	228.45	179.90	290.12	<LOD	29328.30	80.60	178.00	705.00	1788.60	3516.90
Mexican American	1410	106.88	89.06	128.27	<LOD	8106.90	45.20	99.30	234.00	624.00	1103.00
Other Race-Including MultiRacial	132	112.26	81.17	155.25	<LOD	3783.60	53.00	83.00	190.00	1058.00	1821.50
Other Hispanic	*240*	*180.73*	*127.71*	*255.76*	*<LOD*	*16112.00*	*61.00*	*143.60*	*543.50*	*1618.00*	*2083.70*

Table 6: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Gender

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Male	2451	171.93	138.71	213.10	<LOD	29328.30	63.50	141.00	445.20	1469.00	2327.10
Female	2606	125.91	105.17	150.75	<LOD	16112.00	44.00	108.00	311.50	1142.20	1923.30

Table 7: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Education

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Less than High School	2911	160.08	133.26	192.30	<LOD	29328.30	61.30	137.00	370.50	1339.50	2262.00
High School Diploma	778	208.75	164.44	265.01	<LOD	26559.90	64.00	173.00	687.70	1865.80	3068.00
More than High School	1361	113.59	91.89	140.41	<LOD	13615.90	43.00	95.00	249.00	962.00	1821.50

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Table 8: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Marital Status

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Married	1655	129.57	104.22	161.08	<LOD	26559.90	48.00	104.10	334.00	1177.00	2064.60
Widowed	253	109.18	89.41	133.31	<LOD	10644.80	42.50	89.00	207.00	687.80	1724.40
Divorced	245	253.95	178.59	361.11	<LOD	13615.90	72.00	207.50	1080.00	2538.00	3783.60
Separated	107	395.92	240.82	650.91	<LOD	17897.40	96.00	429.00	1713.30	3489.00	5393.00
Never Married	1424	185.85	152.21	226.91	<LOD	12804.80	71.70	162.00	499.00	1362.00	2080.90
Living with Partner	154	248.40	177.27	348.07	<LOD	29328.30	73.00	206.00	968.20	1975.00	2900.00

Table 9: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Country of Birth

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Born in the US	4058	150.98	123.54	184.51	<LOD	29328.30	54.80	125.00	390.00	1363.00	2262.00
Born in Mexico	613	108.88	90.53	130.96	<LOD	4744.10	46.30	104.00	240.20	595.00	1158.10
Born Elsewhere	354	124.92	85.56	182.41	<LOD	10644.80	46.00	108.80	309.50	1058.00	2083.70

Table 10: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Pregnancy Status

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Pregnant	205	84.13	60.22	117.53	<LOD	9471.00	41.00	67.00	138.00	742.00	1897.70
Not Pregnant	1304	146.40	120.85	177.36	<LOD	13208.80	51.90	122.20	364.00	1508.40	2492.10

Table 11: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Type of Home

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
A Mobile Home or Trailer	403	215.97	169.81	274.67	<LOD	17897.40	74.50	179.00	742.10	1835.10	2492.20
A detached single family home	3069	130.59	104.15	163.74	<LOD	29328.30	50.00	109.10	314.10	1063.00	1875.00
Attached Single Family Home	402	140.41	106.51	185.11	<LOD	7706.60	52.20	123.00	358.00	1362.00	1903.00
An Apartment	1058	184.39	145.65	233.43	<LOD	17553.90	59.00	152.50	578.00	2007.40	3315.00
Something Else	49	155.60	111.93	216.30	<LOD	4437.00	59.00	170.00	294.90	988.00	988.00
Dormitory	22	280.29	.	.	42.00	5850.00	161.00	166.00	624.70	1214.00	5850.00

Table 12: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Year Home Built

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
1990-present	683	114.98	95.16	138.92	<LOD	10641.40	47.00	93.00	237.00	830.00	1330.00
1978-1989	832	140.53	115.07	171.62	<LOD	12085.10	50.80	107.00	370.50	1362.00	2088.10
1960-1977	906	138.69	105.93	181.58	<LOD	16112.00	49.00	117.80	322.00	1358.00	2034.00
1950-1959	478	133.50	101.51	175.57	<LOD	13208.80	51.90	115.00	354.10	992.00	2280.00
1940-1949	271	166.91	116.79	238.55	<LOD	26559.90	65.00	133.80	517.00	1626.10	2674.10
before 1940	566	158.83	111.13	227.03	<LOD	17553.90	54.50	141.00	409.50	1363.00	2189.00

Table 13: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Water Source

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Private-Public Water Company	4472	143.03	117.83	173.63	<LOD	29328.30	52.20	117.30	355.00	1301.00	2186.80
Private Public Well	464	167.77	126.73	222.11	<LOD	8094.70	59.00	160.00	454.40	1463.00	2091.00
Some other Water Source	27	98.43	43.49	222.75	<LOD	2033.00	54.00	81.00	111.00	736.20	1529.50

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Table 14: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Helpings of Protein per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	15	82.54	51.76	131.65	<LOD	765.70	42.20	79.80	113.20	388.10	765.70
1	163	107.84	63.15	184.14	<LOD	11135.20	25.00	95.40	349.90	1423.30	3596.70
2	181	111.73	78.09	159.85	<LOD	10644.80	38.80	122.70	287.40	673.80	1066.60
3+	97	77.61	48.29	124.73	<LOD	13615.90	22.30	52.60	200.40	825.80	1913.50

Table 15: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Helpings of Milk/Dairy per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	73	158.45	91.96	273.02	<LOD	10644.80	48.40	159.80	485.70	1913.50	2492.20
1	210	95.77	60.87	150.69	<LOD	11135.20	28.30	101.10	250.20	673.80	2094.90
2	126	93.62	63.15	138.78	<LOD	5376.50	28.60	80.60	274.60	874.60	1301.30
3+	49	97.64	46.10	206.80	<LOD	13615.90	27.80	78.00	292.50	664.70	5153.20

Table 16: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Helpings of Fruit per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	45	194.43	95.72	394.92	<LOD	3941.80	63.30	202.80	591.60	2492.20	3681.80
1	195	111.75	78.43	159.22	<LOD	11135.20	33.50	112.30	250.20	825.80	1662.40
2	144	112.36	64.17	196.75	<LOD	6825.20	31.70	122.70	375.20	1301.30	1913.50
3+	73	48.08	28.67	80.63	<LOD	13615.90	15.70	36.20	101.10	494.90	545.10

Table 17: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Helpings of Vegetables per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	42	89.02	42.87	184.85	<LOD	2646.80	28.30	99.90	274.60	1853.20	2284.60
1	229	123.16	85.19	178.06	<LOD	11135.20	38.80	125.00	340.10	1339.50	2094.90
2	181	111.73	78.09	159.85	<LOD	10644.80	38.80	122.70	287.40	673.80	1066.60
3+	60	68.45	32.67	143.38	<LOD	13615.90	20.30	46.40	191.50	494.90	664.70

Table 18: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Helpings of Bread/grain per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	34	87.13	37.65	201.62	<LOD	2253.70	28.60	54.90	290.80	1307.90	1339.50
1	160	125.81	78.58	201.43	<LOD	11135.20	33.30	126.90	365.00	1187.50	2646.80
2	162	84.68	51.09	140.37	<LOD	13615.90	19.40	67.40	260.40	825.80	1423.30
3+	101	103.66	64.62	166.30	<LOD	5153.20	31.70	122.60	260.80	664.70	2284.60

Table 19: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Servings of Beans per month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	275	142.10	114.25	176.73	<LOD	9471.00	64.00	121.00	233.00	954.00	1548.00
1 to 5	1049	141.50	115.65	173.12	<LOD	5655.00	64.00	122.00	290.00	923.00	1576.00
6 to 10	541	117.66	100.99	137.09	<LOD	6199.00	53.00	95.00	235.00	795.00	1438.00
11 to 15	305	106.05	80.96	138.91	<LOD	3068.00	49.00	91.00	203.00	526.00	1659.00
15+	486	136.30	104.83	177.21	<LOD	6556.00	54.00	106.00	308.00	1063.00	2262.00

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Table 20: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Fish Consumed in Past Month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	1376	141.83	90.15	223.13	<LOD	29328.30	38.80	123.00	472.10	1540.90	2701.90
No	838	227.75	159.64	324.90	<LOD	17553.90	66.80	212.10	832.10	2360.30	4431.90

Table 21:Concentration of 3-Hydroxyfluorene in ng/L found in urine and Shellfish Consumed in Past Month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	914	136.60	87.65	212.89	<LOD	29328.30	37.20	113.60	449.80	1662.40	3013.90
No	1302	193.47	133.90	279.54	<LOD	17897.40	54.50	186.00	668.10	1993.60	3593.00

Table 22: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Body Mass Index Category

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Under Weight	91	138.95	93.40	206.72	<LOD	4431.90	47.00	99.00	246.00	1618.00	3357.00
Healthy Weight	2111	144.52	116.87	178.71	<LOD	26559.90	56.00	116.00	368.00	1362.00	2363.80
Over Weight	2729	147.28	120.90	179.43	<LOD	29328.30	53.00	124.00	372.00	1301.30	2101.80

Table 23: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Ever told you have Weak/Failing Kidneys

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	41	166.17	73.71	374.62	<LOD	2692.20	46.80	129.00	861.60	1713.30	1724.40
No	1269	170.31	113.08	256.50	<LOD	29328.30	41.90	145.60	631.40	2064.60	3805.80

Table 24: Concentration of 3-Hydroxyfluorene in ng/L found in urine and total number of beers consumed per month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	832	154.78	105.99	226.03	<LOD	29328.30	42.10	141.70	474.10	1678.60	2646.80
0-5	276	194.09	102.49	367.57	<LOD	26559.90	39.20	178.70	916.30	2716.50	4610.20
6 to 10	72	193.17	106.91	349.04	<LOD	6825.20	58.30	169.00	723.80	2703.80	3261.00
11 to 15	37	245.35	96.94	620.99	<LOD	11030.20	36.70	191.20	1070.40	5130.20	5558.30
16+	97	174.11	116.95	259.22	<LOD	11135.20	40.80	129.00	567.40	2088.10	3783.60

Table 25: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Water (gm)/day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0 to 896	2195	159.51	130.66	194.73	<LOD	26559.90	60.00	134.00	414.00	1250.00	2377.30
897-1792g	1203	109.76	91.89	131.10	<LOD	9753.10	42.30	92.00	245.20	890.00	1713.30
>1792g	839	136.10	109.78	168.75	<LOD	29328.30	48.80	117.00	370.00	1257.40	2034.00

Table 26: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Alcohol (gm)/day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	3886	138.35	114.83	166.69	<LOD	17897.40	52.00	117.00	324.00	1096.00	1993.00
0-28	630	126.06	90.24	176.09	<LOD	29328.30	40.00	100.00	355.00	1410.70	2414.00
>28	325	272.73	206.78	359.70	<LOD	11866.40	83.00	233.00	969.60	2230.00	3376.10

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Table 27: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Caffeine(gm)/day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	945	138.82	111.80	172.36	<LOD	29328.30	55.00	121.00	338.60	1118.50	1724.40
0-400	3644	136.45	113.47	164.07	<LOD	17897.40	51.00	115.00	331.30	1147.40	2072.70
400+	252	263.05	181.43	381.36	<LOD	26559.90	61.90	244.00	1175.50	2528.00	4542.80

Table 28: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Fiber (gm) /day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0g	9	505.12	218.80	1166.15	70.00	2361.20	412.00	563.00	584.70	1231.00	1231.00
1 to 10	1692	202.98	165.35	249.18	<LOD	29328.30	71.70	169.00	565.20	1678.60	2846.00
11 to 24	2529	126.38	102.01	156.56	<LOD	26559.90	48.00	104.70	291.00	1034.10	1993.00
25+	611	109.32	89.96	132.85	<LOD	11034.20	43.50	86.00	246.00	770.70	1460.10

Table 29: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Breastfeeding Status

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Currently Breastfeeding	38	69.11	53.91	88.59	<LOD	865.10	34.00	85.00	98.40	301.00	621.00
Not currently Breastfeeding	93	205.20	92.27	456.37	<LOD	12085.10	66.00	161.30	628.40	4431.90	4431.90

Table 30: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Liver Conditions

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Ever had a liver condition	87	175.97	113.87	271.93	<LOD	11030.20	39.00	164.40	691.70	1821.50	2320.00
Never had a liver condition	2846	150.42	123.50	183.21	<LOD	29328.30	51.00	122.00	422.20	1469.00	2492.10

Table 31: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Anyone Smoke in the Home

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	1067	462.68	363.36	589.15	<LOD	29328.30	143.00	536.00	1523.00	3013.90	4726.80
No	3937	106.02	89.24	125.95	<LOD	16112.00	45.00	94.30	222.00	633.00	1192.70

Table 32: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Ever told that you have Diabetes?

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	259	92.52	67.47	126.87	<LOD	10644.80	33.90	79.00	232.00	776.00	2062.00
No	4753	150.43	124.58	181.64	<LOD	29328.30	55.90	123.00	382.80	1356.50	2230.00

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Table 33: Concentration of 3-Hydroxyfluorene in ng/L found in urine by Currently Taking Birth Control Pills?

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	149	177.89	132.26	239.28	<LOD	13208.80	69.00	145.00	472.10	1656.00	3805.80
No	405	144.87	108.26	193.85	<LOD	12085.10	49.00	122.00	398.10	1528.00	3068.00

Table 34: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Now Use Depo-Provera Injectables

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	44	302.05	160.22	569.43	<LOD	6807.20	122.20	244.00	615.00	4523.00	6807.20
No	147	268.06	157.66	455.77	<LOD	5868.40	66.00	178.70	1192.70	2528.00	4431.90

Table 35: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Currently Taking Estrogen Only Pills

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	122	111.53	79.79	155.90	<LOD	13615.90	42.10	88.00	284.60	944.00	2080.90
No	123	88.37	60.89	128.25	<LOD	7212.50	21.30	66.80	322.00	1626.10	2237.00

Table 36: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Currently Taking Projestin Only Pills

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	25	85.04	70.51	102.57	<LOD	13615.90	36.70	83.00	155.00	551.00	4705.00
No	49	65.56	42.46	101.23	<LOD	2079.00	22.00	53.00	141.00	359.60	1607.00

Table 37: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Currently Taking Estrogen-Projestin Pills

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	40	80.13	70.41	91.20	<LOD	1719.20	36.00	53.00	156.40	1394.00	1576.00
No	28	56.77	39.63	81.32	<LOD	2492.20	25.00	51.90	106.00	233.00	399.00

Table 38: Concentration of 3-Hydroxyfluorene in ng/L found in urine and Number of Prescription Medications Taken

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	3073	162.69	131.46	201.34	<LOD	29328.30	60.00	131.00	414.00	1420.00	2317.50
1	796	136.91	105.34	177.94	<LOD	16112.00	44.70	110.00	373.60	1258.90	2094.90
2	419	137.67	103.37	183.36	<LOD	17897.40	56.00	122.20	340.10	1070.40	2034.00
3	307	117.12	89.62	153.04	<LOD	13615.90	49.70	100.00	275.00	913.00	1881.00
4	153	145.03	110.24	190.79	<LOD	6711.80	42.20	122.70	341.20	1337.00	2002.00
5	109	96.02	62.68	147.09	<LOD	10644.80	35.10	79.00	234.00	672.00	1400.00
6+	200	114.96	88.41	149.48	<LOD	5376.50	39.00	82.80	407.00	1844.70	2237.00

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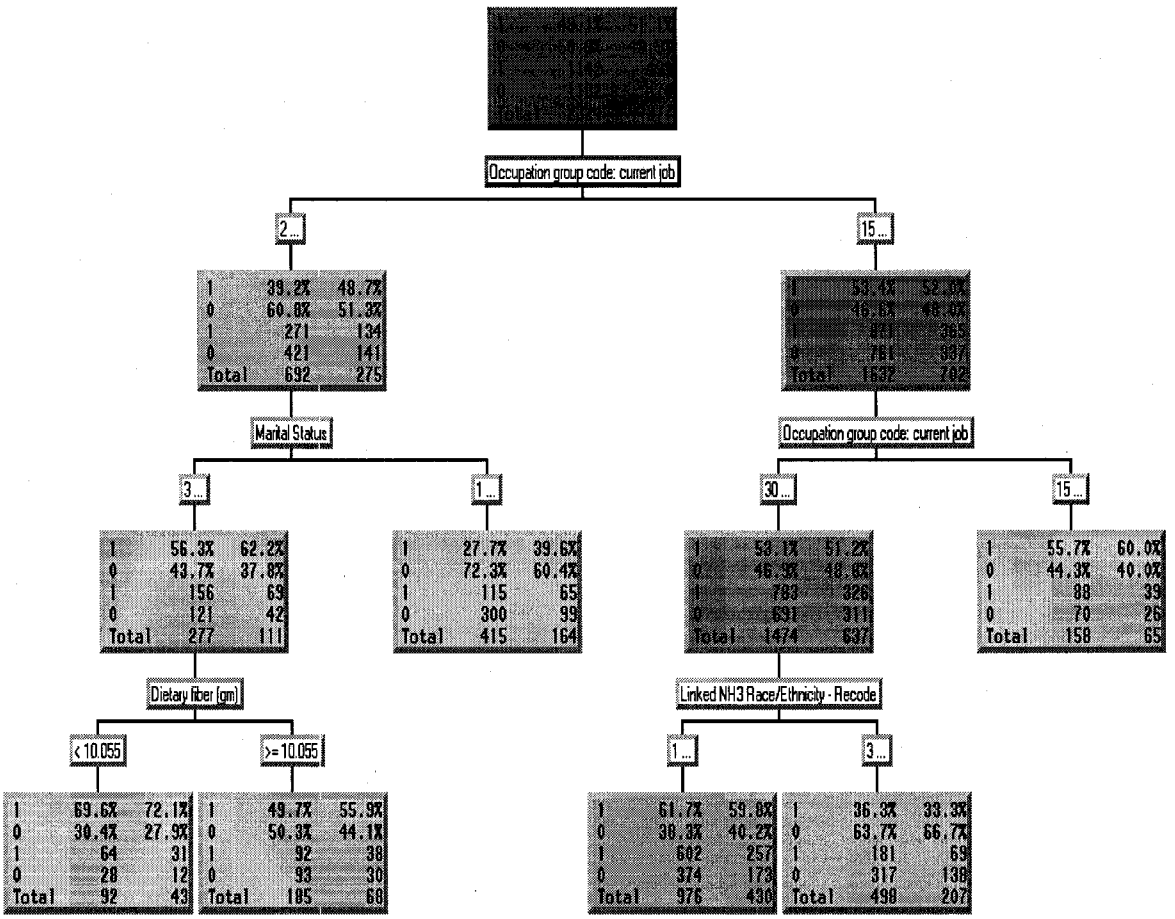
Classification and Regression Tree for 3-hydroxyfluorene



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APPENDIX 31: 1-HYDROXYPHENANTHRENE

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Table 1: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine by age category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Age 5-11	681	121.12	103.27	142.04	<LOD	27671.50	63.00	121.00	247.00	412.00	601.30
Age 12-19	1413	147.34	126.34	171.83	<LOD	23634.00	74.40	146.70	297.70	546.00	809.90
Age 20-40	1140	158.42	134.66	186.38	<LOD	6310.40	76.20	159.90	343.10	644.10	891.10
Age 41-55	697	147.60	124.31	175.25	<LOD	12665.00	74.30	144.00	306.50	626.00	949.40
Age 55+	1056	134.48	117.32	154.15	<LOD	17806.90	64.30	139.00	286.00	520.70	692.00

Table 2: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Occupation

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Executive, Administrators, & Managers	137	125.38	102.90	152.77	<LOD	7386.00	66.00	125.00	198.00	586.70	764.60
Management Related	48	123.67	107.49	142.29	22.00	1372.00	57.00	117.00	224.00	443.00	796.00
Engineers, Architects, and Scientists	49	143.76	114.04	181.21	<LOD	1272.40	63.00	156.30	353.00	481.00	753.00
Health Diagnosing, Assessing & Treating	41	111.91	96.86	129.30	<LOD	2657.00	56.80	102.00	182.00	435.70	471.20
Teachers	71	110.40	80.95	150.58	<LOD	3162.00	57.00	116.00	209.10	507.00	769.00
Writers, Artists, Entertainers & Athletes	35	120.48	100.09	145.02	<LOD	819.00	79.20	142.00	207.00	382.10	582.90
Other Professional Speciality	52	130.49	90.57	188.00	<LOD	1281.40	58.90	165.00	354.00	539.50	626.00
Technicians and Related Supported	54	132.77	108.26	162.83	<LOD	1101.00	79.00	134.00	226.00	649.00	902.50
Supervisors and Proprietors, Sales	38	148.56	100.14	220.38	<LOD	1579.50	85.00	137.00	274.00	729.00	992.50
Sales Representatives,finance,business,commodities	55	120.05	92.57	155.70	17.00	3145.00	53.00	95.00	364.20	582.00	759.00
Sales Workers, retail & personal services	140	144.46	114.75	181.88	<LOD	23634.00	73.10	143.00	300.60	607.00	772.00
Secretaries, Stenographers, and typists	31	143.66	86.03	239.90	<LOD	1243.50	70.50	252.00	357.00	487.40	651.00
Information Clerks	28	180.75	81.20	402.32	<LOD	753.10	101.00	204.00	414.40	677.90	753.10
Records Processing	62	164.62	120.60	224.72	<LOD	7667.70	65.00	135.00	426.00	743.00	1963.10
Material Recording, Scheduling,distributing clerks	33	135.33	76.46	239.53	<LOD	1090.00	59.50	148.00	343.10	429.10	533.10
Miscellaneous administrative support	121	166.38	122.91	225.22	<LOD	4189.00	93.00	208.90	278.00	681.30	1094.70
Private Household	18	147.75	119.00	183.45	22.00	503.50	142.40	173.00	341.10	354.80	354.80
Protective Service	33	149.33	103.69	215.06	<LOD	12665.00	58.00	149.00	279.70	454.00	854.00
Waiters and Waitresses	40	170.83	138.15	211.24	25.10	1963.60	121.00	199.00	334.00	472.90	649.00
Cooks	53	187.75	151.40	232.83	19.50	3100.00	71.00	179.30	515.00	697.70	1012.20
Miscellaneous food preparation and service	56	238.80	161.28	353.58	<LOD	2524.20	109.00	244.30	419.80	970.00	1528.80
Health Service Occupation	51	240.47	197.80	292.34	<LOD	1469.00	136.00	241.00	479.80	713.00	1256.00
Cleaning and Building Service	70	145.00	90.33	232.76	<LOD	4912.90	88.10	133.30	248.00	426.00	1099.90
Personal Service	51	134.79	100.66	180.50	<LOD	1611.00	79.70	147.00	304.30	602.00	868.70
Farm Operators, Managers and Supervisors	7	319.40	.	.	26.40	883.00	263.00	488.20	883.00	883.00	883.00
Farm and Nursery Workers	27	120.31	75.68	191.25	28.90	2097.20	67.70	102.10	146.70	490.30	490.30
Related Agricultural, Forestry and Fishing	42	161.08	114.84	225.95	<LOD	1823.00	114.00	169.00	402.50	584.70	595.00
Vehicle and Mobile Equipment Mechanics, Repairs	26	208.87	133.58	326.59	33.00	960.00	86.60	266.50	430.70	672.40	960.00
Other Mechanics and repairers	38	220.39	191.01	254.29	23.00	898.70	111.80	295.30	550.00	623.00	845.00
Construction traders	117	214.37	159.42	288.25	<LOD	6084.00	103.80	215.80	391.00	741.00	1121.70
Extractive and Precision Production	44	140.63	80.44	245.84	15.40	5390.00	60.80	123.00	221.00	518.00	823.50
Textile, apparel and furnishings machine operators	17	160.75	102.49	252.14	18.00	763.00	91.30	160.00	439.00	763.00	763.00
Machine Operators, Assorted Materials	60	209.56	154.64	283.98	<LOD	2246.90	90.00	204.00	405.80	934.70	1103.80
Fabricators, Assemblers, Inspectors, and Samplers	45	165.64	97.94	280.15	23.40	1448.50	58.90	189.00	482.60	730.00	1448.50
Motor vehicle operators	65	219.15	138.19	347.56	24.00	5462.00	118.00	208.20	375.00	669.00	1586.30
Other transportation and material moving	20	198.26	101.95	385.56	37.00	1361.50	118.00	169.00	368.00	669.00	1361.50
Construction laborers	26	199.30	114.10	348.14	37.00	3098.10	119.00	213.20	313.00	746.10	746.10
Laborers, except construction	5	1017.04	.	.	77.20	3247.20	375.00	409.00	3247.20	3247.20	3247.20
Frieght, Stock, and Material Movers, hand	43	106.18	66.19	170.34	<LOD	6310.40	51.60	118.10	243.00	475.00	543.50
Other helpers, equipment cleaners, hand packages and laborers	24	127.81	37.85	431.55	<LOD	1035.00	40.00	133.00	441.00	700.00	1035.00

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Table 3: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Employment Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Working at a Job or Business	1055	147.15	132.34	163.61	<LOD	23634.00	79.00	143.00	289.00	518.00	759.00
With a Job but not at Work	52	172.22	121.40	244.31	35.00	846.00	109.00	187.00	271.00	426.00	451.00
Looking for Work	54	178.27	129.03	246.30	47.00	1180.00	74.00	193.00	273.00	506.00	650.00
Not working at a job or Business	811	139.35	119.93	161.92	<LOD	13743.00	77.00	147.00	270.00	473.00	608.00

Table 4: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Income

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
$0-$4 999	110	164.59	117.77	230.03	<LOD	1206.70	87.00	177.60	305.00	817.00	1186.00
$ 5000-$9 999	289	172.22	121.40	244.31	35.00	846.00	109.00	187.00	271.00	426.00	451.00
$10 000-$14 999	384	178.27	129.03	246.30	47.00	1180.00	74.00	193.00	273.00	506.00	650.00
$15 000-$19 999	384	139.35	119.93	161.92	<LOD	13743.00	77.00	147.00	270.00	473.00	608.00
$20 000-$24 999	360	175.05	133.72	229.16	<LOD	27671.50	81.00	168.20	432.00	741.90	975.00
$25 000-$34 999	578	132.27	111.82	156.46	<LOD	22334.00	69.40	132.00	270.10	502.00	720.50
$35 000-$44 999	461	163.35	128.17	208.18	<LOD	7667.70	68.00	159.00	363.90	753.10	1129.00
$45 000-$54 999	389	147.08	116.27	186.05	<LOD	12438.90	79.00	142.50	319.40	570.50	697.70
$55 000-$64 999	304	131.20	107.81	159.66	<LOD	2431.10	60.40	138.00	291.00	539.50	793.00
$65 000-$74 999	230	151.93	120.68	191.27	<LOD	12517.60	63.00	138.40	278.00	595.00	862.00
$75 000 and over	849	129.26	110.87	150.69	<LOD	6085.30	65.00	137.00	248.90	489.10	784.80

Table 5: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Race/Ethnicity

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Non-Hispanic White	2019	147.07	134.90	173.16	<LOD	23634.00	73.00	147.80	312.30	580.80	845.00
Non-Hispanic Black	1206	155.39	128.18	188.38	<LOD	12665.00	73.20	153.00	326.00	667.20	1012.20
Mexican American	1391	115.65	99.50	134.43	<LOD	10522.70	57.60	115.00	221.00	399.00	605.00
Other Race-Including MultiRacial	131	119.55	100.51	142.21	<LOD	2011.00	63.00	123.00	203.10	412.30	703.60
Other Hispanic	240	166.33	118.49	233.49	<LOD	27671.50	74.00	187.00	334.40	674.00	1121.70

Table 6: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Gender

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Male	2416	150.73	130.44	174.18	<LOD	10522.70	76.00	145.00	311.90	584.70	832.80
Female	2571	140.43	122.11	161.50	<LOD	27671.50	66.00	145.80	300.80	571.70	821.50

Table 7: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Education

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Less than High School	2872	145.92	126.88	167.81	<LOD	27671.50	72.00	151.10	301.10	534.90	763.00
High School Diploma	768	173.95	143.40	211.00	<LOD	22334.00	90.00	168.20	364.20	650.50	1121.70
More than High School	1340	132.61	114.78	153.20	<LOD	17806.90	62.00	132.00	279.10	588.70	821.50

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Table 8: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Marital Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Married	1628	143.60	123.21	167.36	<LOD	17806.90	71.90	142.00	306.00	582.90	858.50
Widowed	250	134.97	107.98	168.71	<LOD	13743.00	73.00	153.00	261.00	473.00	688.70
Divorced	244	180.39	140.25	232.01	<LOD	6084.00	92.00	200.00	411.00	707.00	960.00
Separated	107	217.09	148.96	316.39	<LOD	12665.00	100.20	244.00	506.00	992.50	1372.00
Never Married	1407	157.57	135.41	183.37	<LOD	8571.10	80.70	162.00	313.00	618.20	862.00
Living with Partner	154	187.74	149.93	235.09	<LOD	23634.00	86.30	193.00	393.60	713.00	769.00

Table 9: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Country of Birth

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Born in the US	4006	147.05	127.03	170.22	<LOD	27671.50	72.00	147.00	307.00	588.00	844.70
Born in Mexico	602	116.27	96.99	139.40	<LOD	5806.00	57.00	113.20	217.00	409.10	605.00
Born Elsewhere	347	144.39	105.79	197.06	<LOD	3363.50	70.80	149.00	312.30	582.90	898.70

Table 10: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Pregnancy Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Pregnant	204	164.48	131.16	206.25	<LOD	23634.00	87.30	178.00	287.00	493.00	590.70
Not Pregnant	1288	145.86	124.43	171.00	<LOD	22334.00	70.00	149.50	320.00	626.00	868.70

Table 11: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Type of Home

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
A Mobile Home or Trailer	391	155.12	127.08	189.33	<LOD	6084.00	83.30	169.00	334.00	520.70	634.00
A detached single family home	3028	139.51	117.94	165.03	<LOD	27671.50	67.70	140.90	297.00	575.00	821.50
Attached Single Family Home	402	148.01	123.83	176.90	<LOD	8045.90	82.00	136.00	278.00	593.00	796.00
An Apartment	1043	159.05	130.26	194.20	<LOD	23634.00	75.30	166.00	333.10	677.90	992.50
Something Else	49	160.66	139.89	184.52	20.90	1180.00	100.00	161.20	293.70	422.00	630.00
Dormitory	22	201.61	.	.	37.10	1924.30	93.50	262.40	408.00	553.00	583.10

Table 12: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Year Home Built

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
1990-present	674	120.60	105.43	137.95	<LOD	8045.90	60.00	123.00	239.00	439.00	586.70
1978-1989	824	142.70	121.19	168.04	<LOD	7667.70	69.10	137.00	290.20	619.50	951.00
1960-1977	884	139.22	116.45	166.43	<LOD	27671.50	66.00	142.00	302.90	588.00	817.00
1950-1959	474	148.41	124.45	176.98	<LOD	12665.00	74.00	148.00	330.00	581.00	934.70
1940-1949	266	149.06	112.09	198.21	<LOD	6085.30	77.50	149.00	320.00	561.60	845.00
before 1940	561	167.50	125.67	223.25	<LOD	17806.90	85.00	185.00	373.00	632.00	850.90

Table 13: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Water Source

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Private-Public Water Company	4419	141.02	122.26	162.65	<LOD	27671.50	69.00	142.00	296.00	564.00	795.30
Private Public Well	450	175.72	145.70	211.94	<LOD	13743.00	83.00	176.00	389.10	688.70	883.00
Some other Water Source	27	119.99	110.31	130.52	<LOD	1586.30	86.00	100.00	154.00	327.70	468.00

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Table 14: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Helpings of Protein per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	13	180.04	119.38	271.54	25.30	1019.60	145.00	196.00	198.10	232.40	1019.60
1	154	142.02	84.71	238.09	<LOD	17806.90	39.00	170.90	400.60	819.60	1577.70
2	175	149.98	115.24	195.19	<LOD	10522.70	69.60	165.60	342.50	654.80	855.20
3+	96	79.84	49.09	129.84	<LOD	8045.90	39.60	68.00	161.20	325.20	637.00

Table 15: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Helpings of Milk/Dairy per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	68	136.82	88.80	210.79	<LOD	8571.10	56.60	142.70	332.40	637.00	855.20
1	201	140.79	89.82	220.71	<LOD	17806.90	55.60	151.80	384.40	702.50	1070.40
2	122	120.04	83.76	172.04	<LOD	8045.90	48.40	124.60	325.20	569.20	1063.60
3+	49	109.69	64.33	187.02	<LOD	2402.20	42.20	112.70	221.40	654.80	746.10

Table 16: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Helpings of Fruit per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	42	147.42	98.57	220.47	<LOD	2770.70	93.30	196.00	302.20	571.70	1063.60
1	191	136.86	93.23	200.92	<LOD	17806.90	59.50	151.80	317.30	657.20	1019.60
2	136	146.72	101.81	211.43	<LOD	8045.90	54.50	142.70	374.00	688.70	1951.40
3+	70	84.08	51.52	137.22	<LOD	2431.10	39.60	73.50	215.90	410.90	1070.40

Table 17: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Helpings of Vegetables per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	37	95.30	47.84	189.85	<LOD	1075.10	51.40	95.00	244.70	415.40	1063.60
1	221	156.76	110.43	222.53	<LOD	17806.90	64.30	170.90	374.00	746.10	1329.20
2	175	149.98	115.24	195.19	<LOD	10522.70	69.60	165.60	342.50	654.80	855.20
3+	58	110.66	66.74	183.47	<LOD	2402.20	47.90	101.00	246.80	688.70	966.20

Table 18: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Helpings of Bread/grain per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	28	101.55	43.89	234.96	<LOD	1577.70	41.80	152.80	199.00	374.00	1577.70
1	156	150.02	92.64	242.91	<LOD	12517.60	55.60	170.90	430.50	739.30	1070.40
2	156	116.60	79.76	170.46	<LOD	10522.70	44.50	112.80	276.70	608.90	1669.30
3+	99	126.82	87.05	184.76	<LOD	17806.90	51.40	132.70	306.50	642.30	1063.60

Table 19: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Servings of Beans per month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	274	160.86	129.65	199.57	<LOD	23634.00	98.00	145.00	297.00	473.00	626.00
1 to 5	1048	149.06	129.21	171.96	<LOD	13743.00	84.00	149.00	287.00	499.00	729.00
6 to 10	538	128.44	114.76	143.74	<LOD	5806.00	68.00	127.00	235.00	441.00	611.00
11 to 15	305	127.41	97.08	167.22	<LOD	3100.00	69.00	137.00	252.00	464.00	550.00
15+	487	125.27	104.48	150.21	<LOD	4189.00	62.00	138.00	217.00	464.00	634.00

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Table 20: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Fish Consumed in Past Month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	1334	144.92	104.43	201.11	<LOD	17806.90	58.90	148.50	360.90	681.30	1042.20
No	817	166.89	129.89	214.43	<LOD	27671.50	75.00	173.80	391.50	735.40	1101.00

Table 21: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Shellfish Consumed in Past Month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	883	144.50	102.10	204.52	<LOD	12517.60	58.90	142.90	370.80	681.30	1172.20
No	1270	157.85	118.54	210.21	<LOD	27671.50	69.40	166.00	364.20	731.90	1042.20

Table 22: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Body Mass Index Category

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Under Weight	89	117.49	92.33	149.50	<LOD	7049.90	53.00	105.00	261.00	415.00	713.00
Healthy Weight	2085	136.96	116.84	160.54	<LOD	27671.50	63.00	139.30	297.00	563.40	854.00
Over Weight	2688	152.81	133.82	174.49	<LOD	22334.00	80.00	150.00	319.00	608.90	821.50

Table 23: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Ever told you have Weak/Failing Kidneys

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	41	140.08	79.49	246.85	<LOD	8571.10	46.00	214.30	275.80	734.90	753.10
No	1227	154.18	113.90	208.69	<LOD	17806.90	62.50	153.70	385.30	739.30	1121.70

Table 24: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and total number of beers consumed per month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	809	158.54	114.60	219.31	<LOD	17806.90	60.60	173.20	429.10	784.80	1180.90
0-5	265	152.46	110.03	211.27	<LOD	3971.10	64.10	150.60	337.30	727.40	1272.40
6 to 10	70	145.48	89.50	236.48	<LOD	6085.30	58.90	158.60	341.80	604.30	746.10
11 to 15	34	160.34	104.26	246.58	<LOD	1319.10	104.30	136.90	555.10	796.00	1121.70
16+	94	135.44	106.52	172.21	<LOD	3098.10	65.60	129.90	306.50	479.80	633.70

Table 25: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Water (gm)/day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0 to 896	2163	157.92	134.02	186.07	<LOD	27671.50	78.00	162.00	334.00	644.50	962.60
897-1792g	1187	128.14	113.67	144.45	<LOD	13743.00	61.50	127.00	260.00	533.10	713.00
>1792g	826	130.53	112.06	152.04	<LOD	10522.70	59.60	125.00	295.30	541.00	703.60

Table 26: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Alcohol (gm)/day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	3833	141.34	124.65	160.26	<LOD	23634.00	69.90	142.00	295.30	569.20	812.50
0-28	622	140.16	108.65	180.82	<LOD	27671.50	64.10	137.00	312.00	602.00	793.00
>28	318	196.40	158.40	243.51	<LOD	6310.40	100.00	198.00	419.80	730.00	1025.80

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Table 27: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Caffeine(gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	932	137.57	115.54	163.81	<LOD	8045.90	70.30	133.00	276.00	613.00	819.00
0-400	3596	144.54	126.08	165.70	<LOD	27671.50	71.00	147.00	304.00	576.00	818.00
400+	245	169.80	134.30	214.67	<LOD	6085.30	79.20	162.00	382.10	640.80	960.00

Table 28: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Fiber (gm) /day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0g	9	165.70	85.72	320.31	90.00	643.70	118.10	127.00	164.00	359.00	359.00
1 to 10	1665	167.10	143.60	194.43	<LOD	23634.00	85.60	173.80	359.00	657.20	912.00
11 to 24	2499	137.40	118.65	159.11	<LOD	27671.50	65.30	137.00	279.00	569.60	789.00
25+	600	130.55	111.23	153.24	<LOD	8571.10	65.00	131.20	249.00	527.10	748.00

Table 29: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Breastfeeding Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Currently Breastfeeding	38	130.41	103.25	164.71	21.50	698.00	54.00	183.00	187.00	289.00	476.00
Not currently Breastfeeding	92	222.61	124.50	398.03	17.00	3162.00	86.00	217.00	522.60	1042.20	1186.00

Table 30: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Liver Conditions

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Ever had a liver condition	86	159.92	105.22	243.06	<LOD	10522.70	54.00	166.00	479.80	881.00	1372.00
Never had a liver condition	2801	148.02	128.21	170.89	<LOD	17806.90	73.00	149.00	313.20	590.70	851.00

Table 31: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Anyone Smoke in the Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	1045	206.92	174.54	245.29	<LOD	23634.00	111.80	218.00	436.00	713.00	981.00
No	3891	131.40	114.60	150.67	<LOD	27671.50	64.00	132.00	267.00	527.00	769.00

Table 32: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Ever told that you have Diabetes?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	259	108.28	87.21	134.44	<LOD	8571.10	56.00	108.00	199.00	428.80	712.00
No	4684	131.40	114.60	150.67	<LOD	27671.50	64.00	132.00	267.00	527.00	769.00

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Table 33: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine by Currently Taking Birth Control Pills?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	145	252.84	200.66	318.60	<LOD	22334.00	102.00	258.80	565.10	1042.20	1243.50
No	401	140.50	113.57	173.82	<LOD	6085.30	67.00	148.00	319.20	618.20	862.00

Table 34: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Now Use Depo-Provera Injectables

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	43	147.55	108.42	200.79	20.00	682.50	90.00	125.60	291.00	499.00	618.20
No	146	211.20	155.00	287.78	<LOD	7386.00	95.00	260.80	515.00	743.00	795.30

Table 35: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Currently Taking Estrogen Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	119	166.05	119.98	229.81	<LOD	12517.60	87.00	133.30	308.00	769.00	1282.80
No	122	95.20	74.15	122.21	<LOD	1550.00	42.00	87.00	232.10	436.00	642.30

Table 36: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Currently Taking Projestin Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	24	121.14	93.52	156.90	<LOD	12517.60	69.70	101.00	244.00	326.00	595.00
No	48	93.15	59.46	145.91	<LOD	1448.50	54.50	87.00	214.30	467.00	764.60

Table 37: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Currently Taking Estrogen-Projestin Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	39	139.22	115.66	167.57	<LOD	951.00	75.50	149.00	246.80	626.00	796.00
No	28	78.64	54.73	113.01	<LOD	571.70	49.00	88.10	188.00	307.00	432.00

Table 38: Concentration of 1-Hydroxyphenanthrene in ng/L found in urine and Number of Prescription Medications Taken

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	3031	148.57	127.29	173.40	<LOD	23634.00	74.00	148.00	301.00	582.00	854.00
1	788	142.83	121.79	167.51	<LOD	27671.50	71.00	145.00	312.00	575.00	784.80
2	411	143.94	118.90	174.25	<LOD	7049.90	70.00	149.50	307.00	565.10	795.30
3	302	135.23	110.58	165.37	<LOD	10522.70	65.00	139.00	297.00	534.90	713.00
4	149	160.94	132.91	194.88	<LOD	17806.90	65.40	150.00	356.00	628.00	1004.90
5	108	139.01	101.44	190.49	<LOD	8045.90	57.50	125.00	415.00	661.00	951.00
6+	198	130.18	99.73	169.92	<LOD	22334.00	64.00	135.10	301.00	648.80	1083.10

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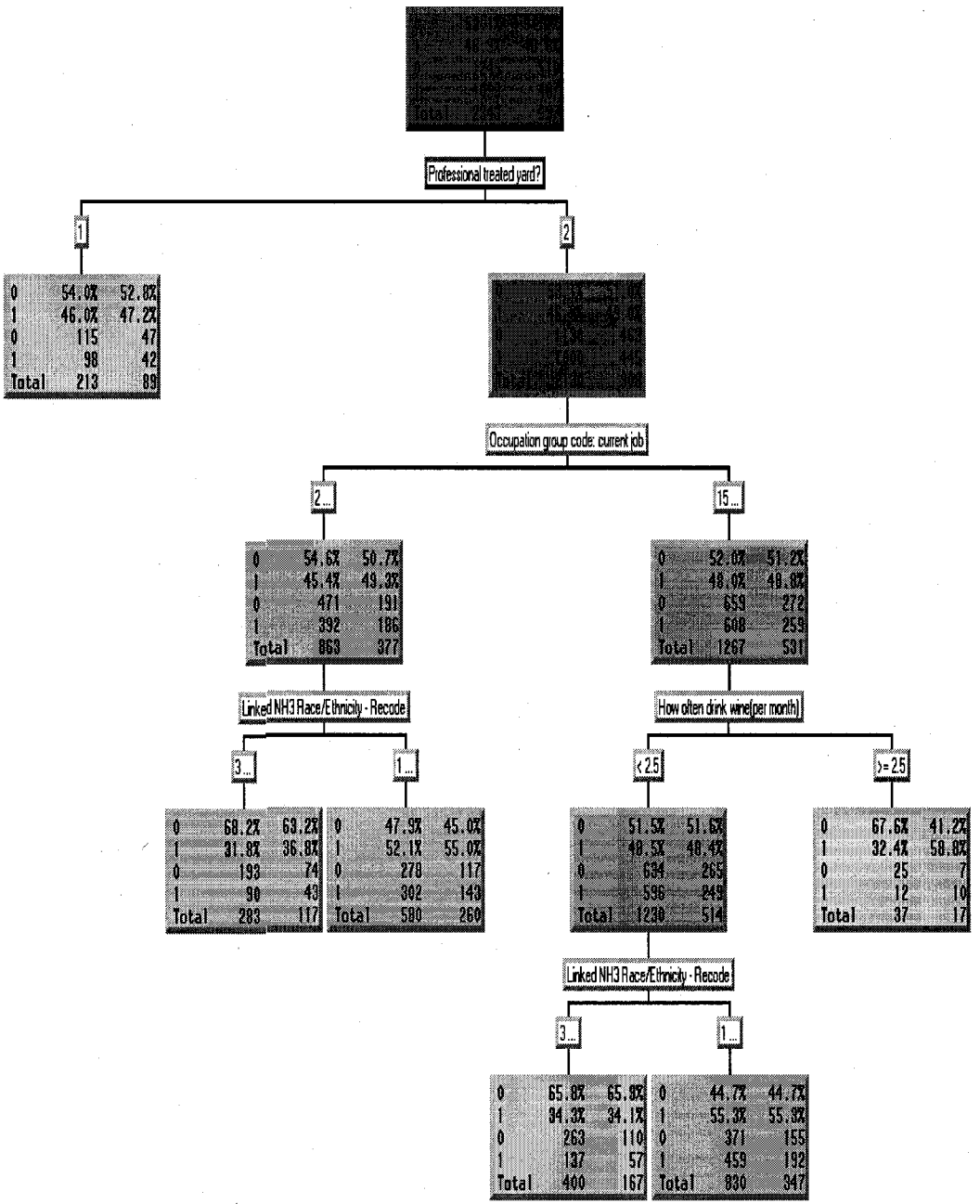
Classification and Regression Tree for 1-hydroxyphenanthrene



*Occupations truncated

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APPENDIX 32: 2-HYDROXYPHENANTHRENE

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Table 1: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine by age category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Age 5-11	678	54.16	45.81	64.02	<LOD	26249.10	28.00	57.00	115.00	253.30	413.00
Age 12-19	1383	70.17	58.09	84.77	<LOD	17122.00	34.00	76.30	154.30	323.10	581.60
Age 20-40	1127	82.40	68.87	98.59	<LOD	9048.30	39.60	91.00	195.50	422.30	721.40
Age 41-55	691	67.24	57.11	79.17	<LOD	10601.50	28.00	71.00	165.00	346.70	514.10
Age 55+	1042	60.56	52.53	69.82	<LOD	2360.20	26.00	59.00	146.10	319.10	506.10

Table 2: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Occupation

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Executive, Administrators, & Managers	138	53.31	41.28	68.87	<LOD	2946.10	29.00	59.00	110.70	217.40	378.40
Management Related	49	57.70	42.62	78.11	<LOD	1534.70	22.00	64.00	123.60	334.90	695.60
Engineers, Architects, and Scientists	47	62.74	49.25	79.93	<LOD	826.10	31.00	79.00	121.00	262.00	508.50
Health Diagnosing, Assessing & Treating	40	36.09	28.86	45.13	<LOD	692.00	23.00	39.00	72.60	232.50	333.00
Teachers	72	42.86	34.91	52.62	<LOD	1138.00	19.00	47.00	103.00	230.00	253.40
Writers, Artists, Entertainers & Athletes	36	46.39	33.80	63.66	<LOD	480.50	19.70	42.00	109.00	173.40	261.20
Other Professional Speciality	50	59.14	38.70	90.38	<LOD	945.10	20.40	63.00	162.00	319.10	611.50
Technicians and Related Supported	54	82.95	67.25	102.33	<LOD	771.00	34.10	89.00	200.00	397.00	452.10
Supervisors and Proprietors, Sales	39	72.47	51.12	102.72	<LOD	1546.00	44.00	91.00	165.20	348.80	612.00
Sales Representatives,finance,business,commodities	55	51.95	37.97	71.09	<LOD	1461.40	16.00	70.40	161.00	387.00	441.10
Sales Workers, retail & personal services	132	74.96	55.00	102.18	<LOD	17122.00	33.00	77.00	151.00	260.50	928.40
Secretaries, Stenographers, and typists	27	53.07	25.44	110.71	<LOD	402.00	19.00	84.10	126.90	172.70	235.40
Information Clerks	28	75.99	30.86	187.10	<LOD	737.80	39.00	92.80	257.60	721.40	737.80
Records Processing	61	74.03	44.39	123.48	<LOD	10601.50	30.00	56.10	225.00	876.40	936.70
Material Recording, Scheduling,distributing clerks	33	62.32	38.06	102.05	<LOD	1287.60	36.00	74.00	114.00	194.30	231.50
Miscellaneous administrative support	122	79.93	62.22	102.66	<LOD	2963.00	43.30	91.80	185.00	293.60	633.00
Private Household	17	69.90	61.44	79.51	12.00	234.10	53.00	102.60	139.90	156.00	166.60
Protective Service	32	54.53	32.38	91.85	<LOD	4343.00	25.00	59.00	203.90	292.00	446.70
Waiters and Waitresses	40	89.00	64.27	123.25	<LOD	1475.70	52.00	93.00	221.30	298.00	341.00
Cooks	53	118.31	87.08	160.76	<LOD	2312.10	40.20	80.00	276.50	1800.50	1800.50
Miscellaneous food preparation and service	55	103.51	68.60	156.19	<LOD	2409.60	46.00	95.00	239.00	592.70	889.10
Health Service Occupation	49	102.11	73.79	141.30	<LOD	1096.70	44.90	112.00	269.00	457.00	582.80
Cleaning and Building Service	70	84.67	63.88	112.23	<LOD	2587.80	39.00	96.60	174.60	220.60	386.70
Personal Service	49	64.13	38.59	106.58	<LOD	1955.60	25.00	69.00	123.40	323.00	740.80
Farm Operators, Managers and Supervisors	7	135.67	.	.	<LOD	680.20	98.00	189.40	329.00	329.00	680.20
Farm and Nursery Workers	27	57.37	30.79	106.92	<LOD	2166.90	34.10	51.60	127.00	129.40	268.30
Related Agricultural, Forestry and Fishing	42	76.90	48.46	122.04	<LOD	2285.00	35.00	77.00	202.10	387.10	560.00
Vehicle and Mobile Equipment Mechanics, Repairs	26	143.50	87.72	234.73	18.00	766.80	77.00	167.70	343.00	430.20	453.00
Other Mechanics and repairers	37	115.79	82.01	163.49	<LOD	1530.60	54.00	186.00	241.90	445.70	476.00
Construction traders	114	110.65	75.71	161.72	<LOD	1743.00	52.00	132.00	249.00	502.80	859.20
Extractive and Precision Production	42	82.89	43.99	156.17	18.00	6355.00	33.00	65.00	127.00	272.10	480.00
Textile, apparel and furnishings machine operators	17	107.09	54.67	209.76	<LOD	1174.10	84.50	137.00	324.00	644.00	872.10
Machine Operators, Assorted Materials	61	115.55	72.82	183.34	<LOD	9048.30	32.00	150.40	414.00	572.70	594.60
Fabricators, Assemblers, Inspectors, and Samplers	45	78.83	61.82	100.53	<LOD	653.80	27.00	92.00	214.50	359.00	633.00
Motor vehicle operators	65	112.21	74.39	169.26	<LOD	2132.00	49.00	98.00	203.00	637.80	1011.50
Other transportation and material moving	20	100.10	27.33	366.60	<LOD	617.00	46.60	117.00	342.00	557.80	617.00
Construction laborers	28	104.54	56.49	193.47	12.30	1166.40	58.00	72.00	318.70	417.60	458.80
Laborers, except construction	5	424.14	.	.	51.20	1259.20	157.00	233.00	1259.20	1259.20	1259.20
Frieght, Stock, and Material Movers, hand	43	70.59	45.34	109.88	<LOD	4930.80	44.00	84.90	102.00	227.90	345.40
Other helpers, equipment cleaners, hand packages and laborers	25	64.03	18.31	223.83	<LOD	1449.40	18.00	62.00	194.00	469.00	822.20

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Table 3: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Employment Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Working at a Job or Business	1056	56.29	48.36	65.51	<LOD	17122.00	29.00	61.00	130.00	249.00	342.00
With a Job but not at Work	52	63.76	36.44	111.58	<LOD	766.00	37.00	63.00	151.00	213.00	240.00
Looking for Work	54	89.39	63.51	125.83	17.00	724.00	39.00	98.00	175.00	262.00	403.00
Not working at a job or Business	811	56.09	47.58	66.12	<LOD	4049.00	29.00	58.00	116.00	262.00	331.00

Table 4: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Income

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
$0-$4 999	106	90.86	68.83	119.94	<LOD	944.50	51.00	97.40	188.40	308.00	576.00
$ 5000-$9 999	282	63.76	36.44	111.58	<LOD	766.00	37.00	63.00	151.00	213.00	240.00
$10 000-$14 999	376	89.39	63.51	125.83	17.00	724.00	39.00	98.00	175.00	262.00	403.00
$15 000-$19 999	381	56.09	47.58	66.12	<LOD	4049.00	29.00	58.00	116.00	262.00	331.00
$20 000-$24 999	360	92.21	68.93	123.35	<LOD	26249.10	34.80	97.00	226.00	502.80	863.70
$25 000-$34 999	575	63.93	53.64	76.20	<LOD	9882.00	30.00	64.00	138.00	310.00	452.10
$35 000-$44 999	452	74.24	56.12	98.20	<LOD	10601.50	29.00	64.00	214.40	528.90	781.00
$45 000-$54 999	385	71.84	57.98	89.01	<LOD	4930.80	39.60	70.50	158.00	343.00	506.10
$55 000-$64 999	302	59.02	47.02	74.07	<LOD	2469.00	27.00	60.70	150.00	324.00	485.60
$65 000-$74 999	225	63.00	48.65	81.57	<LOD	6355.00	26.10	66.00	142.00	387.00	694.70
$75 000 and over	837	54.69	45.50	65.74	<LOD	4049.00	22.00	59.00	128.50	269.00	453.60

Table 5: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Race/Ethnicity

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Non-Hispanic White	1996	65.99	55.53	78.41	<LOD	17122.00	28.00	71.00	161.50	339.30	528.90
Non-Hispanic Black	1199	92.60	76.89	111.50	<LOD	9048.30	42.40	91.00	220.00	480.00	746.70
Mexican American	1363	62.50	51.17	76.32	<LOD	4049.00	29.40	66.00	150.00	320.90	469.90
Other Race-Including MultiRacial	127	57.71	45.16	73.74	<LOD	1367.80	32.00	59.00	111.50	274.00	581.50
Other Hispanic	236	87.61	59.24	129.56	<LOD	26249.10	38.00	90.00	186.20	416.00	741.30

Table 6: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Gender

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Male	2393	78.01	67.53	90.11	<LOD	10601.50	36.70	81.00	185.00	387.00	633.00
Female	2528	62.03	53.36	72.11	<LOD	26249.10	25.50	64.00	151.00	321.00	530.00

Table 7: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Education

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Less than High School	2832	72.74	63.82	82.92	<LOD	26249.10	34.00	76.00	173.00	365.50	528.90
High School Diploma	756	86.78	72.60	103.72	<LOD	10601.50	40.00	87.00	200.00	425.20	711.70
More than High School	1326	59.64	50.20	70.86	<LOD	6355.00	24.90	61.00	148.00	321.00	514.10

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Table 8: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Marital Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Married	1619	63.58	53.50	75.54	<LOD	10601.50	27.00	69.00	155.60	343.00	582.80
Widowed	247	59.43	47.14	74.92	<LOD	1719.10	26.00	56.00	148.00	314.60	398.00
Divorced	239	82.82	63.42	108.16	<LOD	1743.00	39.00	84.90	208.00	441.10	579.30
Separated	102	104.73	70.77	155.00	<LOD	4343.00	50.00	126.90	262.00	534.30	764.00
Never Married	1377	83.04	70.37	97.98	<LOD	6355.00	39.00	89.00	184.20	368.20	659.00
Living with Partner	155	103.29	83.62	127.59	<LOD	17122.00	47.00	99.00	231.50	389.60	644.00

Table 9: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Country of Birth

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Born in the US	3960	69.11	59.60	80.13	<LOD	26249.10	30.00	72.50	167.70	353.40	579.30
Born in Mexico	592	63.64	49.09	82.50	<LOD	4049.00	30.70	69.00	150.00	295.00	469.90
Born Elsewhere	337	73.79	52.30	104.12	<LOD	2312.10	34.00	79.70	162.00	380.70	503.70

Table 10: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Pregnancy Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Pregnant	198	74.21	54.94	100.23	<LOD	17122.00	44.70	79.00	148.30	276.50	579.30
Not Pregnant	1273	63.33	52.62	76.24	<LOD	9882.00	25.10	70.10	155.50	334.90	572.70

Table 11: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Type of Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
A Mobile Home or Trailer	401	72.57	61.50	85.63	<LOD	2711.50	36.00	84.10	176.00	277.00	369.00
A detached single family home	2978	63.64	53.34	75.94	<LOD	26249.10	26.90	66.30	155.50	341.00	592.30
Attached Single Family Home	392	75.80	60.93	94.30	<LOD	3076.90	37.00	70.50	161.00	354.00	638.20
An Apartment	1026	88.18	72.78	106.84	<LOD	17122.00	41.00	90.80	208.00	429.90	642.20
Something Else	49	80.19	63.20	101.75	<LOD	526.00	51.00	91.00	207.00	329.00	452.60
Dormitory	22	90.42	.	.	<LOD	1707.80	52.00	117.20	128.00	401.60	402.00

Table 13: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Water Source

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Private-Public Water Company	4349	68.21	59.03	78.81	<LOD	26249.10	30.20	72.00	161.70	348.00	579.30
Private Public Well	453	75.36	60.29	94.20	<LOD	2711.50	32.10	84.50	191.10	343.00	525.00
Some other Water Source	27	60.78	50.53	73.12	<LOD	1457.30	27.00	44.00	80.00	556.50	912.50

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Table 14: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Helpings of Protein per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	13	75.70	34.77	164.81	<LOD	623.40	28.40	148.00	148.00	175.30	623.40
1	154	72.03	46.56	111.42	<LOD	2360.20	22.80	65.40	216.10	456.50	642.20
2	167	82.46	64.03	106.20	<LOD	2166.90	36.80	86.50	188.90	408.40	545.10
3+	92	45.67	30.65	68.06	<LOD	1545.70	16.50	49.60	160.10	211.00	386.80

Table 15: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Helpings of Milk/Dairy per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	68	76.62	47.35	124.00	<LOD	1368.60	28.40	68.30	209.50	527.60	578.70
1	194	70.65	46.24	107.95	<LOD	2360.20	21.70	78.70	204.60	415.80	570.90
2	121	64.66	46.97	89.01	<LOD	2166.90	27.10	66.20	148.00	332.00	453.50
3+	44	67.31	36.77	123.21	<LOD	1508.90	21.10	56.50	172.30	417.60	560.30

Table 16: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Helpings of Fruit per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	42	95.62	55.92	163.50	<LOD	1611.50	34.40	108.90	312.40	411.50	905.70
1	182	72.14	48.94	106.33	<LOD	2360.20	23.20	66.20	195.20	447.10	623.40
2	136	70.51	47.98	103.62	<LOD	2166.90	22.80	76.60	194.00	357.70	527.60
3+	66	49.24	30.04	80.72	<LOD	1508.90	16.60	46.60	118.00	191.10	277.50

Table 17: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Helpings of Vegetables per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	39	61.34	34.13	110.25	<LOD	1611.50	19.80	75.70	138.60	284.30	1611.50
1	215	84.04	60.66	116.42	<LOD	2360.20	31.50	88.40	209.20	417.60	623.40
2	167	82.46	64.03	106.20	<LOD	2166.90	36.80	86.50	188.90	408.40	545.10
3+	53	55.74	25.41	122.25	<LOD	1508.90	23.30	46.60	151.60	314.60	538.20

Table 18: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Helpings of Bread/grain per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	30	53.79	34.07	84.91	<LOD	578.70	21.70	66.20	120.70	209.20	369.60
1	149	76.08	47.68	121.38	<LOD	2360.20	27.70	68.30	216.10	417.60	609.40
2	151	59.25	40.75	86.17	<LOD	2166.90	19.80	60.20	155.50	342.80	422.90
3+	96	82.57	53.68	126.99	<LOD	1611.50	30.10	88.40	238.50	538.20	809.70

Table 19: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Servings of Beans per month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	274	66.14	49.81	87.81	<LOD	17122.00	36.00	76.00	137.00	245.00	324.00
1 to 5	1049	56.52	45.71	69.87	<LOD	6355.00	29.00	62.00	128.00	269.00	369.00
6 to 10	538	45.07	38.70	52.49	<LOD	4049.00	23.00	46.00	98.00	188.00	269.00
11 to 15	305	50.60	40.17	63.75	<LOD	1145.00	25.00	57.00	101.00	201.00	272.00
15+	487	50.70	42.65	60.27	<LOD	1866.00	25.00	56.00	104.00	236.00	303.00

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Table 20: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Fish Consumed in Past Month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	1286	88.88	66.06	119.58	<LOD	10601.50	34.80	96.50	220.60	506.10	809.20
No	804	113.63	92.82	139.11	<LOD	26249.10	45.20	123.60	282.70	609.90	828.00

Table 21: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Shellfish Consumed in Past Month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	864	90.49	63.60	128.74	<LOD	9048.30	35.70	99.60	231.20	508.50	865.30
No	1227	101.53	82.36	125.17	<LOD	26249.10	43.50	111.80	247.30	557.80	781.00

Table 22: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Body Mass Index Category

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Under Weight	90	41.61	28.39	60.99	<LOD	601.70	17.50	54.40	108.00	321.90	429.40
Healthy Weight	2056	62.78	53.81	73.24	<LOD	26249.10	26.00	63.00	143.00	345.40	581.50
Over Weight	2650	75.21	65.56	86.28	<LOD	9882.00	34.40	80.40	182.00	377.00	594.60

Table 23: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Ever told you have Weak/Failing Kidneys

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	37	96.65	76.61	121.93	<LOD	1611.50	53.50	119.40	161.70	470.90	721.40
No	1197	96.78	74.04	126.50	<LOD	10601.50	37.90	104.20	250.40	550.10	863.70

Table 24: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and total number of beers consumed per month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	783	93.68	72.24	121.49	<LOD	10601.50	38.90	102.50	235.40	527.60	766.70
0-5	261	102.46	72.25	145.31	<LOD	4643.90	36.70	120.50	304.30	737.80	936.70
6 to 10	70	113.05	67.06	190.57	<LOD	1870.30	58.10	133.50	242.30	514.10	945.10
11 to 15	35	102.90	65.83	160.84	<LOD	2360.20	32.10	123.60	277.50	592.30	865.30
16+	89	89.33	66.11	120.70	<LOD	1719.10	25.90	89.10	229.10	508.50	809.20

Table 25: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Water (gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0 to 896	2139	77.70	66.34	91.01	<LOD	26249.10	34.00	81.00	188.40	411.50	679.70
897-1792g	1171	56.32	47.88	66.26	<LOD	6355.00	25.00	59.00	125.40	302.00	445.70
>1792g	815	62.63	53.00	74.00	<LOD	9048.30	26.90	61.00	155.50	335.00	527.60

Table 26: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Alcohol (gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	3793	65.97	57.25	76.02	<LOD	17122.00	29.00	70.00	161.50	331.00	545.10
0-28	602	70.20	54.95	89.68	<LOD	26249.10	31.00	73.00	162.10	368.20	611.50
>28	318	97.26	76.45	123.72	<LOD	4930.80	45.00	91.00	253.00	506.10	809.20

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Table 27: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Caffeine(gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	926	68.03	58.63	78.93	<LOD	9048.30	32.00	72.90	160.10	307.60	506.40
0-400	3545	67.92	58.93	78.29	<LOD	26249.10	29.00	71.00	162.00	354.00	577.10
400+	242	82.40	63.52	106.91	<LOD	2132.00	34.90	89.90	212.20	453.60	817.10

Table 28: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Fiber (gm) /day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0g	8	93.35	29.55	294.91	44.00	520.70	58.00	97.30	97.50	238.00	238.00
1 to 10	1647	82.15	69.74	96.76	<LOD	17122.00	39.00	89.00	202.10	429.40	694.70
11 to 24	2459	63.56	54.40	74.26	<LOD	26249.10	27.00	68.00	149.00	329.00	508.50
25+	599	63.19	51.47	77.58	<LOD	2587.80	29.00	63.00	142.50	354.00	549.00

Table 29: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Breastfeeding Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Currently Breastfeeding	38	51.96	35.85	75.33	<LOD	464.00	50.00	56.00	72.60	149.00	192.00
Not currently Breastfeeding	89	111.34	56.76	218.38	<LOD	1138.00	51.40	128.00	417.00	513.00	692.00

Table 30: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Liver Conditions

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Ever had a liver condition	84	81.31	49.50	133.53	<LOD	1449.40	30.10	96.00	269.00	453.60	489.30
Never had a liver condition	2770	70.98	61.48	81.95	<LOD	10601.50	31.00	75.00	171.00	367.00	591.00

Table 31: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Anyone Smoke in the Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	1032	108.11	88.92	131.44	<LOD	17122.00	53.50	111.50	242.00	457.00	771.00
No	3836	61.14	53.15	70.34	<LOD	26249.10	27.00	63.00	141.10	321.00	514.10

Table 32: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Ever told that you have Diabetes?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	249	62.31	52.02	74.63	<LOD	2276.00	29.00	60.00	115.00	392.30	633.00
No	4628	69.87	60.54	80.64	<LOD	26249.10	31.00	74.00	167.70	354.00	579.30

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Table 33: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine by Currently Taking Birth Control Pills?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	144	116.45	85.81	158.03	<LOD	9882.00	47.00	117.50	269.00	692.00	863.70
No	395	61.12	47.23	79.10	<LOD	6355.00	24.00	66.00	164.20	351.00	592.70

Table 34: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Now Use Depo-Provera Injectables

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	43	90.44	59.38	137.75	<LOD	945.10	53.00	92.00	150.00	354.00	945.10
No	146	99.55	71.37	138.84	<LOD	2946.10	39.60	120.40	269.00	737.80	863.70

Table 35: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Currently Taking Estrogen Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	120	60.86	42.80	86.54	<LOD	2360.20	31.00	72.70	134.00	294.00	386.80
No	117	43.65	30.11	63.27	<LOD	2039.00	14.60	42.00	127.00	261.20	455.00

Table 36: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Currently Taking Projestin Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	24	48.47	24.61	95.45	<LOD	1508.90	23.00	58.70	96.60	134.00	353.40
No	47	34.77	27.17	44.50	<LOD	512.40	14.00	42.00	71.00	185.00	252.50

Table 37: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Currently Taking Estrogen-Projestin Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	39	52.17	47.75	57.01	<LOD	865.30	20.00	47.00	107.00	242.00	252.50
No	28	30.96	<LOD	104.01	<LOD	411.50	13.40	33.00	81.00	175.00	182.00

Table 40: Concentration of 2-Hydroxyphenanthrene in ng/L found in urine and Number of Prescription Medications Taken

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	2992	72.43	61.35	85.50	<LOD	17122.00	32.10	76.00	170.80	380.70	609.90
1	774	67.64	56.62	80.79	<LOD	26249.10	29.00	71.40	171.00	324.00	528.90
2	407	65.69	54.08	79.79	<LOD	4643.90	31.00	74.00	165.00	314.60	572.70
3	298	62.36	50.24	77.40	<LOD	2039.00	28.00	63.00	142.00	335.80	429.40
4	150	60.21	48.04	75.47	<LOD	809.70	24.00	64.00	155.50	304.30	441.10
5	107	66.23	47.91	91.55	<LOD	2360.20	33.00	66.00	152.00	331.00	485.00
6+	193	70.63	55.89	89.25	<LOD	9882.00	29.00	70.00	146.10	452.60	897.00

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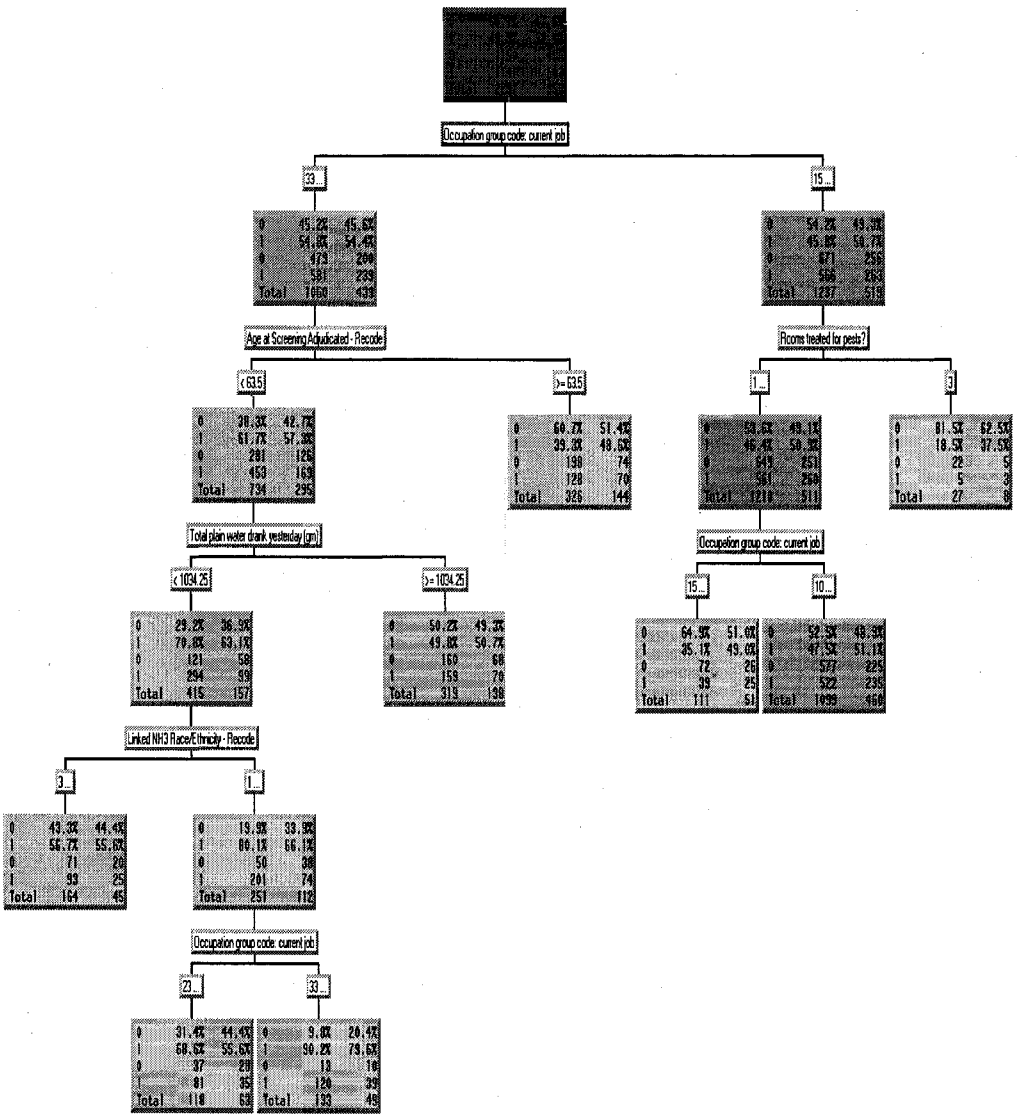
Figure 1: Classification and Regression Tree for 2-hydroxyphenanthrene



*Occupations truncated

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APPENDIX 33: 3-HYDROXYPHENANTHRENE

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Table 1: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine by age category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Age 5-11	689	118.51	102.35	137.22	<LOD	19501.70	68.00	127.90	221.20	343.40	540.00
Age 12-19	1433	122.42	108.31	138.37	<LOD	19643.00	69.00	131.10	232.00	395.00	536.00
Age 20-40	1153	126.30	111.54	143.00	<LOD	9347.00	65.00	131.00	250.00	512.80	718.40
Age 41-55	701	103.81	90.39	119.22	<LOD	4972.00	52.00	105.00	214.00	416.00	650.00
Age 55+	1064	96.51	85.99	108.31	<LOD	126202.00	43.00	97.00	195.00	396.00	621.00

Table 2: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Occupation

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Executive, Administrators, & Managers	138	90.82	73.77	111.81	<LOD	4145.00	54.50	87.00	156.60	292.00	441.70
Management Related	49	94.93	80.52	111.92	<LOD	790.40	49.00	109.00	181.90	294.00	413.00
Engineers, Architects, and Scientists	50	104.51	73.94	147.72	<LOD	13183.00	47.00	106.80	192.00	416.00	448.00
Health Diagnosing, Assessing & Treating	41	78.19	67.73	90.26	<LOD	957.00	43.40	84.40	146.90	214.00	275.00
Teachers	71	65.83	50.49	85.84	<LOD	856.00	36.00	79.30	130.00	197.80	294.50
Writers, Artists, Entertainers & Athletes	36	81.12	66.24	99.34	<LOD	643.00	52.00	72.30	167.00	263.00	295.00
Other Professional Speciality	52	101.45	74.32	138.47	<LOD	717.90	45.00	131.00	202.70	474.40	537.00
Technicians and Related Supported	54	111.26	94.33	131.24	<LOD	824.50	59.00	126.00	214.00	403.10	476.70
Supervisors and Proprietors, Sales	39	125.00	91.77	170.26	<LOD	975.00	66.00	134.30	318.50	454.10	824.30
Sales Representatives,finance,business,commodities	56	82.84	68.03	100.86	<LOD	2125.00	44.00	81.00	155.00	254.20	494.00
Sales Workers, retail & personal services	140	133.74	104.23	171.61	<LOD	16531.00	69.00	122.00	239.00	437.70	1639.00
Secretaries, Stenographers, and typists	31	95.37	63.28	143.74	<LOD	331.00	53.30	162.00	180.00	264.00	310.70
Information Clerks	28	96.74	55.43	168.83	<LOD	311.00	43.00	136.00	204.60	310.20	311.00
Records Processing	63	117.39	85.22	161.70	<LOD	4657.60	47.60	97.00	337.90	936.30	1253.00
Material Recording, Scheduling,distributing clerks	33	110.61	84.27	145.17	23.00	3286.40	59.60	122.00	202.00	233.30	330.90
Miscellaneous administrative support	124	120.21	100.75	143.44	<LOD	4973.00	57.00	125.00	219.90	465.00	1056.30
Private Household	18	81.88	72.93	91.93	18.00	254.30	54.00	85.00	121.50	171.80	201.90
Protective Service	33	112.13	83.19	151.14	15.50	3700.00	40.00	91.70	260.00	399.80	542.00
Waiters and Waitresses	40	127.38	91.68	176.98	<LOD	1102.00	69.80	145.00	246.20	379.00	667.00
Cooks	53	111.78	87.09	143.48	<LOD	1143.00	48.40	117.00	210.00	489.00	581.20
Miscellaneous food preparation and service	56	168.83	135.80	209.90	<LOD	1777.40	79.00	187.00	340.80	707.60	1057.00
Health Service Occupation	51	168.50	134.92	210.43	<LOD	1305.00	109.20	193.00	276.00	417.00	477.00
Cleaning and Building Service	70	129.50	86.67	193.49	<LOD	4054.00	60.50	153.00	264.40	451.40	1232.00
Personal Service	52	85.86	64.39	114.49	<LOD	886.80	42.80	112.00	192.60	352.00	577.00
Farm Operators, Managers and Supervisors	7	190.65	.	.	<LOD	539.40	158.00	428.10	474.00	474.00	539.40
Farm and Nursery Workers	28	116.52	74.42	182.44	19.00	3105.00	67.00	90.00	198.10	240.70	477.20
Related Agricultural, Forestry and Fishing	43	140.58	89.60	220.57	<LOD	4260.20	75.00	187.70	238.00	407.50	1035.00
Vehicle and Mobile Equipment Mechanics, Repairs	27	173.23	41.45	723.99	<LOD	9347.00	121.30	194.90	314.30	1009.00	9347.00
Other Mechanics and repairers	38	168.30	132.56	213.67	<LOD	852.00	78.00	188.00	425.20	535.00	565.00
Construction traders	118	180.94	136.79	239.34	<LOD	4492.00	97.30	183.90	367.70	601.00	1031.00
Extractive and Precision Production	44	124.39	67.00	230.94	<LOD	4972.00	51.00	100.70	193.00	725.00	1051.00
Textile, apparel and furnishings machine operators	17	84.89	48.25	149.36	<LOD	1454.80	27.40	139.00	347.00	863.00	863.00
Machine Operators, Assorted Materials	61	146.81	101.28	212.82	<LOD	5194.00	83.00	149.00	292.40	374.30	760.00
Fabricators, Assemblers, Inspectors, and Samplers	45	119.59	95.92	149.11	<LOD	1147.20	48.10	139.00	270.20	566.10	665.00
Motor vehicle operators	66	161.83	113.96	229.81	<LOD	3873.00	98.60	144.00	268.00	711.10	2584.00
Other transportation and material moving	20	149.44	82.26	271.47	17.00	495.00	78.00	227.00	334.20	459.70	495.00
Construction laborers	27	151.85	88.77	259.77	47.00	1307.00	84.60	138.00	253.80	552.40	801.50
Laborers, except construction	5	441.09	.	.	119.00	1083.20	211.00	272.00	1083.20	1083.20	1083.20
Frieght, Stock, and Material Movers, hand	43	107.63	68.68	168.67	<LOD	2712.30	76.80	146.80	264.50	370.50	378.00
Other helpers, equipment cleaners, hand packages and laborers	25	110.66	25.67	476.97	<LOD	2335.00	36.00	97.00	394.00	1513.00	1530.80

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Table 3: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Employment Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Working at a Job or Business	1055	106.17	95.74	117.74	<LOD	16531.00	51.00	107.00	206.00	413.00	665.00
With a Job but not at Work	52	124.06	65.63	234.53	<LOD	8709.00	65.00	118.00	192.00	576.00	899.00
Looking for Work	54	149.78	98.78	227.11	28.00	2982.00	66.00	147.00	353.00	651.00	790.00
Not working at a job or Business	811	101.56	84.14	122.57	<LOD	126202.00	48.00	97.00	201.00	459.00	683.00

Table 4: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Income

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
$0-$4 999	110	151.43	115.84	197.95	<LOD	1406.00	83.60	214.20	257.00	515.00	515.00
$ 5000-$9 999	295	124.06	65.63	234.53	<LOD	8709.00	65.00	118.00	192.00	576.00	899.00
$10 000-$14 999	388	149.78	98.78	227.11	28.00	2982.00	66.00	147.00	353.00	651.00	790.00
$15 000-$19 999	387	101.56	84.14	122.57	<LOD	126202.00	48.00	97.00	201.00	459.00	683.00
$20 000-$24 999	364	143.12	110.46	185.45	<LOD	19869.00	71.00	140.00	336.40	603.20	961.00
$25 000-$34 999	586	101.41	86.21	119.28	<LOD	10079.00	51.00	107.80	200.00	378.00	651.00
$35 000-$44 999	462	121.79	101.24	146.52	<LOD	4657.60	54.00	125.20	263.00	474.20	714.00
$45 000-$54 999	390	118.92	98.42	143.69	<LOD	9347.00	69.00	111.00	210.00	464.90	633.30
$55 000-$64 999	308	94.60	77.57	115.39	<LOD	1513.00	45.50	103.20	214.00	347.00	437.70
$65 000-$74 999	234	99.26	81.95	120.21	<LOD	4972.00	54.00	99.00	196.00	409.00	494.00
$75 000 and over	856	96.35	83.41	111.30	<LOD	15514.00	51.00	101.00	187.00	353.00	597.00

Table 5: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Race/Ethnicity

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Non-Hispanic White	2025	109.73	97.08	124.04	<LOD	41354.00	54.60	114.70	218.90	416.00	631.80
Non-Hispanic Black	1212	156.63	133.71	183.47	<LOD	126202.00	75.20	153.00	329.60	594.10	1029.30
Mexican American	1427	96.55	84.57	110.24	<LOD	10575.40	53.00	99.00	185.70	334.20	494.90
Other Race-Including MultiRacial	131	90.17	73.70	110.32	<LOD	1051.00	48.00	90.00	192.60	299.00	594.30
Other Hispanic	245	119.02	94.64	149.69	<LOD	19501.70	66.00	126.90	229.80	441.70	609.50

Table 6: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Gender

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Male	2444	129.16	115.35	144.63	<LOD	126202.00	66.50	130.00	250.00	480.00	695.30
Female	2596	99.54	89.08	111.23	<LOD	41354.00	49.00	103.80	204.70	361.10	577.00

Table 7: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Education

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Less than High School	2908	124.93	111.61	139.85	<LOD	126202.00	67.00	131.10	242.00	439.00	631.80
High School Diploma	773	129.05	113.21	147.11	<LOD	18313.00	65.00	133.50	253.00	501.00	710.00
More than High School	1352	96.71	85.96	108.81	<LOD	15082.00	47.00	98.00	196.00	383.00	633.30

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Table 8: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Marital Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Married	1640	99.29	87.94	112.11	<LOD	19869.00	50.00	104.00	200.00	396.00	603.20
Widowed	252	101.58	78.87	130.83	<LOD	41354.00	46.00	93.00	199.00	429.00	590.00
Divorced	246	132.94	106.74	165.56	<LOD	4492.00	57.00	143.60	311.00	649.00	966.20
Separated	108	181.78	133.77	247.03	<LOD	3700.00	92.80	180.00	413.00	657.40	1035.00
Never Married	1424	132.38	117.34	149.35	<LOD	126202.00	73.00	140.20	252.00	454.10	616.30
Living with Partner	155	139.85	113.59	172.19	<LOD	16531.00	71.00	145.20	261.30	483.00	747.00

Table 9: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Country of Birth

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Born in the US	4039	115.10	103.51	127.98	<LOD	126202.00	58.00	118.00	227.00	440.70	665.00
Born in Mexico	619	93.92	79.66	110.73	<LOD	3903.00	51.00	96.50	184.00	338.80	454.40
Born Elsewhere	350	103.63	82.93	129.49	<LOD	15082.00	53.00	116.00	207.00	413.00	537.00

Table 10: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Pregnancy Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Pregnant	206	112.91	86.11	148.07	<LOD	16531.00	66.00	98.30	194.40	403.00	966.20
Not Pregnant	1297	100.39	88.40	114.00	<LOD	19643.00	50.00	103.20	203.50	395.30	603.20

Table 11: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Type of Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
A Mobile Home or Trailer	397	122.73	104.70	143.88	<LOD	9347.00	64.70	136.60	238.40	480.00	631.80
A detached single family home	3064	105.30	92.77	119.53	<LOD	126202.00	52.00	109.10	211.00	391.90	597.00
Attached Single Family Home	400	121.85	101.27	146.60	<LOD	8440.00	59.80	114.00	235.00	576.00	824.30
An Apartment	1054	131.91	112.85	154.19	<LOD	16531.00	67.00	130.90	263.80	500.00	749.00
Something Else	49	150.53	120.47	188.09	22.00	16745.00	61.00	114.00	239.00	574.00	790.00
Dormitory	22	143.74	.	.	33.00	2982.00	82.00	188.80	207.00	240.00	308.00

Table 12: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Year Home Built

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
1990-present	682	91.20	80.70	103.08	<LOD	9347.00	44.60	96.30	191.00	353.00	542.00
1978-1989	830	106.89	94.27	121.21	<LOD	15514.00	55.20	111.90	212.00	409.00	546.60
1960-1977	892	111.83	97.00	128.92	<LOD	126202.00	52.00	107.10	222.00	474.40	950.80
1950-1959	481	113.40	96.75	132.93	<LOD	18313.00	57.00	107.80	224.50	450.00	710.00
1940-1949	268	120.88	93.67	155.98	<LOD	41354.00	70.00	126.00	207.00	434.00	727.90
before 1940	567	124.51	102.66	151.01	<LOD	16745.00	68.10	141.00	238.40	383.20	512.80

Table 13: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Water Source

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Private-Public Water Company	4468	110.74	99.42	123.35	<LOD	126202.00	56.00	113.00	218.80	425.20	657.50
Private Public Well	452	126.69	106.94	150.07	<LOD	10979.00	62.00	135.70	247.50	428.10	542.00
Some other Water Source	27	85.34	63.61	114.50	<LOD	787.50	57.30	95.00	138.00	264.50	338.80

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Table 14: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Helpings of Protein per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	14	128.30	42.56	386.76	<LOD	383.20	46.60	109.10	339.00	339.00	383.20
1	157	95.54	71.73	127.26	<LOD	8607.40	35.40	93.10	221.70	481.50	711.10
2	176	109.98	94.98	127.34	<LOD	10575.40	59.60	111.90	201.00	319.90	524.40
3+	98	64.73	42.74	98.05	<LOD	1688.00	23.80	64.30	175.60	347.50	418.40

Table 15: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Helpings of Milk/Dairy per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	69	109.90	76.71	157.46	<LOD	8607.40	62.20	110.60	255.70	458.70	524.40
1	203	94.44	68.98	129.29	<LOD	10575.40	41.70	111.00	192.10	339.00	505.50
2	126	85.91	69.93	105.55	<LOD	1688.00	40.40	91.10	185.20	365.40	491.30
3+	49	94.59	60.49	147.90	<LOD	3286.40	41.60	89.00	200.10	352.20	1029.30

Table 16: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Helpings of Fruit per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	44	159.02	110.56	228.70	<LOD	1159.90	74.90	223.40	364.60	464.40	934.60
1	193	99.56	77.20	128.39	<LOD	10575.40	52.30	101.20	187.80	365.40	481.50
2	139	96.09	71.19	129.70	<LOD	2385.70	41.60	110.60	192.40	448.60	505.50
3+	70	57.29	40.26	81.52	<LOD	3286.40	25.20	57.00	117.20	255.50	319.90

Table 17: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Helpings of Vegetables per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	39	75.70	46.96	122.03	<LOD	1688.00	36.20	77.70	111.00	149.60	1159.90
1	225	105.58	86.51	128.87	<LOD	10575.40	49.70	128.70	223.40	366.10	594.10
2	176	109.98	94.98	127.34	<LOD	10575.40	59.60	111.90	201.00	319.90	524.40
3+	59	92.82	54.06	159.36	<LOD	2385.70	36.30	83.80	243.80	505.50	571.10

Table 18: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Helpings of Bread/grain per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	29	99.14	46.44	211.64	<LOD	489.00	46.60	81.90	288.70	339.00	489.00
1	159	98.72	71.00	137.24	<LOD	8607.40	51.80	111.40	188.60	364.60	505.50
2	158	86.46	65.15	114.74	<LOD	10575.40	39.80	91.50	173.60	365.40	524.40
3+	100	96.42	72.02	129.08	<LOD	1688.00	41.60	94.60	223.40	442.10	539.40

Table 19: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Servings of Beans per month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	274	111.68	90.25	138.21	<LOD	16531.00	62.00	108.00	207.00	412.00	515.00
1 to 5	1048	112.00	97.61	128.50	<LOD	126202.00	54.00	110.00	212.00	436.00	712.00
6 to 10	538	95.10	84.32	107.25	<LOD	19869.00	47.00	96.00	184.00	328.00	604.00
11 to 15	305	89.44	66.69	119.95	<LOD	2424.00	55.00	94.00	161.00	383.00	501.00
15+	487	100.24	84.15	119.40	<LOD	8709.00	48.00	97.00	194.00	394.00	667.00

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Table 20: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Fish Consumed in Past Month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	1357	113.88	92.33	140.46	<LOD	10575.40	59.10	127.50	231.70	402.00	603.20
No	844	146.26	123.63	173.04	<LOD	19501.70	78.20	155.20	318.60	512.80	720.50

Table 21: 2,4- D and Shellfish Consumed in Past Month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	903	114.59	91.09	144.14	<LOD	5194.00	57.60	130.70	239.10	454.40	634.60
No	1300	131.33	110.49	156.09	<LOD	19501.70	75.80	141.90	268.60	454.10	603.20

Table 22: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Body Mass Index Category

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Under Weight	91	104.90	77.64	141.74	<LOD	854.00	55.00	99.70	191.00	475.00	760.00
Healthy Weight	2109	116.32	103.20	131.12	<LOD	19501.70	57.60	121.00	231.80	449.00	684.00
Over Weight	2714	110.32	99.39	122.45	<LOD	126202.00	56.60	113.00	217.90	409.00	624.40

Table 23: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Ever told you have Weak/Failing Kidneys

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	41	109.22	63.70	187.27	<LOD	8607.40	61.90	143.60	181.90	251.00	440.70
No	1252	119.95	100.35	143.38	<LOD	10575.40	59.80	129.50	254.00	474.40	671.10

Table 24: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and total number of beers consumed per month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	824	116.05	97.82	137.68	<LOD	10575.40	59.60	121.00	245.40	464.40	657.40
0-5	272	122.57	92.02	163.26	<LOD	4054.00	63.00	145.00	270.30	454.40	624.40
6 to 10	71	116.89	81.81	167.00	<LOD	1278.00	65.60	132.00	260.60	399.80	717.90
11 to 15	35	169.57	98.51	291.89	<LOD	2222.40	89.00	185.30	440.70	645.80	710.00
16+	95	125.08	99.77	156.81	<LOD	4260.20	52.20	141.70	224.80	549.60	934.60

Table 25: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Water (gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0 to 896	2187	122.59	108.37	138.67	<LOD	19869.00	65.40	128.40	235.00	449.00	698.00
897-1792g	1197	92.08	82.65	102.59	<LOD	126202.00	48.00	93.00	181.90	337.00	492.80
>1792g	836	102.97	91.60	115.75	<LOD	41354.00	47.00	108.00	210.70	395.30	554.20

Table 26: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Alcohol (gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	3873	108.26	98.41	119.10	<LOD	126202.00	54.50	111.00	217.30	398.60	577.00
0-28	627	106.94	87.02	131.41	<LOD	19501.70	51.00	110.60	212.10	451.40	714.00
>28	323	165.57	137.57	199.26	<LOD	13183.00	80.60	159.00	337.00	665.00	1009.00

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Table 27: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Caffeine(gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	947	122.54	109.17	137.54	<LOD	126202.00	65.00	127.00	223.20	436.00	676.60
0-400	3630	108.10	97.60	119.72	<LOD	41354.00	54.40	110.60	219.00	409.00	609.00
400+	246	137.24	112.13	167.98	<LOD	4260.20	65.70	139.90	274.10	569.40	1031.00

Table 28: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Fiber (gm) /day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0g	9	431.26	18.12	########	57.00	8709.00	155.20	184.00	518.00	8709.00	8709.00
1 to 10	1683	131.65	118.02	146.84	<LOD	41354.00	68.00	140.00	266.60	480.00	707.60
11 to 24	2519	104.31	92.54	117.59	<LOD	126202.00	52.00	108.00	206.50	409.00	621.00
25+	612	101.08	87.87	116.27	<LOD	17980.00	52.00	95.10	192.00	363.20	559.00

Table 29: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Breastfeeding Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Currently Breastfeeding	38	80.98	70.07	93.59	<LOD	575.00	66.00	77.90	96.80	188.20	328.00
Not currently Breastfeeding	93	166.17	108.37	254.80	<LOD	963.00	84.00	181.00	398.60	707.60	760.00

Table 30: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Liver Conditions

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Ever had a liver condition	86	117.95	69.92	198.99	<LOD	10575.40	47.00	146.30	334.90	590.00	676.60
Never had a liver condition	2826	110.53	99.64	122.60	<LOD	126202.00	53.30	111.60	219.90	451.00	671.80

Table 31: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Anyone Smoke in the Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	1053	187.53	163.40	215.23	<LOD	16531.00	97.00	197.10	391.90	649.00	931.00
No	3934	98.10	88.78	108.41	<LOD	126202.00	50.90	102.00	192.70	337.40	498.00

Table 32: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Ever told that you have Diabetes?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	259	83.91	64.94	108.41	<LOD	126202.00	41.00	82.60	151.50	378.00	813.00
No	4737	114.71	103.82	126.75	<LOD	41354.00	58.30	120.00	225.50	431.60	631.80

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Table 33: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine by Currently Taking Birth Control Pills?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	147	137.60	105.28	179.84	<LOD	10079.00	67.00	142.10	288.90	515.00	824.30
No	403	105.05	86.03	128.28	<LOD	8709.00	54.00	106.00	219.00	474.40	720.50

Table 34: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Now Use Depo-Provera Injectables

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	43	127.62	89.03	182.94	<LOD	886.40	73.00	105.00	221.00	401.00	717.90
No	148	168.48	133.60	212.46	<LOD	8709.00	83.00	178.00	291.00	743.00	1253.00

Table 35: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Currently Taking Estrogen Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	120	88.08	67.04	115.72	<LOD	1326.60	49.00	91.10	183.00	290.60	365.40
No	122	64.20	47.93	85.98	<LOD	4973.00	29.60	61.00	154.00	270.30	491.30

Table 36: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Currently Taking Projestin Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	24	80.14	48.86	131.45	<LOD	1326.60	55.00	79.30	144.00	197.80	256.30
No	48	56.38	39.02	81.46	<LOD	4973.00	21.00	58.00	139.00	192.00	340.00

Table 37: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Currently Taking Estrogen-Projestin Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	40	59.03	52.12	66.87	<LOD	4094.00	30.10	58.00	126.00	253.00	537.00
No	28	49.65	25.84	95.39	<LOD	458.70	18.00	49.00	126.00	386.00	386.00

Table 38: Concentration of 3-Hydroxyphenanthrene in ng/L found in urine and Number of Prescription Medications Taken

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	3067	119.24	105.16	135.20	<LOD	16531.00	61.00	124.00	233.30	428.10	621.00
1	795	111.65	98.57	126.46	<LOD	19643.00	55.20	120.00	227.60	434.00	631.80
2	417	106.89	90.78	125.87	<LOD	126202.00	54.00	105.40	217.90	409.00	603.20
3	304	97.17	80.44	117.37	<LOD	11834.00	52.00	106.00	201.00	376.00	565.00
4	149	120.34	93.39	155.05	<LOD	41354.00	53.00	107.70	210.00	458.70	880.00
5	108	93.76	71.14	123.58	<LOD	16745.00	53.00	94.60	186.00	320.00	717.90
6+	200	93.69	69.52	126.27	<LOD	19869.00	33.20	95.00	209.20	649.00	1027.00

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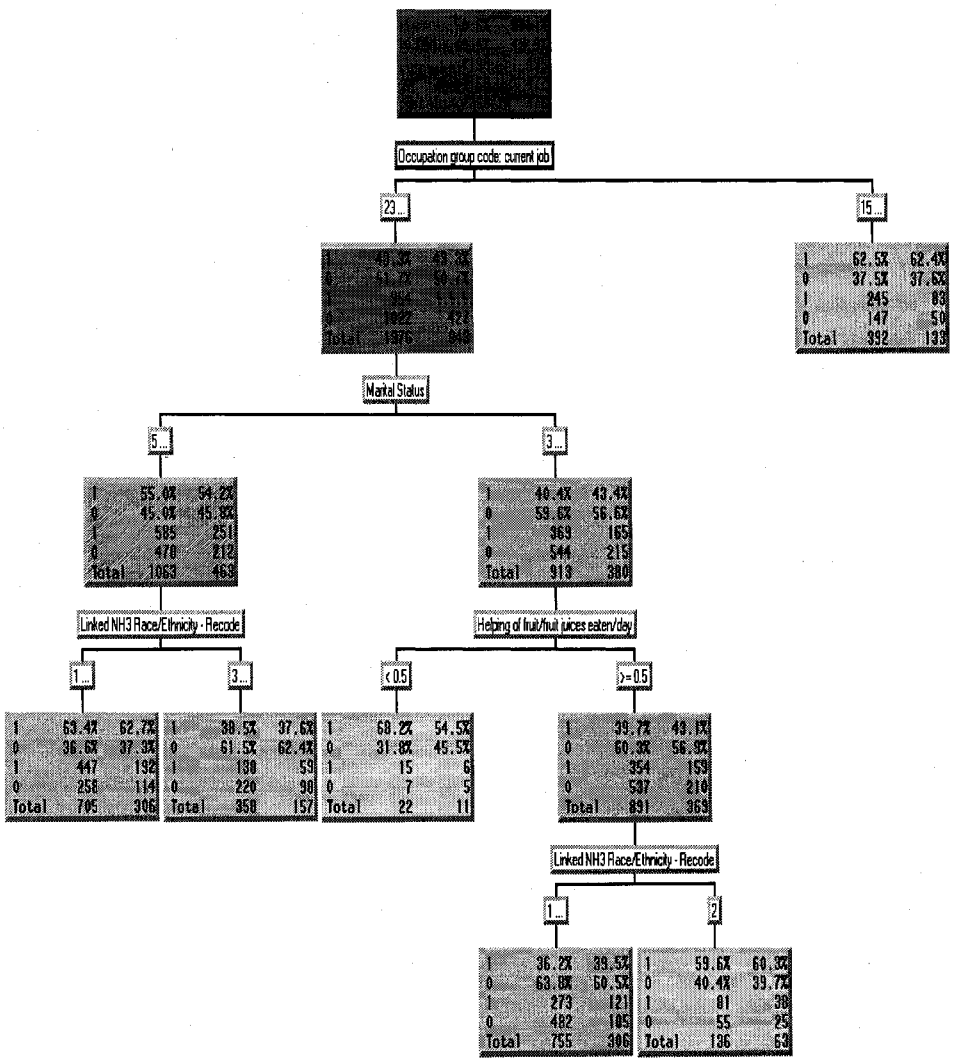
Figure 1: Classification and Regression Tree for 3-hydroxyphenanthrene



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APPENDIX 34: 1-HYDROXYPYRENE

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Table 1: Concentration of 1-Hydroxypyrene in ng/L found in urine by age category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Age 5-11	697	72.03	63.64	81.52	<LOD	8435.70	37.00	73.00	138.00	247.20	386.20
Age 12-19	1428	75.24	65.44	86.52	<LOD	24129.00	36.00	74.00	161.00	327.00	528.00
Age 20-40	1150	73.16	63.32	84.52	<LOD	21710.00	32.00	70.00	157.20	422.30	604.00
Age 41-55	707	55.71	47.51	65.32	<LOD	2394.60	26.00	51.70	123.00	284.40	444.00
Age 55+	1077	39.00	34.73	43.78	<LOD	3765.30	18.00	37.00	88.00	178.20	278.00

Table 2: Concentration of 1-Hydroxypyrene in ng/L found in urine and Occupation

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Executive, Administrators, & Managers	139	43.60	35.04	54.25	<LOD	3115.10	22.00	43.00	102.00	164.60	338.30
Management Related	49	49.15	35.74	67.60	6.00	871.50	28.00	46.50	84.00	247.00	780.40
Engineers, Architects, and Scientists	50	52.32	42.31	64.69	5.30	650.10	18.00	58.00	110.00	278.00	643.20
Health Diagnosing, Assessing & Treating	41	32.84	27.74	38.88	<LOD	609.00	23.50	35.00	48.40	85.00	88.00
Teachers	72	30.57	25.19	37.09	<LOD	749.20	16.00	33.00	61.00	125.50	160.00
Writers, Artists, Entertainers & Athletes	37	41.57	34.91	49.51	5.30	573.50	21.40	34.00	82.00	158.60	230.00
Other Professional Speciality	51	42.51	27.91	64.76	<LOD	926.00	22.40	54.90	111.10	251.40	360.90
Technicians and Related Supported	52	72.87	58.13	91.35	<LOD	1886.10	47.00	68.10	131.20	393.00	506.30
Supervisors and Proprietors, Sales	40	67.07	48.27	93.20	6.30	2833.60	30.00	43.00	169.40	450.60	1396.50
Sales Representatives,finance,business,commodities	55	40.46	33.54	48.80	5.30	578.00	16.50	41.00	71.00	147.20	242.10
Sales Workers, retail & personal services	139	62.25	51.01	75.97	<LOD	24129.00	28.40	60.00	120.00	224.40	491.00
Secretaries, Stenographers, and typists	32	47.41	25.24	89.08	<LOD	251.30	30.00	94.80	157.20	168.40	218.00
Information Clerks	28	42.04	18.47	95.70	<LOD	198.00	37.00	76.00	101.00	119.30	122.30
Records Processing	64	59.50	42.41	83.48	4.00	1679.70	18.00	60.00	220.00	361.00	590.50
Material Recording, Scheduling,distributing clerks	32	46.97	30.89	71.41	<LOD	411.80	21.00	63.60	86.00	242.00	393.30
Miscellaneous administrative support	126	60.98	46.36	80.22	<LOD	2188.00	29.20	57.90	125.00	265.40	456.20
Private Household	18	53.36	41.58	68.46	9.00	669.90	40.00	46.90	70.00	139.40	240.00
Protective Service	32	48.53	38.32	61.47	<LOD	461.00	20.00	44.90	152.80	236.00	244.00
Waiters and Waitresses	40	78.73	59.63	103.95	9.00	529.00	45.00	82.00	187.00	399.00	520.00
Cooks	53	85.58	59.55	122.99	<LOD	1362.70	34.60	58.00	245.00	647.00	1226.10
Miscellaneous food preparation and service	57	108.78	86.38	136.99	7.10	7150.30	43.00	96.00	203.00	747.30	1127.00
Health Service Occupation	51	78.59	61.51	100.40	<LOD	740.00	46.00	91.60	142.00	295.20	350.10
Cleaning and Building Service	70	73.29	49.24	109.08	<LOD	9316.70	34.00	87.00	149.10	269.60	505.20
Personal Service	52	53.50	39.04	73.32	<LOD	709.70	21.00	62.00	95.90	232.30	435.90
Farm Operators, Managers and Supervisors	7	153.78	.	.	6.60	444.00	93.00	312.50	444.00	444.00	444.00
Farm and Nursery Workers	28	83.12	57.93	119.27	9.70	685.90	29.00	78.10	215.20	256.50	400.60
Related Agricultural, Forestry and Fishing	42	95.02	59.78	151.02	9.00	2914.30	31.10	78.00	324.10	672.30	696.40
Vehicle and Mobile Equipment Mechanics, Repairs	28	129.63	98.41	170.75	15.00	757.20	61.00	147.60	286.80	480.00	506.30
Other Mechanics and repairers	38	100.44	61.77	163.32	9.00	2335.50	33.00	69.00	245.00	394.00	2010.80
Construction traders	116	101.81	75.94	136.50	10.00	21710.00	43.00	93.00	201.00	496.00	629.90
Extractive and Precision Production	45	67.63	40.97	111.64	9.70	1878.00	41.00	61.00	113.30	268.00	649.70
Textile, apparel and furnishings machine operators	17	79.27	46.18	136.09	5.00	330.00	56.00	96.00	246.00	330.00	330.00
Machine Operators, Assorted Materials	61	106.65	58.67	193.87	13.20	1902.00	37.00	111.00	224.90	807.20	940.10
Fabricators, Assemblers, Inspectors, and Samplers	46	78.46	64.36	95.64	10.00	1147.00	36.00	95.00	208.00	243.00	446.00
Motor vehicle operators	65	104.98	74.05	148.81	<LOD	2111.00	50.00	90.00	182.00	505.70	606.70
Other transportation and material moving	20	96.42	41.78	222.48	8.00	570.10	34.80	97.10	274.00	366.30	570.10
Construction laborers	29	103.71	43.98	244.57	13.00	2030.10	28.00	93.00	234.10	750.50	1482.40
Laborers, except constuction	5	406.41	.	.	79.00	992.30	140.00	297.00	992.30	992.30	992.30
Frieght, Stock, and Material Movers, hand	43	61.18	41.09	91.10	<LOD	6121.90	31.40	58.20	168.10	305.40	305.40
Other helpers, equipment cleaners, hand packages and laborers	25	73.03	17.65	302.28	4.00	1187.00	17.00	84.00	400.00	889.00	889.00

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Table 3: Concentration of 1-Hydroxypyrene in ng/L found in urine and Employment Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Working at a Job or Business	1057	50.26	43.93	57.50	<LOD	24129.00	23.00	49.00	109.00	224.00	361.00
With a Job but not at Work	52	52.13	33.94	80.07	4.00	450.00	30.00	49.00	97.00	187.00	306.00
Looking for Work	54	80.62	56.05	115.97	15.00	683.00	30.00	92.00	193.00	352.00	416.00
Not working at a job or Business	814	43.57	37.39	50.77	<LOD	8560.00	21.00	42.00	93.00	201.00	350.00

Table 4: Concentration of 1-Hydroxypyrene in ng/L found in urine and Income

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
$0-$4 999	110	114.20	83.97	155.31	<LOD	1055.00	38.00	112.70	314.60	583.00	795.10
$ 5000-$9 999	297	52.13	33.94	80.07	4.00	450.00	30.00	49.00	97.00	187.00	306.00
$10 000-$14 999	390	80.62	56.05	115.97	15.00	683.00	30.00	92.00	193.00	352.00	416.00
$15 000-$19 999	392	43.57	37.39	50.77	<LOD	8560.00	21.00	42.00	93.00	201.00	350.00
$20 000-$24 999	367	76.36	58.70	99.34	<LOD	8435.70	31.40	70.00	179.00	480.00	783.60
$25 000-$34 999	588	55.36	46.36	66.10	<LOD	8382.40	24.00	51.00	129.00	290.90	434.70
$35 000-$44 999	462	65.82	52.96	81.80	<LOD	3115.10	28.40	65.00	146.00	349.00	570.10
$45 000-$54 999	389	62.68	50.08	78.45	<LOD	6121.90	33.00	62.80	133.00	289.20	435.90
$55 000-$64 999	310	51.08	40.41	64.55	<LOD	3224.30	23.70	50.00	115.10	234.00	412.60
$65 000-$74 999	235	52.01	42.94	62.98	<LOD	2188.00	25.90	49.00	105.50	222.40	360.90
$75 000 and over	860	46.88	39.60	55.50	<LOD	2833.60	21.00	46.00	96.00	242.10	433.50

Table 5: Concentration of 1-Hydroxypyrene in ng/L found in urine and Race/Ethnicity

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Non-Hispanic White	2039	56.03	48.84	64.26	<LOD	24129.00	24.30	55.10	127.90	298.50	480.00
Non-Hispanic Black	1220	81.32	71.64	92.31	<LOD	21710.00	34.50	80.00	186.90	400.00	642.40
Mexican American	1431	61.37	52.91	71.17	<LOD	8560.00	30.00	58.90	121.10	260.70	468.00
Other Race-Including MultiRacial	130	55.38	45.57	67.32	4.00	1886.10	28.40	52.60	95.90	224.90	436.60
Other Hispanic	239	78.56	65.05	94.89	<LOD	8435.70	39.60	77.00	157.20	285.30	489.00

Table 6: Concentration of 1-Hydroxypyrene in ng/L found in urine and Gender

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Male	2454	69.38	61.17	78.71	<LOD	21710.00	31.30	65.00	153.00	367.00	550.90
Female	2605	52.82	47.03	59.34	<LOD	24129.00	24.00	53.80	120.00	251.30	396.00

Table 7: Concentration of 1-Hydroxypyrene in ng/L found in urine and Education

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Less than High School	2917	75.28	67.08	84.47	<LOD	24129.00	36.00	74.30	164.60	349.00	540.90
High School Diploma	778	68.55	59.48	79.01	<LOD	21710.00	31.80	64.00	152.30	343.00	542.00
More than High School	1357	46.65	40.58	53.63	<LOD	3115.10	21.00	45.70	101.00	236.00	399.00

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Table 8: Concentration of 1-Hydroxypyrene in ng/L found in urine and Marital Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Married	1654	48.39	42.67	54.88	<LOD	3765.30	22.50	48.00	109.00	231.20	403.70
Widowed	252	37.71	30.72	46.31	<LOD	1410.00	18.00	36.90	77.00	188.00	266.40
Divorced	246	76.39	58.88	99.11	<LOD	21710.00	33.00	74.00	172.00	408.10	555.00
Separated	107	92.23	62.56	135.98	<LOD	2085.00	40.60	112.00	269.60	502.40	610.80
Never Married	1418	80.78	69.11	94.42	<LOD	9316.70	37.00	76.80	181.00	422.30	617.50
Living with Partner	155	81.66	63.37	105.23	<LOD	24129.00	33.00	88.00	163.40	330.00	495.70

Table 9: Concentration of 1-Hydroxypyrene in ng/L found in urine and Country of Birth

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Born in the US	4062	60.18	53.58	67.58	<LOD	24129.00	27.50	59.40	137.00	305.40	505.70
Born in Mexico	617	61.19	50.19	74.59	<LOD	2914.30	29.90	57.60	119.00	274.80	468.30
Born Elsewhere	349	60.83	48.94	75.61	<LOD	1886.10	27.00	59.80	131.00	311.00	502.40

Table 10: Concentration of 1-Hydroxypyrene in ng/L found in urine and Pregnancy Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Pregnant	205	67.08	48.55	92.69	<LOD	24129.00	42.00	64.00	114.30	361.90	709.70
Not Pregnant	1301	55.73	48.10	64.58	<LOD	2833.60	25.10	56.90	123.00	269.60	450.60

Table 11: Concentration of 1-Hydroxypyrene in ng/L found in urine and Type of Home

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
A Mobile Home or Trailer	405	67.92	58.81	78.44	<LOD	21710.00	36.00	70.00	155.10	301.00	459.80
A detached single family home	3078	54.44	47.62	62.24	<LOD	9316.70	24.10	54.30	122.00	259.50	422.30
Attached Single Family Home	399	64.99	54.69	77.22	<LOD	8382.40	28.00	57.00	159.50	386.00	740.00
An Apartment	1052	79.23	69.07	90.88	<LOD	24129.00	34.80	72.30	190.00	453.00	595.70
Something Else	49	61.20	45.53	82.26	<LOD	683.00	34.40	55.00	142.00	343.00	518.00
Dormitory	22	75.21	.	.	14.00	637.80	38.70	89.90	129.50	332.00	396.00

Table 12: Concentration of 1-Hydroxypyrene in ng/L found in urine and Year Home Built

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
1990-present	682	44.39	38.36	51.38	<LOD	2335.50	20.50	44.00	97.00	214.00	313.20
1978-1989	827	58.86	50.97	67.98	<LOD	2833.60	28.70	57.00	131.20	314.10	506.30
1960-1977	904	55.74	47.42	65.52	<LOD	21710.00	25.00	55.00	125.00	266.50	495.70
1950-1959	483	60.10	51.75	69.80	<LOD	8382.40	25.20	62.20	138.10	290.00	436.60
1940-1949	267	64.48	50.46	82.40	<LOD	2394.60	31.00	59.90	127.00	268.00	540.90
before 1940	571	67.83	53.85	85.46	<LOD	3224.30	33.00	70.00	152.30	333.90	564.00

Table 13: Concentration of 1-Hydroxypyrene in ng/L found in urine and How long lived in home

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
lived in home <1 year	826	75.73	64.02	89.59	<LOD	24129.00	33.00	70.00	157.00	412.70	675.80
lived in home 1-2 years	849	77.65	66.75	90.33	<LOD	9316.70	34.50	79.20	164.80	424.00	600.00
lived in home 3-5 years	1002	56.22	49.03	64.47	<LOD	21710.00	25.10	52.40	125.00	270.30	461.00
lived in home 6-10 years	828	52.05	42.33	64.01	<LOD	8435.70	26.00	55.00	118.00	236.00	361.00
lived in home 10+ years	1482	52.30	46.44	58.90	<LOD	6121.90	22.50	50.00	120.00	278.00	435.90

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Table 14: Concentration of 1-Hydroxypyrene in ng/L found in urine and Water Source

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Private-Public Water Company	4477	59.60	53.08	66.91	<LOD	24129.00	27.00	58.00	131.00	301.00	506.30
Private Public Well	462	61.96	53.25	72.08	<LOD	1862.20	27.40	64.00	148.90	309.00	439.00
Some other Water Source	27	72.16	26.93	193.33	9.30	468.00	34.00	59.00	108.70	315.30	371.00

Table 15: Concentration of 1-Hydroxypyrene in ng/L found in urine and Helpings of Protein per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	15	59.54	37.58	94.34	5.50	182.80	51.70	68.00	88.10	105.00	182.80
1	166	45.41	33.11	62.28	<LOD	843.60	17.80	50.30	107.30	232.70	403.70
2	179	44.78	36.70	54.63	<LOD	412.70	24.00	44.90	104.60	170.80	281.80
3+	98	35.67	25.81	49.30	<LOD	3765.30	14.80	27.70	92.20	213.40	313.20

Table 16: Concentration of 1-Hydroxypyrene in ng/L found in urine and Helpings of Milk/Dairy per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	71	47.03	34.05	64.97	<LOD	733.30	17.60	38.90	152.60	266.40	311.10
1	213	44.49	32.40	61.10	<LOD	843.60	21.30	45.10	88.10	197.10	338.30
2	127	41.05	31.40	53.65	<LOD	3765.30	17.60	43.40	92.80	172.80	275.60
3+	49	41.14	26.02	65.02	<LOD	480.00	14.50	56.00	114.00	213.30	281.80

Table 17: Concentration of 1-Hydroxypyrene in ng/L found in urine and Helpings of Fruit per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	46	91.08	56.45	146.96	5.50	733.30	43.00	107.30	213.30	311.10	641.70
1	197	46.12	36.09	58.94	<LOD	3765.30	19.90	47.20	104.30	180.30	283.20
2	142	39.67	29.86	52.71	<LOD	842.60	17.60	43.40	74.60	232.70	313.20
3+	74	29.80	19.88	44.68	<LOD	1862.20	14.80	26.00	61.50	152.10	281.80

Table 18: Concentration of 1-Hydroxypyrene in ng/L found in urine and Helpings of Vegetables per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	42	48.57	32.23	73.20	4.50	1862.20	24.50	63.00	95.40	338.30	641.70
1	232	49.16	38.90	62.12	<LOD	1597.20	21.60	47.60	118.50	226.90	313.20
2	179	44.78	36.70	54.63	<LOD	412.70	24.00	44.90	104.60	170.80	281.80
3+	59	36.56	20.97	63.75	<LOD	480.00	15.30	42.60	67.90	240.20	316.60

Table 19: Concentration of 1-Hydroxypyrene in ng/L found in urine and Helpings of Bread/grain per day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	33	66.39	46.83	94.13	<LOD	733.30	30.40	88.10	140.90	266.40	338.30
1	163	43.13	32.76	56.80	4.80	843.60	18.60	42.50	87.60	213.30	350.30
2	161	36.42	26.57	49.93	<LOD	1597.20	17.00	42.70	86.50	155.90	229.50
3+	102	52.25	36.42	74.95	5.30	3765.30	24.00	58.70	136.80	311.10	362.10

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Table 20: Concentration of 1-Hydroxypyrene in ng/L found in urine and Servings of Beans per month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	275	58.72	46.20	74.64	<LOD	24129.00	28.00	58.00	119.00	246.00	332.00
1 to 5	1051	51.07	43.23	60.33	<LOD	21710.00	24.00	50.00	106.00	226.00	349.00
6 to 10	539	41.94	36.69	47.94	<LOD	2085.00	21.00	43.00	88.00	179.00	254.00
11 to 15	306	44.49	35.18	56.27	<LOD	1187.00	27.00	44.00	88.00	192.00	351.00
15+	487	50.58	41.84	61.14	<LOD	2188.00	24.00	46.00	103.00	200.00	384.00

Table 21: Concentration of 1-Hydroxypyrene in ng/L found in urine and Fish Consumed in Past Month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	1373	67.35	56.92	79.68	<LOD	7150.30	29.00	66.30	160.00	350.30	588.40
No	840	100.16	80.42	124.73	<LOD	9316.70	46.60	96.10	251.30	536.50	807.20

Table 22: 2,4- D and Shellfish Consumed in Past Month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	918	72.05	57.00	91.07	<LOD	8382.40	27.70	69.20	182.70	422.30	669.40
No	1297	80.37	68.05	94.92	<LOD	9316.70	36.80	77.90	177.30	393.20	641.70

Table 23: Concentration of 1-Hydroxypyrene in ng/L found in urine and Body Mass Index Category

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Under Weight	91	58.09	35.56	94.89	5.30	1396.50	27.00	44.00	111.00	433.50	940.10
Healthy Weight	2107	65.47	57.17	74.98	<LOD	24129.00	28.00	64.00	152.70	333.10	582.90
Over Weight	2733	57.27	51.76	63.38	<LOD	21710.00	26.50	58.10	127.00	269.70	436.60

Table 24: Concentration of 1-Hydroxypyrene in ng/L found in urine and Ever told you have Weak/Failing Kidneys

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	41	71.82	40.20	128.32	<LOD	795.10	49.70	75.90	157.20	441.00	795.10
No	1264	72.50	60.05	87.53	<LOD	9316.70	29.90	68.00	179.60	435.90	780.40

Table 25: Concentration of 1-Hydroxypyrene in ng/L found in urine and total number of beers consumed per month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	832	62.87	51.50	76.74	<LOD	6121.90	26.20	64.30	157.30	360.90	583.00
0-5	273	84.36	60.64	117.38	<LOD	9316.70	33.70	85.00	231.20	506.30	976.80
6 to 10	71	89.73	60.01	134.16	5.40	1310.40	29.30	80.50	232.70	807.20	1000.90
11 to 15	37	100.89	59.30	171.64	4.90	2335.50	34.90	98.70	338.30	629.90	780.40
16+	96	88.38	72.16	108.25	6.10	1375.70	35.00	89.00	160.00	571.20	650.10

Table 26: Concentration of 1-Hydroxypyrene in ng/L found in urine and Water (gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0 to 896	2198	65.64	58.43	73.74	<LOD	24129.00	31.00	65.00	147.00	321.10	540.90
897-1792g	1199	46.08	40.06	53.00	<LOD	6121.90	21.00	44.00	100.10	224.00	367.60
>1792g	839	58.34	50.36	67.58	<LOD	21710.00	25.10	54.40	130.00	323.10	528.00

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Table 27: Concentration of 1-Hydroxypyrene in ng/L found in urine and Alcohol (gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	3890	57.94	52.33	64.14	<LOD	24129.00	26.50	58.00	127.90	286.80	459.80
0-28	625	54.02	43.60	66.93	<LOD	8435.70	23.50	51.00	125.50	298.50	480.00
>28	325	91.09	75.03	110.59	<LOD	21710.00	39.00	89.60	201.00	424.00	598.00

Table 28: Concentration of 1-Hydroxypyrene in ng/L found in urine and Caffeine(gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	944	66.69	61.22	72.64	<LOD	8560.00	29.00	68.00	155.00	314.90	530.00
0-400	3649	57.28	51.27	63.99	<LOD	24129.00	26.90	56.30	125.50	286.80	444.00
400+	247	73.34	58.48	91.97	<LOD	3765.30	27.70	67.20	202.30	483.00	641.70

Table 29: Concentration of 1-Hydroxypyrene in ng/L found in urine and Fiber (gm) /day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0g	9	104.55	30.70	356.04	35.00	669.90	44.00	168.10	187.00	224.60	669.90
1 to 10	1693	76.35	66.94	87.08	<LOD	24129.00	35.10	79.00	179.70	359.00	573.50
11 to 24	2525	53.80	48.14	60.14	<LOD	8560.00	24.40	53.00	115.00	274.00	446.00
25+	613	49.72	41.54	59.52	<LOD	9316.70	23.90	46.00	98.00	240.00	422.30

Table 30: Concentration of 1-Hydroxypyrene in ng/L found in urine and Breastfeeding Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Currently Breastfeeding	40	30.36	25.59	36.02	<LOD	752.70	23.50	31.00	67.90	81.10	157.00
Not currently Breastfeeding	94	104.42	47.38	230.13	<LOD	1101.50	40.00	105.50	321.00	940.10	1101.50

Table 31: Concentration of 1-Hydroxypyrene in ng/L found in urine and Liver Conditions

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Ever had a liver condition	87	59.61	38.42	92.47	<LOD	2335.50	21.60	63.10	192.00	295.20	520.00
Never had a liver condition	2841	56.75	50.51	63.75	<LOD	21710.00	25.00	54.70	127.00	306.30	506.30

Table 32: Concentration of 1-Hydroxypyrene in ng/L found in urine and Anyone Smoke in the Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	1064	122.78	105.07	143.48	<LOD	24129.00	57.10	129.50	279.00	530.00	795.80
No	3942	49.30	44.45	54.67	<LOD	8560.00	23.50	49.00	101.60	232.30	368.00

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Table 33: Concentration of 1-Hydroxypyrene in ng/L found in urine and Ever told that you have Diabetes?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	260	36.54	30.35	43.99	<LOD	980.00	18.00	35.00	74.00	181.00	279.90
No	4754	62.11	55.74	69.20	<LOD	24129.00	28.00	61.40	139.40	312.50	506.30

Table 34: Concentration of 1-Hydroxypyrene in ng/L found in urine by Currently Taking Birth Control Pills?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	148	87.01	63.09	119.99	<LOD	2833.60	37.00	85.00	149.70	547.40	976.80
No	403	55.16	43.77	69.52	<LOD	2188.00	26.00	53.00	131.20	315.90	450.60

Table 35: Concentration of 1-Hydroxypyrene in ng/L found in urine and Now Use Depo-Provera Injectables

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	44	87.61	45.13	170.06	<LOD	926.00	56.90	85.00	198.00	523.00	926.00
No	143	98.61	66.71	145.76	4.00	3115.10	46.00	108.00	182.00	561.00	940.10

Table 36: Concentration of 1-Hydroxypyrene in ng/L found in urine and Currently Taking Estrogen Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	122	40.61	31.02	53.16	<LOD	590.50	19.80	39.00	88.00	160.00	232.70
No	121	28.67	22.46	36.59	<LOD	564.00	13.00	28.30	57.00	164.80	311.10

Table 37: Concentration of 1-Hydroxypyrene in ng/L found in urine and Currently Taking Projestin Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	25	44.53	38.84	51.06	6.10	480.00	23.90	59.40	81.00	141.90	290.00
No	49	24.06	17.12	33.81	4.00	249.00	10.00	21.00	53.00	112.00	130.80

Table 38: Concentration of 1-Hydroxypyrene in ng/L found in urine and Currently Taking Estrogen-Projestin Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	40	29.07	28.40	29.76	<LOD	780.40	13.00	30.00	80.00	130.00	247.00
No	28	18.51	9.38	36.52	<LOD	311.10	5.00	19.50	72.00	157.00	157.00

Table 39: Concentration of 1-Hydroxypyrene in ng/L found in urine and Number of Prescription Medications Taken

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	3075	69.09	60.42	79.01	<LOD	24129.00	32.00	67.00	149.70	350.30	557.00
1	791	57.82	49.92	66.98	<LOD	8435.70	29.00	57.80	137.30	254.50	408.00
2	421	57.26	47.08	69.64	<LOD	1846.00	25.00	57.10	108.90	283.20	531.00
3	309	47.78	39.60	57.63	<LOD	8382.40	22.00	44.70	99.00	266.50	372.10
4	152	47.80	39.04	58.52	<LOD	1597.20	23.90	40.00	104.30	248.40	343.00
5	109	36.38	28.72	46.09	<LOD	926.00	17.70	39.00	64.30	163.60	212.00
6+	202	37.84	28.92	49.51	<LOD	2405.00	17.00	34.00	104.60	224.00	349.00

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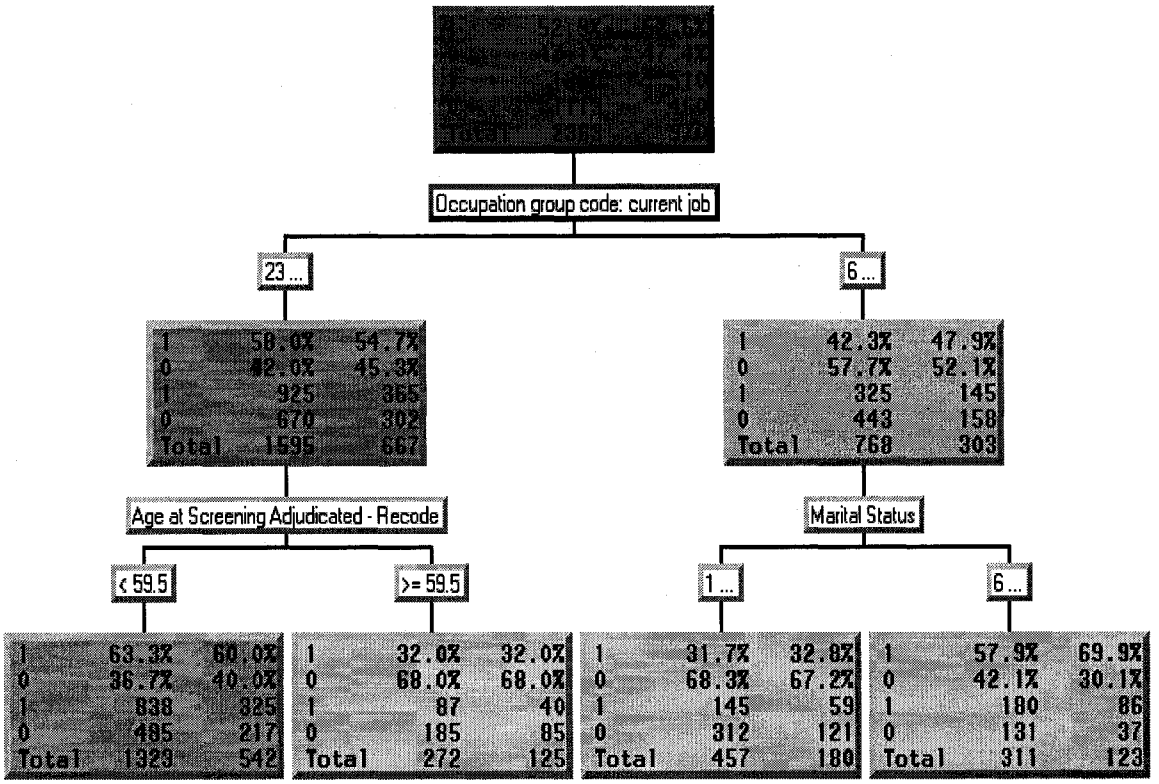
Classification and Regression Tree for 1-Hydroxypyrene



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APPENDIX 35: 9-HYDROXYFLUORENE

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Table 1: Concentration of 9-Hydroxyfluorene in ng/L found in urine by age category

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Age 5-11	387	168.93	141.85	201.17	<LOD	3745.00	105.00	168.00	296.00	487.00	720.00
Age 12-19	733	197.27	161.03	241.66	<LOD	36393.00	105.00	201.00	371.00	666.00	889.00
Age 20-40	633	236.54	191.87	291.61	<LOD	5092.00	132.00	243.00	450.00	800.00	1085.00
Age 41-55	429	237.34	206.18	273.21	<LOD	67885.00	125.00	226.00	491.00	873.00	1263.00
Age 55+	563	208.91	178.97	243.85	<LOD	5803.00	119.00	218.00	445.00	799.00	1098.00

Table 2: Concentration of 9-Hydroxyfluorene in ng/L found in urine and Occupation

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Executive, Administrators, & Managers	85	207.87	161.54	267.49	<LOD	5803.00	143.00	217.00	360.00	641.00	787.00
Management Related	25	183.15	142.56	235.30	20.00	1073.00	113.00	218.00	358.00	527.00	699.00
Engineers, Architects, and Scientists	32	211.67	125.86	355.98	32.00	2091.00	116.00	196.00	486.00	986.00	1098.00
Health Diagnosing, Assessing & Treating	28	102.61	72.69	144.84	<LOD	1534.00	68.00	100.00	284.00	364.00	370.00
Teachers	49	180.44	118.38	275.03	27.00	3992.00	100.00	196.00	320.00	471.00	812.00
Writers, Artists, Entertainers & Athletes	18	272.80	183.70	405.12	107.00	1164.00	141.00	228.00	569.00	779.00	1164.00
Other Professional Speciality	29	238.75	154.60	368.70	42.00	1197.00	103.00	225.00	512.00	684.00	930.00
Technicians and Related Supported	29	260.38	173.26	391.32	40.00	1355.00	161.00	245.00	425.00	817.00	931.00
Supervisors and Proprietors, Sales	24	225.93	166.58	306.42	42.00	4352.00	133.00	185.00	310.00	918.00	918.00
Sales Representatives,finance,business,commodities	29	263.22	166.71	415.59	23.00	3631.00	165.00	257.00	506.00	750.00	1160.00
Sales Workers, retail & personal services	79	228.46	165.51	315.35	<LOD	36393.00	121.00	259.00	392.00	771.00	5092.00
Secretaries, Stenographers, and typists	17	148.28	115.98	189.56	46.00	401.00	71.00	146.00	301.00	393.00	401.00
Information Clerks	15	244.44	74.74	799.46	23.00	1018.00	145.00	242.00	617.00	1018.00	1018.00
Records Processing	38	191.20	135.64	269.51	<LOD	1857.00	94.00	164.00	358.00	1015.00	1799.00
Material Recording, Scheduling,distributing clerks	19	233.46	122.45	445.10	38.00	1132.00	129.00	289.00	389.00	1132.00	1132.00
Miscellaneous administrative support	69	246.21	184.81	328.01	31.00	2143.00	146.00	244.00	463.00	659.00	968.00
Private Household	8	180.58	52.17	625.09	45.00	1136.00	60.00	324.00	339.00	480.00	480.00
Protective Service	18	241.28	134.03	434.35	55.00	27697.00	107.00	201.00	339.00	1691.00	1691.00
Waiters and Waitresses	22	284.32	193.82	417.08	61.00	1202.00	225.00	299.00	389.00	870.00	1061.00
Cooks	24	208.45	102.59	423.54	<LOD	1383.00	116.00	207.00	603.00	1042.00	1042.00
Miscellaneous food preparation and service	34	257.92	213.29	311.88	34.00	935.00	132.00	246.00	573.00	935.00	935.00
Health Service Occupation	28	443.26	309.73	634.35	7.00	3294.00	221.00	393.00	999.00	1032.00	1562.00
Cleaning and Building Service	41	259.82	196.66	343.27	<LOD	1473.00	153.00	268.00	479.00	692.00	781.00
Personal Service	29	214.82	119.26	386.95	18.00	925.00	113.00	170.00	462.00	800.00	905.00
Farm Operators, Managers and Supervisors	2	799.97	.	.	319.00	1335.00	319.00	1335.00	1335.00	1335.00	1335.00
Farm and Nursery Workers	7	162.11	.	.	57.00	270.00	138.00	156.00	177.00	270.00	270.00
Related Agricultural, Forestry and Fishing	24	315.41	149.75	664.31	40.00	5350.00	194.00	274.00	622.00	1416.00	3617.00
Vehicle and Mobile Equipment Mechanics, Repairs	14	215.60	55.79	833.16	52.00	1669.00	106.00	165.00	444.00	1669.00	1669.00
Other Mechanics and repairers	18	439.94	191.88	1008.70	51.00	2718.00	199.00	307.00	1180.00	1975.00	2718.00
Construction traders	67	321.48	231.80	445.85	<LOD	5585.00	192.00	302.00	753.00	873.00	1021.00
Extractive and Precision Production	23	373.23	146.24	952.52	48.00	67885.00	191.00	327.00	451.00	5511.00	5511.00
Textile, apparel and furnishings machine operators	9	270.57	138.37	529.11	19.00	1000.00	278.00	346.00	722.00	1000.00	1000.00
Machine Operators, Assorted Materials	28	253.32	193.49	331.65	<LOD	6474.00	145.00	229.00	333.00	696.00	1536.00
Fabricators, Assemblers, Inspectors, and Samplers	24	258.99	235.89	284.34	36.00	1519.00	98.00	290.00	666.00	786.00	1210.00
Motor vehicle operators	35	339.11	205.43	559.77	69.00	3332.00	194.00	390.00	462.00	1177.00	1263.00
Other transportation and material moving	12	304.32	91.19	1015.51	36.00	1970.00	154.00	560.00	694.00	1970.00	1970.00
Construction laborers	15	301.37	176.13	515.64	98.00	745.00	215.00	254.00	508.00	588.00	588.00
Laborers, except constuction	3	499.22	.	.	281.00	709.00	281.00	650.00	709.00	709.00	709.00
Frieght, Stock, and Material Movers, hand	20	219.26	95.78	501.96	33.00	1304.00	47.00	252.00	594.00	1304.00	1304.00
Other helpers, equipment cleaners, hand packages and laborers	17	207.31	31.53	1362.86	14.00	1740.00	76.00	308.00	741.00	1565.00	1740.00

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Table 3: Concentration of 9-Hydroxyfluorene in ng/L found in urine and Employment Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Working at a Job or Business	1056	240.29	206.86	279.13	<LOD	67885.00	132.00	240.00	460.00	873.00	1175.00
With a Job but not at Work	52	232.57	155.49	347.87	44.00	3870.00	138.00	250.00	319.00	582.00	968.00
Looking for Work	54	207.90	115.12	375.44	<LOD	1239.00	153.00	277.00	443.00	670.00	795.00
Not working at a job or Business	813	212.11	186.06	241.82	<LOD	9781.00	111.00	214.00	465.00	799.00	1085.00

Table 4: Concentration of 9-Hydroxyfluorene in ng/L found in urine and Income

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
$0-$4 999	59	347.17	190.88	631.41	<LOD	1431.00	163.00	354.00	792.00	1425.00	1425.00
$ 5000-$9 999	148	232.57	155.49	347.87	44.00	3870.00	138.00	250.00	319.00	582.00	968.00
$10 000-$14 999	196	207.90	115.12	375.44	<LOD	1239.00	153.00	277.00	443.00	670.00	795.00
$15 000-$19 999	201	212.11	186.06	241.82	<LOD	9781.00	111.00	214.00	465.00	799.00	1085.00
$20 000-$24 999	193	289.41	215.25	389.10	<LOD	5092.00	145.00	297.00	675.00	1085.00	1325.00
$25 000-$34 999	323	217.51	165.49	285.89	<LOD	14373.00	122.00	221.00	406.00	736.00	1177.00
$35 000-$44 999	259	218.40	172.79	276.05	<LOD	67885.00	129.00	218.00	432.00	704.00	1132.00
$45 000-$54 999	239	222.81	171.47	289.52	<LOD	2718.00	144.00	234.00	390.00	816.00	1335.00
$55 000-$64 999	191	198.22	153.21	256.46	<LOD	3294.00	94.00	209.00	410.00	730.00	1153.00
$65 000-$74 999	140	225.69	174.98	291.11	5.00	5511.00	113.00	220.00	374.00	710.00	1175.00
$75 000 and over	562	177.25	150.98	208.10	<LOD	6041.00	100.00	185.00	352.00	648.00	913.00

Table 5: Concentration of 9-Hydroxyfluorene in ng/L found in urine and Race/Ethnicity

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Non-Hispanic White	1207	213.40	182.08	250.10	<LOD	36393.00	115.00	215.00	416.00	772.00	1061.00
Non-Hispanic Black	692	327.45	287.48	372.97	<LOD	67885.00	179.00	324.00	609.00	1063.00	1567.00
Mexican American	662	199.32	147.79	268.81	<LOD	9781.00	111.00	203.00	349.00	701.00	1077.00
Other Race-Including MultiRacial	77	120.39	101.06	143.42	<LOD	1321.00	83.00	133.00	194.00	310.00	411.00
Other Hispanic	107	220.88	163.54	298.33	<LOD	1970.00	136.00	250.00	519.00	889.00	1062.00

Table 6: Concentration of 9-Hydroxyfluorene in ng/L found in urine and Gender

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Male	1346	251.31	216.56	291.65	<LOD	67885.00	140.00	249.00	475.00	858.00	1239.00
Female	1399	192.35	164.26	225.24	<LOD	36393.00	103.00	196.00	388.00	701.00	1016.00

Table 7: Concentration of 9-Hydroxyfluorene in ng/L found in urine and Marital Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Married	961	198.97	175.43	225.68	<LOD	5585.00	112.00	213.00	367.00	690.00	1021.00
Widowed	137	190.15	135.79	266.27	<LOD	5496.00	98.00	205.00	487.00	784.00	946.00
Divorced	143	320.06	221.00	463.52	<LOD	67885.00	171.00	390.00	735.00	1177.00	1599.00
Separated	57	362.06	256.20	511.68	17.00	27697.00	155.00	339.00	574.00	1077.00	2143.00
Never Married	767	247.81	204.84	299.81	<LOD	9781.00	132.00	250.00	490.00	799.00	1133.00
Living with Partner	101	317.94	224.67	449.93	41.00	36393.00	164.00	280.00	595.00	1032.00	1428.00

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Table 8: Concentration of 9-Hydroxyfluorene in ng/L found in urine and Country of Birth

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Born in the US	2283	223.78	194.34	257.68	<LOD	67885.00	123.00	223.00	435.00	800.00	1138.00
Born in Mexico	287	213.10	145.11	312.95	<LOD	5068.00	113.00	240.00	415.00	709.00	1077.00
Born Elsewhere	168	175.64	139.91	220.51	<LOD	2056.00	98.00	174.00	341.00	617.00	753.00

Table 9: Concentration of 9-Hydroxyfluorene in ng/L found in urine and Pregnancy Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Pregnant	109	282.18	195.19	407.93	44.00	36393.00	163.00	261.00	479.00	889.00	1073.00
Not Pregnant	866	195.52	162.23	235.64	<LOD	27697.00	107.00	196.00	390.00	710.00	1018.00

Table 10: Concentration of 9-Hydroxyfluorene in ng/L found in urine and Type of Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
A Mobile Home or Trailer	214	218.30	170.31	279.81	<LOD	3611.00	121.00	216.00	433.00	873.00	1045.00
A detached single family home	1674	199.49	170.17	233.88	<LOD	67885.00	106.00	199.00	393.00	710.00	1085.00
Attached Single Family Home	224	259.35	188.68	356.48	<LOD	5803.00	148.00	280.00	441.00	729.00	1042.00
An Apartment	559	277.63	246.63	312.53	<LOD	36393.00	158.00	278.00	566.00	868.00	1164.00
Something Else	32	315.55	261.26	381.12	85.00	1066.00	191.00	267.00	569.00	784.00	1066.00
Dormitory	15	271.68	.	.	71.00	1242.00	155.00	256.00	599.00	1006.00	1242.00

Table 11: Concentration of 9-Hydroxyfluorene in ng/L found in urine and Year Home Built

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
1990-present	425	153.11	121.41	193.09	<LOD	5350.00	85.00	152.00	294.00	617.00	897.00
1978-1989	408	211.88	176.13	254.89	<LOD	3611.00	126.00	220.00	390.00	703.00	918.00
1960-1977	503	218.15	174.33	272.99	<LOD	6041.00	115.00	225.00	408.00	858.00	1054.00
1950-1959	250	221.94	176.22	279.52	5.00	27697.00	120.00	207.00	442.00	826.00	1355.00
1940-1949	139	231.09	176.43	302.70	<LOD	67885.00	168.00	267.00	373.00	573.00	1236.00
before 1940	298	289.58	223.28	375.58	<LOD	6474.00	165.00	302.00	543.00	1032.00	1180.00

Table 12: Concentration of 9-Hydroxyfluorene in ng/L found in urine and Water Source

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Private-Public Water Company	2461	216.89	186.68	252.00	<LOD	67885.00	118.00	217.00	432.00	784.00	1098.00
Private Public Well	225	231.01	199.13	267.98	<LOD	2844.00	136.00	234.00	420.00	704.00	1015.00
Some other Water Source	10	113.07	.	.	46.00	394.00	76.00	129.00	201.00	201.00	201.00

Table 13: Concentration of 9-Hydroxyfluorene in ng/L found in urine and Servings of Beans per month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	275	226.40	192.08	266.85	<LOD	36393.00	113.00	256.00	394.00	715.00	1100.00
1 to 5	1049	228.02	193.36	268.89	<LOD	27697.00	132.00	222.00	443.00	826.00	1175.00
6 to 10	541	207.66	171.48	251.47	<LOD	67885.00	105.00	203.00	439.00	873.00	1066.00
11 to 15	305	198.86	159.35	248.18	<LOD	3122.00	115.00	201.00	364.00	690.00	860.00
15+	486	206.02	164.87	257.43	<LOD	5068.00	116.00	209.00	420.00	704.00	935.00

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Table 14: Concentration of 9-Hydroxyfluorene in ng/L found in urine and Body Mass Index Category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Under Weight	50	174.12	109.40	277.10	<LOD	1263.00	92.00	170.00	409.00	710.00	747.00
Healthy Weight	1132	193.44	167.14	223.86	<LOD	36393.00	102.00	196.00	380.00	709.00	1066.00
Over Weight	1462	237.79	204.18	276.93	<LOD	27697.00	136.00	242.00	463.00	799.00	1160.00

Table 15: Concentration of 9-Hydroxyfluorene in ng/L found in urine and Water (gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0 to 896	1199	237.23	203.28	276.85	<LOD	67885.00	137.00	238.00	459.00	778.00	1138.00
897-1792g	667	184.49	154.05	220.93	<LOD	5585.00	97.00	196.00	366.00	704.00	1015.00
>1792g	462	205.86	166.92	253.89	<LOD	6614.00	113.00	216.00	392.00	781.00	1066.00

Table 16: Concentration of 9-Hydroxyfluorene in ng/L found in urine and Alcohol (gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	2185	205.33	181.69	232.05	<LOD	67885.00	111.00	207.00	392.00	753.00	1062.00
0-28	250	218.06	159.37	298.34	<LOD	27697.00	123.00	221.00	462.00	858.00	1160.00
>28	188	371.43	308.35	447.42	<LOD	4352.00	210.00	370.00	662.00	1000.00	1567.00

Table 17:Concentration of 9-Hydroxyfluorene in ng/L found in urine and Caffeine(gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	506	243.24	208.67	283.55	<LOD	9781.00	136.00	214.00	441.00	858.00	1239.00
0-400	2008	209.69	180.69	243.35	<LOD	67885.00	113.00	215.00	410.00	751.00	1077.00
400+	109	298.46	235.39	378.44	<LOD	6614.00	169.00	333.00	664.00	1061.00	1304.00

Table 18: Concentration of 9-Hydroxyfluorene in ng/L found in urine and Fiber (gm) /day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0g	4	199.74	3.20	######	113.00	319.00	113.00	230.00	319.00	319.00	319.00
1 to 10	855	245.54	200.16	301.19	<LOD	36393.00	136.00	253.00	462.00	844.00	1197.00
11 to 24	1436	211.91	185.28	242.36	<LOD	27697.00	113.00	210.00	432.00	792.00	1113.00
25+	328	195.91	158.34	242.39	<LOD	67885.00	103.00	214.00	339.00	581.00	931.00

Table 19: Concentration of 9-Hydroxyfluorene in ng/L found in urine and Breastfeeding Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Currently Breastfeeding	21	202.21	167.54	244.06	85.00	1085.00	136.00	163.00	313.00	429.00	677.00
Not currently Breastfeeding	48	279.31	123.65	630.90	30.00	3992.00	153.00	248.00	446.00	1425.00	1534.00

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Table 20: Concentration of 9-Hydroxyfluorene in ng/L found in urine and Liver Conditions

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Ever had a liver condition	48	266.16	154.59	458.23	36.00	3294.00	136.00	295.00	617.00	1175.00	1210.00
Never had a liver condition	1574	228.84	198.45	263.88	<LOD	67885.00	127.00	233.00	459.00	826.00	1132.00

Table 21: Concentration of 9-Hydroxyfluorene in ng/L found in urine and Anyone Smoke in the Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	566	401.02	359.56	447.24	<LOD	67885.00	223.00	416.00	743.00	1093.00	1425.00
No	2152	186.47	160.20	217.04	<LOD	27697.00	105.00	192.00	349.00	659.00	925.00

Table 22: 2, 4-D and Ever told that you have Diabetes?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	144	218.06	177.96	267.19	8.00	3294.00	129.00	224.00	323.00	722.00	1062.00
No	2574	219.10	189.42	253.43	<LOD	67885.00	120.00	221.00	433.00	786.00	1098.00

Table 23: Concentration of 9-Hydroxyfluorene in ng/L found in urine by Currently Taking Birth Control Pills?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	79	320.52	245.30	418.80	32.00	14373.00	167.00	246.00	654.00	1032.00	1425.00
No	229	183.70	147.02	229.53	<LOD	5511.00	101.00	194.00	364.00	710.00	935.00

Table 24: Concentration of 9-Hydroxyfluorene in ng/L found in urine and Now Use Depo-Provera Injectables

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	30	275.68	205.73	369.41	36.00	1667.00	185.00	230.00	529.00	679.00	1085.00
No	80	327.73	256.17	419.27	23.00	2145.00	143.00	319.00	710.00	1032.00	1032.00

Table 25: Concentration of 9-Hydroxyfluorene in ng/L found in urine and Currently Taking Estrogen Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	68	188.15	119.76	295.58	<LOD	1562.00	98.00	210.00	483.00	812.00	913.00
No	62	148.38	119.50	184.24	<LOD	1281.00	79.00	168.00	502.00	826.00	925.00

Table 26: Concentration of 9-Hydroxyfluorene in ng/L found in urine and Currently Taking Projestin Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	12	243.46	11.32	5234.58	46.00	913.00	122.00	174.00	414.00	913.00	913.00
No	31	107.29	81.50	141.23	<LOD	1361.00	46.00	138.00	286.00	519.00	772.00

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Table 27: Concentration of 9-Hydroxyfluorene in ng/L found in urine and Currently Taking Estrogen-Projestin Pills

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	25	265.56	200.34	352.02	55.00	1403.00	138.00	232.00	545.00	664.00	913.00
No	19	103.43	49.75	215.03	<LOD	918.00	44.00	144.00	331.00	897.00	918.00

Table 28: Concentration of 9-Hydroxyfluorene in ng/L found in urine and Number of Prescription Medications Taken

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	1651	220.56	185.21	262.66	<LOD	67885.00	120.00	220.00	413.00	779.00	1085.00
1	421	201.84	172.35	236.39	<LOD	5511.00	100.00	199.00	435.00	812.00	1073.00
2	232	213.45	167.78	271.54	<LOD	6474.00	113.00	237.00	404.00	692.00	1132.00
3	170	225.24	173.10	293.09	4.00	2967.00	106.00	221.00	545.00	979.00	1180.00
4	90	247.32	204.48	299.14	<LOD	3611.00	158.00	284.00	492.00	772.00	1153.00
5	61	286.89	224.07	367.32	31.00	1408.00	175.00	283.00	562.00	703.00	926.00
6+	120	222.52	166.07	298.15	<LOD	14373.00	136.00	220.00	425.00	743.00	897.00

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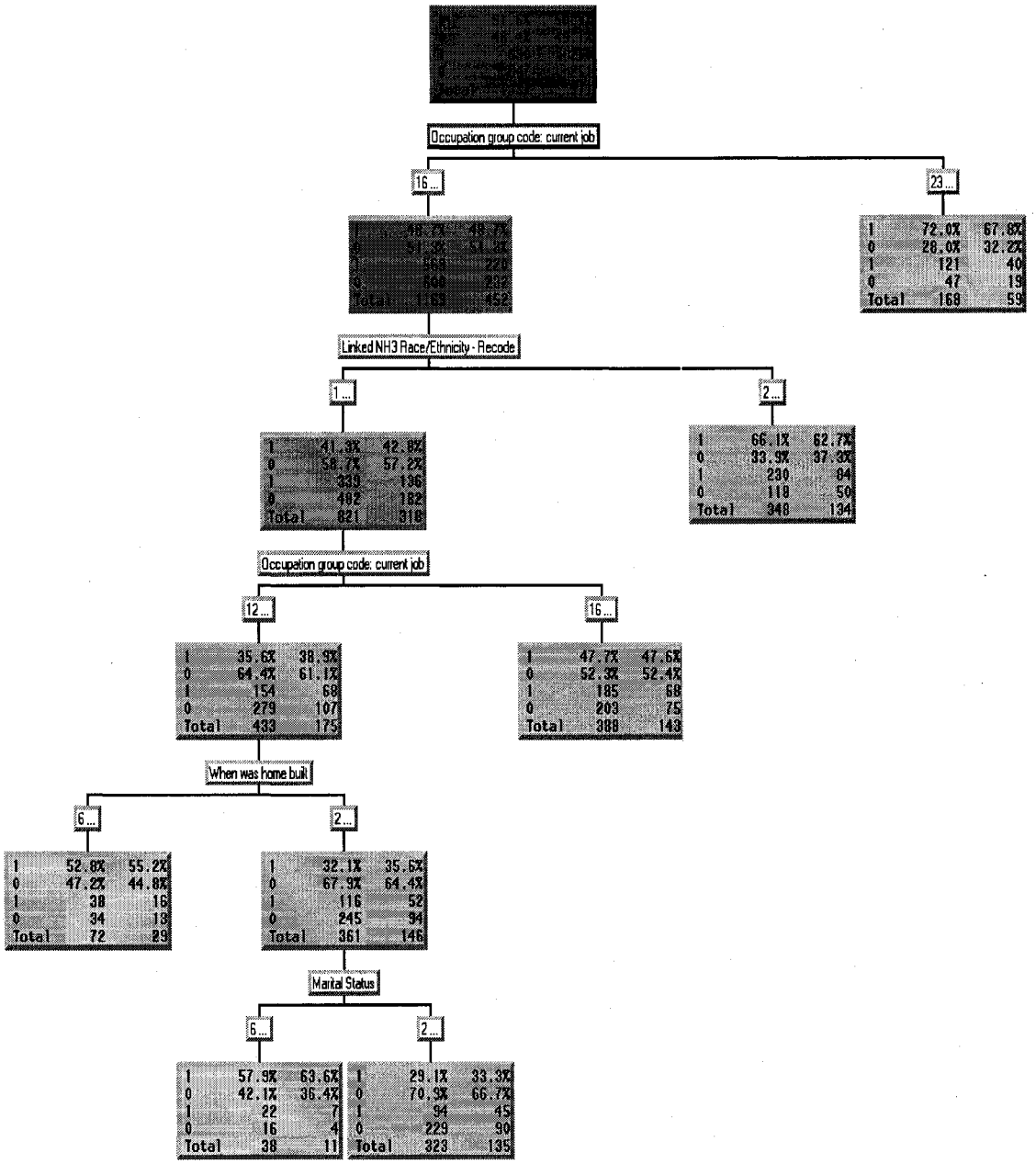
Classification and Regression Tree for 9-Hydroxyfluorene



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APPENDIX 36: 4-HYDROXYPHENANTHRENE

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Table 1: Concentration of 4-Hydroxyphenanthrene in ng/L found in urine by age category

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Age 5-11	387	34.45	24.27	48.90	<LOD	464.00	<LOD	51.00	119.00	201.00	256.00
Age 12-19	733	38.80	28.89	52.12	<LOD	7323.00	<LOD	66.00	132.00	223.00	306.00
Age 20-40	631	51.46	37.06	71.45	<LOD	992.00	17.00	89.00	170.00	247.00	311.00
Age 41-55	427	39.45	28.17	55.25	<LOD	3685.00	<LOD	63.00	130.00	203.00	278.00
Age 55+	563	36.31	27.13	48.59	<LOD	764.00	<LOD	54.00	137.00	204.00	272.00

Table 2: Concentration of 4-Hydroxyphenanthrene in ng/L found in urine and Occupation

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Executive, Administrators, & Managers	85	43.25	23.30	80.30	<LOD	784.00	<LOD	80.00	144.00	204.00	312.00
Management Related	25	49.53	28.01	87.59	<LOD	258.00	23.00	73.00	144.00	202.00	202.00
Engineers, Architects, and Scientists	32	58.65	38.25	89.91	<LOD	579.00	44.00	75.00	116.00	222.00	260.00
Health Diagnosing, Assessing & Treating	28	41.35	23.99	71.28	<LOD	278.00	6.00	51.00	159.00	219.00	278.00
Teachers	49	26.79	16.44	43.66	<LOD	453.00	<LOD	30.00	131.00	207.00	272.00
Writers, Artists, Entertainers & Athletes	18	31.89	8.31	122.42	<LOD	403.00	<LOD	36.00	176.00	247.00	403.00
Other Professional Speciality	29	39.99	16.53	96.73	<LOD	390.00	<LOD	81.00	141.00	191.00	242.00
Technicians and Related Supported	29	32.44	19.13	55.02	<LOD	429.00	<LOD	62.00	88.00	150.00	186.00
Supervisors and Proprietors, Sales	24	55.26	33.85	90.21	<LOD	336.00	33.00	87.00	135.00	190.00	223.00
Sales Representatives,finance,business,commod	29	47.25	23.80	93.81	<LOD	307.00	17.00	98.00	169.00	188.00	231.00
Sales Workers, retail & personal services	79	70.78	42.38	118.20	<LOD	7323.00	49.00	99.00	172.00	359.00	624.00
Secretaries, Stenographers, and typists	17	18.76	12.65	27.81	<LOD	211.00	<LOD	39.00	57.00	95.00	205.00
Information Clerks	15	51.39	35.22	75.00	<LOD	389.00	31.00	77.00	117.00	171.00	171.00
Records Processing	38	64.10	37.27	110.24	<LOD	379.00	45.00	103.00	222.00	270.00	308.00
Material Recording, Scheduling,distributing cler	19	28.92	7.86	106.42	<LOD	257.00	<LOD	49.00	108.00	173.00	252.00
Miscellaneous administrative support	67	56.72	38.84	82.84	<LOD	836.00	28.00	82.00	178.00	268.00	339.00
Private Household	8	22.33	10.50	47.50	<LOD	97.00	11.00	36.00	43.00	66.00	68.00
Protective Service	18	52.88	37.53	74.52	<LOD	1413.00	18.00	74.00	157.00	287.00	287.00
Waiters and Waitresses	23	50.69	26.15	98.26	<LOD	352.00	<LOD	112.00	160.00	296.00	321.00
Cooks	24	35.94	20.86	61.94	<LOD	411.00	<LOD	107.00	192.00	276.00	276.00
Miscellaneous food preparation and service	34	49.36	28.81	84.56	<LOD	448.00	24.00	58.00	149.00	264.00	264.00
Health Service Occupation	28	47.21	34.15	65.27	<LOD	272.00	27.00	70.00	125.00	137.00	157.00
Cleaning and Building Service	41	55.90	28.35	110.23	<LOD	874.00	9.00	112.00	181.00	392.00	392.00
Personal Service	29	44.39	18.58	106.00	<LOD	278.00	16.00	55.00	147.00	206.00	213.00
Farm Operators, Managers and Supervisors	2	74.41	.	.	43.00	101.00	43.00	101.00	101.00	101.00	101.00
Farm and Nursery Workers	8	14.21	.	.	<LOD	206.00	<LOD	<LOD	92.00	97.00	97.00
Related Agricultural, Forestry and Fishing	24	25.80	19.44	34.26	<LOD	586.00	<LOD	47.00	107.00	150.00	359.00
Vehicle and Mobile Equipment Mechanics, Repa	14	51.88	49.28	54.62	<LOD	250.00	25.00	45.00	182.00	250.00	250.00
Other Mechanics and repairers	18	48.44	<LOD	487.52	<LOD	356.00	<LOD	65.00	216.00	298.00	356.00
Construction traders	67	52.41	34.71	79.15	<LOD	444.00	25.00	75.00	174.00	230.00	295.00
Extractive and Precision Production	23	35.23	7.11	174.63	<LOD	3685.00	<LOD	25.00	141.00	424.00	3685.00
Textile, apparel and furnishings machine operato	9	33.06	6.49	168.48	<LOD	311.00	<LOD	96.00	126.00	269.00	269.00
Machine Operators, Assorted Materials	28	24.87	15.15	40.83	<LOD	358.00	<LOD	32.00	137.00	247.00	350.00
Fabricators, Assemblers, Inspectors, and Sampl	23	37.86	23.89	59.98	<LOD	320.00	<LOD	55.00	161.00	215.00	251.00
Motor vehicle operators	35	49.48	20.95	116.83	<LOD	678.00	<LOD	97.00	193.00	397.00	678.00
Other transportation and material moving	12	105.73	47.11	237.32	15.00	390.00	46.00	151.00	225.00	390.00	390.00
Construction laborers	15	52.96	29.77	94.21	<LOD	239.00	26.00	56.00	116.00	232.00	232.00
Laborers, except constuction	3	129.15	.	.	52.00	216.00	52.00	206.00	216.00	216.00	216.00
Frieght, Stock, and Material Movers, hand	20	29.05	13.79	61.19	<LOD	398.00	<LOD	46.00	102.00	278.00	278.00
Other helpers, equipment cleaners, hand packag and laborers	17	70.58	34.96	142.48	<LOD	567.00	53.00	59.00	160.00	236.00	567.00

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Table 3: Concentration of 4-Hydroxyphenanthrene in ng/L found in urine and Employment Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Working at a Job or Business	1055	45.06	32.60	62.28	<LOD	7323.00	9.00	72.00	150.00	232.00	287.00
With a Job but not at Work	52	41.26	23.32	72.97	<LOD	448.00	<LOD	70.00	175.00	359.00	387.00
Looking for Work	54	89.37	67.34	118.60	<LOD	551.00	66.00	98.00	139.00	232.00	248.00
Not working at a job or Business	811	39.30	29.65	52.09	<LOD	992.00	<LOD	64.00	140.00	213.00	294.00

Table 4: Concentration of 4-Hydroxyphenanthrene in ng/L found in urine and Income

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
$0-$4 999	59	53.18	41.58	68.00	<LOD	610.00	39.00	89.00	97.00	173.00	246.00
$ 5000-$9 999	148	41.26	23.32	72.97	<LOD	448.00	<LOD	70.00	175.00	359.00	387.00
$10 000-$14 999	195	89.37	67.34	118.60	<LOD	551.00	66.00	98.00	139.00	232.00	248.00
$15 000-$19 999	201	39.30	29.65	52.09	<LOD	992.00	<LOD	64.00	140.00	213.00	294.00
$20 000-$24 999	193	49.99	33.86	73.82	<LOD	624.00	21.00	86.00	156.00	218.00	306.00
$25 000-$34 999	324	57.34	41.75	78.77	<LOD	7323.00	27.00	96.00	160.00	236.00	295.00
$35 000-$44 999	258	42.41	30.04	59.87	<LOD	956.00	9.00	70.00	140.00	216.00	292.00
$45 000-$54 999	237	39.06	25.28	60.37	<LOD	460.00	<LOD	53.00	150.00	237.00	287.00
$55 000-$64 999	191	42.67	26.39	69.01	<LOD	567.00	<LOD	70.00	155.00	268.00	320.00
$65 000-$74 999	140	31.84	15.54	65.23	<LOD	3685.00	<LOD	48.00	129.00	224.00	314.00
$75 000 and over	560	39.92	29.26	54.46	<LOD	992.00	<LOD	69.00	141.00	217.00	272.00

Table 5: Concentration of 4-Hydroxyphenanthrene in ng/L found in urine and Race/Ethnicity

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Non-Hispanic White	1204	41.05	29.56	57.01	<LOD	7323.00	<LOD	67.00	141.00	225.00	287.00
Non-Hispanic Black	690	48.58	33.76	69.89	<LOD	1413.00	15.00	80.00	160.00	233.00	294.00
Mexican American	664	42.81	25.26	72.55	<LOD	992.00	<LOD	73.00	145.00	227.00	289.00
Other Race-Including MultiRacial	76	42.73	28.90	63.18	<LOD	421.00	9.00	77.00	139.00	191.00	224.00
Other Hispanic	107	37.56	25.26	55.84	<LOD	445.00	6.00	55.00	126.00	211.00	249.00

Table 6: Concentration of 4-Hydroxyphenanthrene in ng/L found in urine and Gender

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Male	1344	45.28	33.63	60.97	<LOD	956.00	15.00	73.00	143.00	226.00	287.00
Female	1397	38.89	28.81	52.50	<LOD	7323.00	<LOD	65.00	141.00	223.00	280.00

Table 7: Concentration of 4-Hydroxyphenanthrene in ng/L found in urine and Education

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Less than High School	1509	39.32	28.46	54.33	<LOD	6456.00	<LOD	66.00	136.00	224.00	278.00
High School Diploma	427	45.13	33.15	61.44	<LOD	7323.00	<LOD	82.00	157.00	239.00	278.00
More than High School	802	42.27	30.73	58.15	<LOD	3685.00	6.00	68.00	139.00	218.00	280.00

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Table 8: Concentration of 4-Hydroxyphenanthrene in ng/L found in urine and Marital Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Married	959	41.21	29.71	57.18	<LOD	992.00	<LOD	67.00	141.00	213.00	295.00
Widowed	136	32.08	20.82	49.43	<LOD	697.00	<LOD	48.00	129.00	213.00	302.00
Divorced	143	53.22	34.98	80.95	<LOD	624.00	27.00	85.00	154.00	237.00	278.00
Separated	57	40.69	21.75	76.09	<LOD	1413.00	<LOD	73.00	157.00	227.00	255.00
Never Married	767	45.32	32.60	63.00	<LOD	3685.00	10.00	75.00	145.00	235.00	296.00
Living with Partner	101	48.01	28.21	81.71	<LOD	7323.00	8.00	62.00	160.00	269.00	332.00

Table 9: Concentration of 4-Hydroxyphenanthrene in ng/L found in urine and Country of Birth

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Born in the US	2279	41.89	31.46	55.76	<LOD	7323.00	<LOD	68.00	144.00	230.00	287.00
Born in Mexico	288	45.00	22.00	92.03	<LOD	992.00	11.00	77.00	135.00	216.00	305.00
Born Elsewhere	167	40.61	27.40	60.20	<LOD	555.00	9.00	64.00	125.00	191.00	222.00

Table 10: Concentration of 4-Hydroxyphenanthrene in ng/L found in urine and Pregnancy Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Pregnant	109	68.12	36.03	128.77	<LOD	6456.00	24.00	109.00	186.00	387.00	392.00
Not Pregnant	865	38.85	27.59	54.71	<LOD	7323.00	<LOD	66.00	141.00	228.00	280.00

Table 11: Concentration of 4-Hydroxyphenanthrene in ng/L found in urine and Type of Home

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
A Mobile Home or Trailer	215	45.97	31.42	67.26	<LOD	956.00	20.00	66.00	138.00	232.00	277.00
A detached single family home	1672	37.69	27.31	52.03	<LOD	3685.00	<LOD	63.00	136.00	218.00	276.00
Attached Single Family Home	222	57.17	34.43	94.91	<LOD	784.00	26.00	92.00	176.00	247.00	312.00
An Apartment	558	52.70	40.78	68.10	<LOD	7323.00	24.00	82.00	157.00	240.00	310.00
Something Else	32	53.73	26.01	110.97	<LOD	551.00	40.00	76.00	145.00	215.00	551.00
Dormitory	15	38.16	.	.	<LOD	674.00	<LOD	21.00	152.00	236.00	674.00

Table 12: Concentration of 4-Hydroxyphenanthrene in ng/L found in urine and Year Home Built

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
1990-present	425	36.46	26.94	49.35	<LOD	956.00	<LOD	63.00	136.00	219.00	266.00
1978-1989	407	46.36	33.91	63.38	<LOD	992.00	16.00	71.00	145.00	225.00	272.00
1960-1977	501	43.95	29.21	66.13	<LOD	3685.00	6.00	70.00	140.00	237.00	287.00
1950-1959	251	30.32	19.44	47.30	<LOD	1413.00	<LOD	46.00	121.00	180.00	261.00
1940-1949	137	41.28	25.40	67.09	<LOD	697.00	6.00	54.00	175.00	278.00	314.00
before 1940	297	43.73	31.11	61.45	<LOD	784.00	8.00	75.00	149.00	215.00	278.00

Table 13: Concentration of 4-Hydroxyphenanthrene in ng/L found in urine and Water Source

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Private-Public Water Company	2459	41.91	31.75	55.32	<LOD	7323.00	<LOD	68.00	142.00	224.00	284.00
Private Public Well	223	43.22	25.65	72.81	<LOD	559.00	6.00	73.00	139.00	231.00	273.00
Some other Water Source	10	25.97	.	.	<LOD	465.00	14.00	26.00	39.00	75.00	75.00

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Table 14: Concentration of 4-Hydroxyphenanthrene in ng/L found in urine and Servings of Beans per month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	274	43.33	32.61	57.58	<LOD	7323.00	10.00	74.00	136.00	196.00	254.00
1 to 5	1048	43.95	31.83	60.68	<LOD	3685.00	<LOD	72.00	149.00	243.00	301.00
6 to 10	538	36.62	27.40	48.94	<LOD	992.00	<LOD	58.00	128.00	214.00	311.00
11 to 15	305	42.39	29.48	60.94	<LOD	567.00	<LOD	74.00	148.00	228.00	268.00
15+	487	41.09	27.41	61.59	<LOD	956.00	<LOD	70.00	131.00	206.00	264.00

Table 15: Concentration of 4-Hydroxyphenanthrene in ng/L found in urine and Body Mass Index Category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Under Weight	50	35.96	11.20	115.46	<LOD	356.00	<LOD	96.00	182.00	247.00	278.00
Healthy Weight	1133	38.79	28.98	51.91	<LOD	6456.00	<LOD	62.00	139.00	215.00	273.00
Over Weight	1456	43.63	32.30	58.92	<LOD	7323.00	6.00	72.00	144.00	225.00	287.00

Table 17: Concentration of 4-Hydroxyphenanthrene in ng/L found in urine and Water (gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0 to 896	1198	42.54	31.31	57.78	<LOD	7323.00	6.00	67.00	144.00	227.00	320.00
897-1792g	667	36.19	26.23	49.93	<LOD	3685.00	<LOD	58.00	135.00	211.00	254.00
>1792g	459	44.98	32.97	61.37	<LOD	784.00	9.00	81.00	145.00	225.00	275.00

Table 18: Concentration of 4-Hydroxyphenanthrene in ng/L found in urine and Alcohol (gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	2181	39.49	28.64	54.45	<LOD	6456.00	<LOD	66.00	137.00	221.00	273.00
0-28	250	44.18	33.10	58.97	<LOD	7323.00	<LOD	75.00	150.00	225.00	306.00
>28	187	55.50	37.51	82.11	<LOD	956.00	25.00	80.00	176.00	247.00	298.00

Table 19: Concentration of 4-Hydroxyphenanthrene in ng/L found in urine and Caffeine(gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	505	50.40	37.00	68.65	<LOD	992.00	24.00	81.00	146.00	236.00	301.00
0-400	2005	39.29	28.68	53.80	<LOD	7323.00	<LOD	63.00	139.00	216.00	278.00
400+	108	50.32	32.73	77.37	<LOD	678.00	7.00	85.00	181.00	264.00	278.00

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Table 20: Concentration of 4-Hydroxyphenanthrene in ng/L found in urine and Fiber (gm) /day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0g	4	101.26	<LOD	292170.26	47.00	359.00	47.00	74.00	359.00	359.00	359.00
1 to 10	852	43.90	32.69	58.95	<LOD	6456.00	<LOD	71.00	141.00	237.00	297.00
11 to 24	1436	40.74	30.02	55.30	<LOD	7323.00	<LOD	66.00	144.00	222.00	278.00
25+	326	37.84	26.73	53.57	<LOD	610.00	<LOD	63.00	131.00	205.00	255.00

Table 21: Concentration of 4-Hydroxyphenanthrene in ng/L found in urine and Breastfeeding Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Currently Breastfeeding	21	99.59	63.33	156.60	<LOD	312.00	89.00	111.00	137.00	310.00	312.00
Not currently Breastfeeding	47	41.56	16.45	104.97	<LOD	453.00	<LOD	83.00	176.00	262.00	268.00

Table 22: Concentration of 4-Hydroxyphenanthrene in ng/L found in urine and Liver Conditions

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Ever had a liver condition	48	34.82	19.15	63.31	<LOD	672.00	<LOD	73.00	128.00	205.00	260.00
Never had a liver condition	1570	43.61	31.95	59.51	<LOD	3685.00	6.00	70.00	148.00	228.00	292.00

Table 23: Concentration of 4-Hydroxyphenanthrene in ng/L found in urine and Anyone Smoke in the Home

L_4_phenanthrene	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	563	52.13	41.07	66.16	<LOD	7323.00	24.00	74.00	157.00	237.00	298.00
No	2151	39.71	29.03	54.30	<LOD	3685.00	<LOD	66.00	140.00	221.00	277.00

Table 24: Concentration of 4-Hydroxyphenanthrene in ng/L found in urine and Ever told that you have Diabetes?

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	145	47.82	33.53	68.20	<LOD	465.00	28.00	75.00	125.00	181.00	224.00
No	2569	41.46	30.90	55.63	<LOD	7323.00	<LOD	68.00	142.00	227.00	287.00

Table 25: Concentration of 4-Hydroxyphenanthrene in ng/L found in urine by Currently Taking Birth Control Pills?

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	79	38.74	23.87	62.85	<LOD	7323.00	<LOD	58.00	142.00	206.00	301.00
No	228	47.35	29.46	76.11	<LOD	3685.00	<LOD	75.00	159.00	251.00	278.00

Table 26: Concentration of 4-Hydroxyphenanthrene in ng/L found in urine and Now Use Depo-Provera Injectables

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	29	109.91	76.74	157.42	<LOD	674.00	63.00	115.00	268.00	280.00	501.00
No	80	59.56	34.09	104.07	<LOD	359.00	40.00	97.00	186.00	270.00	304.00

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Table 27: Concentration of 4-Hydroxyphenanthrene in ng/L found in urine and Currently Taking Estrogen Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	68	31.24	19.46	50.14	<LOD	582.00	<LOD	50.00	133.00	202.00	277.00
No	62	36.51	21.76	61.26	<LOD	398.00	<LOD	50.00	160.00	207.00	355.00

Table 28: Concentration of 4-Hydroxyphenanthrene in ng/L found in urine and Currently Taking Projestin Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	12	44.37	13.38	147.18	<LOD	155.00	39.00	61.00	93.00	155.00	155.00
No	31	32.58	18.43	57.61	<LOD	425.00	<LOD	43.00	119.00	310.00	314.00

Table 29: Concentration of 4-Hydroxyphenanthrene in ng/L found in urine and Currently Taking Estrogen-Projestin Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	25	23.64	13.66	40.92	<LOD	314.00	<LOD	41.00	85.00	153.00	314.00
No	19	14.29	<LOD	38.86	<LOD	130.00	<LOD	<LOD	108.00	125.00	130.00

Table 30: Concentration of 4-Hydroxyphenanthrene in ng/L found in urine and Number of Prescription Medications Taken

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	1649	44.11	32.18	60.47	<LOD	6456.00	7.00	73.00	148.00	231.00	278.00
1	421	39.80	30.36	52.19	<LOD	3685.00	<LOD	62.00	139.00	228.00	278.00
2	231	34.85	24.47	49.63	<LOD	992.00	<LOD	51.00	132.00	194.00	247.00
3	169	32.02	22.19	46.20	<LOD	448.00	<LOD	55.00	119.00	202.00	278.00
4	90	47.17	28.34	78.51	<LOD	956.00	24.00	67.00	133.00	204.00	321.00
5	62	67.84	42.07	109.41	<LOD	764.00	32.00	102.00	170.00	197.00	336.00
6+	119	46.37	25.77	83.44	<LOD	7323.00	9.00	84.00	138.00	277.00	398.00

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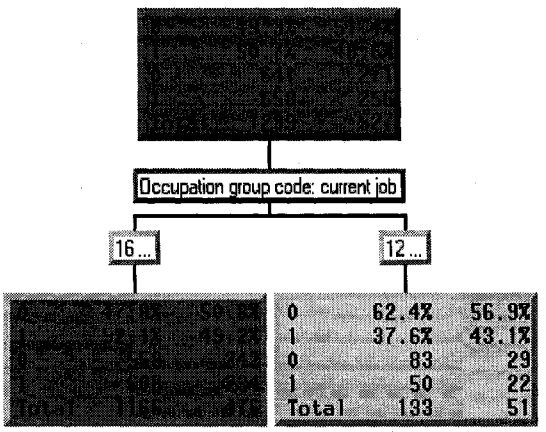
Classification and Regression Tree for 4-hydroxyphenanthrene



*Occupations Truncated

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APPENDIX 37: 9-HYDROXYPHENANTHRENE

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Table 1:Concentration of 9-Hydroxyphenanthrene in ng/L found in urine by age category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Age 5-11	387	24.69	20.97	29.07	<LOD	346.00	16.00	33.00	59.00	99.00	125.00
Age 12-19	733	30.23	25.12	36.38	<LOD	2510.00	16.00	35.00	70.00	151.00	250.00
Age 20-40	631	37.71	30.50	46.61	<LOD	1244.00	22.00	46.00	95.00	247.00	405.00
Age 41-55	427	40.74	33.40	49.68	<LOD	1849.00	20.00	46.00	116.00	248.00	389.00
Age 55+	563	27.76	21.87	35.23	<LOD	4410.00	11.00	38.00	90.00	207.00	334.00

Table 2: Concentration of 9-Hydroxyphenanthrene in ng/L found in urine and Occupation

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Executive, Administrators, & Managers	85	34.49	25.67	46.33	<LOD	4410.00	25.00	38.00	68.00	155.00	392.00
Management Related	25	35.39	26.50	47.26	<LOD	321.00	25.00	55.00	85.00	113.00	151.00
Engineers, Architects, and Scientists	32	44.89	28.00	71.95	<LOD	1370.00	20.00	50.00	98.00	269.00	522.00
Health Diagnosing, Assessing & Treating	28	18.57	12.11	28.46	<LOD	676.00	<LOD	31.00	44.00	137.00	177.00
Teachers	49	24.29	10.48	56.32	<LOD	586.00	14.00	34.00	71.00	120.00	192.00
Writers, Artists, Entertainers & Athletes	18	40.38	23.23	70.20	<LOD	169.00	29.00	53.00	65.00	153.00	169.00
Other Professional Speciality	29	27.21	12.83	57.69	<LOD	387.00	15.00	40.00	71.00	118.00	387.00
Technicians and Related Supported	29	25.17	14.48	43.75	<LOD	731.00	11.00	46.00	68.00	85.00	296.00
Supervisors and Proprietors, Sales	24	26.75	14.72	48.63	<LOD	253.00	11.00	43.00	73.00	180.00	180.00
Sales Representatives,finance,business,commodities	29	32.04	14.42	71.20	<LOD	793.00	23.00	48.00	90.00	135.00	141.00
Sales Workers, retail & personal services	79	33.32	20.23	54.87	<LOD	2510.00	15.00	46.00	94.00	190.00	427.00
Secretaries, Stenographers, and typists	17	30.47	15.22	61.00	<LOD	420.00	15.00	36.00	98.00	155.00	155.00
Information Clerks	15	56.47	33.69	94.63	<LOD	282.00	35.00	66.00	247.00	247.00	282.00
Records Processing	38	22.29	11.54	43.05	<LOD	900.00	7.00	27.00	59.00	194.00	386.00
Material Recording, Scheduling,distributing clerks	19	38.37	21.67	67.95	<LOD	248.00	25.00	38.00	60.00	248.00	248.00
Miscellaneous administrative support	67	42.90	28.82	63.87	<LOD	918.00	25.00	48.00	108.00	207.00	464.00
Private Household	8	24.91	13.26	46.77	<LOD	83.00	11.00	56.00	77.00	83.00	83.00
Protective Service	18	29.38	7.15	120.73	<LOD	622.00	17.00	40.00	101.00	152.00	243.00
Waiters and Waitresses	23	68.04	29.90	154.82	<LOD	604.00	33.00	72.00	175.00	391.00	604.00
Cooks	24	33.65	17.67	64.09	<LOD	396.00	20.00	32.00	73.00	334.00	334.00
Miscellaneous food preparation and service	34	44.57	33.17	59.88	<LOD	1244.00	18.00	48.00	99.00	1244.00	1244.00
Health Service Occupation	28	78.57	48.94	126.13	<LOD	601.00	45.00	69.00	203.00	465.00	562.00
Cleaning and Building Service	41	38.59	19.06	78.11	<LOD	440.00	17.00	47.00	105.00	229.00	252.00
Personal Service	29	27.30	14.20	52.49	<LOD	407.00	14.00	31.00	111.00	151.00	244.00
Farm Operators, Managers and Supervisors	2	108.90	.	.	46.00	176.00	46.00	176.00	176.00	176.00	176.00
Farm and Nursery Workers	8	14.80	.	.	<LOD	224.00	19.00	19.00	31.00	32.00	32.00
Related Agricultural, Forestry and Fishing	24	38.42	26.83	55.02	<LOD	481.00	11.00	46.00	143.00	413.00	481.00
Vehicle and Mobile Equipment Mechanics, Repairs	14	84.51	10.45	683.22	7.00	783.00	33.00	57.00	192.00	783.00	783.00
Other Mechanics and repairers	18	64.20	17.22	239.26	<LOD	779.00	28.00	36.00	157.00	405.00	779.00
Construction traders	67	59.02	36.88	94.45	<LOD	1162.00	34.00	61.00	175.00	314.00	451.00
Extractive and Precision Production	23	41.85	16.48	106.29	<LOD	343.00	28.00	50.00	68.00	296.00	343.00
Textile, apparel and furnishings machine operators	9	30.73	15.89	59.43	<LOD	990.00	<LOD	49.00	67.00	990.00	990.00
Machine Operators, Assorted Materials	28	46.96	26.39	83.56	<LOD	305.00	25.00	55.00	111.00	216.00	248.00
Fabricators, Assemblers, Inspectors, and Samplers	23	44.90	34.59	58.28	<LOD	260.00	36.00	43.00	93.00	236.00	260.00
Motor vehicle operators	35	66.43	42.95	102.77	<LOD	1159.00	28.00	59.00	232.00	439.00	663.00
Other transportation and material moving	12	62.80	16.16	244.06	<LOD	587.00	39.00	62.00	297.00	587.00	587.00
Construction laborers	15	49.32	20.31	119.77	<LOD	388.00	42.00	61.00	77.00	246.00	246.00
Laborers, except construction	3	68.43	.	.	44.00	91.00	44.00	84.00	91.00	91.00	91.00
Frieght, Stock, and Material Movers, hand	20	20.00	7.85	50.97	<LOD	281.00	<LOD	31.00	72.00	84.00	140.00
Other helpers, equipment cleaners, hand packages and laborers	17	48.51	12.76	184.34	<LOD	594.00	17.00	49.00	168.00	312.00	568.00

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Table 3: Concentration of 9-Hydroxyphenanthrene in ng/L found in urine and Employment Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Working at a Job or Business	1055	37.10	32.28	42.63	<LOD	4410.00	20.00	45.00	93.00	231.00	358.00
With a Job but not at Work	52	46.76	30.07	72.71	<LOD	779.00	28.00	53.00	113.00	207.00	450.00
Looking for Work	54	64.14	34.15	120.47	<LOD	1849.00	25.00	66.00	161.00	317.00	550.00
Not working at a job or Business	811	32.92	27.00	40.13	<LOD	2285.00	13.00	43.00	103.00	270.00	406.00

Table 4: Concentration of 9-Hydroxyphenanthrene in ng/L found in urine and Income

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
$0-$4 999	59	59.40	23.73	148.73	<LOD	734.00	25.00	53.00	183.00	345.00	734.00
$ 5000-$9 999	148	46.76	30.07	72.71	<LOD	779.00	28.00	53.00	113.00	207.00	450.00
$10 000-$14 999	195	64.14	34.15	120.47	<LOD	1849.00	25.00	66.00	161.00	317.00	550.00
$15 000-$19 999	201	32.92	27.00	40.13	<LOD	2285.00	13.00	43.00	103.00	270.00	406.00
$20 000-$24 999	193	31.37	19.99	49.22	<LOD	1244.00	17.00	44.00	93.00	231.00	438.00
$25 000-$34 999	324	34.69	24.29	49.55	<LOD	1023.00	19.00	40.00	84.00	306.00	501.00
$35 000-$44 999	258	38.20	28.08	51.96	<LOD	1849.00	21.00	43.00	88.00	180.00	305.00
$45 000-$54 999	237	34.29	25.29	46.48	<LOD	900.00	18.00	45.00	86.00	227.00	379.00
$55 000-$64 999	191	32.27	24.59	42.37	<LOD	568.00	15.00	47.00	79.00	192.00	252.00
$65 000-$74 999	140	31.67	21.82	45.97	<LOD	539.00	20.00	34.00	75.00	155.00	297.00
$75 000 and over	560	28.82	24.28	34.21	<LOD	4410.00	15.00	38.00	79.00	151.00	258.00

Table 5: Concentration of 9-Hydroxyphenanthrene in ng/L found in urine and Race/Ethnicity

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Non-Hispanic White	1204	34.64	30.24	39.68	<LOD	2510.00	18.00	43.00	93.00	207.00	345.00
Non-Hispanic Black	690	34.73	28.49	42.34	<LOD	1849.00	18.00	42.00	104.00	269.00	399.00
Mexican American	664	26.75	21.27	33.64	<LOD	2285.00	14.00	34.00	62.00	132.00	203.00
Other Race-Including MultiRacial	76	24.68	16.79	36.28	<LOD	4410.00	17.00	29.00	53.00	73.00	178.00
Other Hispanic	107	41.65	28.33	61.21	<LOD	764.00	18.00	56.00	112.00	290.00	388.00

Table 6: Concentration of 9-Hydroxyphenanthrene in ng/L found in urine and Gender

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Male	1344	39.40	33.78	45.97	<LOD	4410.00	22.00	47.00	93.00	236.00	381.00
Female	1397	29.40	25.06	34.50	<LOD	2510.00	14.00	36.00	79.00	180.00	343.00

Table 7: Concentration of 9-Hydroxyphenanthrene in ng/L found in urine and Education

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Less than High School	1509	32.85	27.95	38.62	<LOD	2510.00	17.00	38.00	84.00	208.00	351.00
High School Diploma	427	38.36	31.43	46.82	<LOD	1849.00	21.00	47.00	102.00	241.00	363.00
More than High School	802	32.63	27.34	38.94	<LOD	4410.00	17.00	42.00	84.00	190.00	337.00

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Table 8: Concentration of 9-Hydroxyphenanthrene in ng/L found in urine and Marital Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Married	959	32.20	28.50	36.39	<LOD	4410.00	17.00	41.00	84.00	180.00	274.00
Widowed	136	25.49	17.57	36.99	<LOD	970.00	12.00	37.00	77.00	162.00	242.00
Divorced	143	50.63	30.92	82.91	<LOD	1244.00	16.00	64.00	247.00	494.00	588.00
Separated	57	42.88	22.19	82.86	<LOD	973.00	16.00	48.00	147.00	622.00	973.00
Never Married	767	38.68	31.47	47.53	<LOD	2285.00	22.00	47.00	93.00	236.00	345.00
Living with Partner	101	46.86	31.08	70.65	<LOD	2510.00	24.00	55.00	137.00	305.00	663.00

Table 9: Concentration of 9-Hydroxyphenanthrene in ng/L found in urine and Country of Birth

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Born in the US	2279	34.79	30.63	39.52	<LOD	2510.00	18.00	43.00	90.00	212.00	345.00
Born in Mexico	288	31.07	21.63	44.62	<LOD	1162.00	17.00	37.00	74.00	168.00	241.00
Born Elsewhere	167	26.46	19.94	35.10	<LOD	4410.00	12.00	34.00	71.00	183.00	387.00

Table 10: Concentration of 9-Hydroxyphenanthrene in ng/L found in urine and Type of Home

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
A Mobile Home or Trailer	215	34.25	24.95	47.02	<LOD	1007.00	16.00	46.00	116.00	229.00	314.00
A detached single family home	1672	32.16	28.11	36.80	<LOD	4410.00	17.00	40.00	80.00	178.00	291.00
Attached Single Family Home	222	35.69	26.60	47.89	<LOD	1849.00	20.00	41.00	98.00	241.00	465.00
An Apartment	558	39.57	29.61	52.88	<LOD	2510.00	18.00	45.00	113.00	309.00	494.00
Something Else	32	45.58	22.21	93.55	<LOD	588.00	23.00	58.00	113.00	175.00	194.00
Dormitory	15	48.88	.	.	<LOD	294.00	33.00	74.00	89.00	192.00	294.00

Table 11: Concentration of 9-Hydroxyphenanthrene in ng/L found in urine and Year Home Built

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
1990-present	425	31.14	25.83	37.53	<LOD	4410.00	16.00	38.00	72.00	203.00	325.00
1978-1989	407	35.24	27.62	44.97	<LOD	1159.00	20.00	46.00	94.00	185.00	382.00
1960-1977	501	31.52	24.61	40.37	<LOD	1370.00	15.00	41.00	93.00	224.00	343.00
1950-1959	251	34.85	27.90	43.54	<LOD	970.00	19.00	46.00	88.00	232.00	437.00
1940-1949	137	40.45	31.67	51.66	<LOD	779.00	20.00	46.00	105.00	208.00	351.00
before 1940	297	38.17	26.67	54.64	<LOD	769.00	21.00	48.00	89.00	176.00	285.00

Table 12: Concentration of 9-Hydroxyphenanthrene in ng/L found in urine and Water Source

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Private-Public Water Company	2459	33.61	29.62	38.15	<LOD	4410.00	17.00	41.00	87.00	223.00	359.00
Private Public Well	223	36.85	27.32	49.70	<LOD	900.00	21.00	46.00	93.00	198.00	281.00
Some other Water Source	10	22.79	.	.	<LOD	77.00	21.00	46.00	51.00	51.00	77.00

Table 13: Concentration of 9-Hydroxyphenanthrene in ng/L found in urine and Servings of Beans per month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	274	37.05	29.91	45.88	<LOD	2510.00	20.00	44.00	81.00	193.00	345.00
1 to 5	1048	34.19	28.75	40.65	<LOD	2285.00	19.00	44.00	90.00	192.00	322.00
6 to 10	538	29.65	24.58	35.76	<LOD	1849.00	15.00	35.00	77.00	224.00	314.00
11 to 15	305	33.03	25.82	42.25	<LOD	4410.00	15.00	44.00	92.00	180.00	300.00
15+	487	35.31	26.45	47.14	<LOD	1244.00	17.00	40.00	88.00	241.00	476.00

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Table 14: Concentration of 9-Hydroxyphenanthrene in ng/L found in urine and Body Mass Index Category

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Under Weight	50	30.69	19.83	47.49	<LOD	487.00	15.00	35.00	108.00	300.00	417.00
Healthy Weight	1133	31.70	27.36	36.73	<LOD	4410.00	16.00	37.00	79.00	196.00	307.00
Over Weight	1456	35.41	30.79	40.72	<LOD	2285.00	19.00	44.00	89.00	209.00	382.00

Table 15: Concentration of 9-Hydroxyphenanthrene in ng/L found in urine and Water (gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0 to 896	1198	33.12	29.01	37.80	<LOD	2510.00	18.00	42.00	89.00	192.00	306.00
897-1792g	667	29.02	23.28	36.17	<LOD	4410.00	14.00	35.00	76.00	183.00	321.00
>1792g	459	32.64	27.17	39.21	<LOD	769.00	17.00	42.00	77.00	179.00	345.00

Table 16: Concentration of 9-Hydroxyphenanthrene in ng/L found in urine and Alcohol (gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	2181	29.96	27.12	33.10	<LOD	2510.00	15.00	37.00	76.00	174.00	294.00
0-28	250	37.96	25.41	56.72	<LOD	4410.00	21.00	45.00	100.00	289.00	476.00
>28	187	73.29	56.85	94.50	<LOD	1370.00	46.00	82.00	203.00	388.00	568.00

Table 17: 2,6-D and Caffeine(gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	505	37.89	31.07	46.22	<LOD	4410.00	22.00	45.00	81.00	192.00	317.00
0-400	2005	31.38	27.31	36.06	<LOD	2510.00	16.00	39.00	83.00	179.00	305.00
400+	108	59.95	39.72	90.47	<LOD	1244.00	23.00	68.00	237.00	481.00	783.00

Table 18: Concentration of 9-Hydroxyphenanthrene in ng/L found in urine and Fiber (gm) /day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0g	4	31.03	3.39	283.69	<LOD	162.00	<LOD	82.00	162.00	162.00	162.00
1 to 10	852	37.16	29.58	46.69	<LOD	2510.00	20.00	44.00	103.00	248.00	407.00
11 to 24	1436	31.49	28.17	35.19	<LOD	4410.00	16.00	38.00	80.00	184.00	312.00
25+	326	36.75	31.12	43.39	<LOD	1007.00	19.00	46.00	81.00	224.00	350.00

Table 19: Concentration of 9-Hydroxyphenanthrene in ng/L found in urine and Breastfeeding Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Currently Breastfeeding	21	43.51	25.72	73.60	<LOD	386.00	36.00	56.00	73.00	107.00	107.00
Not currently Breastfeeding	47	34.91	11.50	105.94	<LOD	676.00	18.00	47.00	84.00	345.00	345.00

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Table 20: Concentration of 9-Hydroxyphenanthrene in ng/L found in urine and Liver Conditions

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Ever had a liver condition	48	31.09	14.11	68.50	<LOD	970.00	<LOD	43.00	133.00	417.00	465.00
Never had a liver condition	1570	35.98	31.10	41.62	<LOD	4410.00	18.00	44.00	100.00	241.00	387.00

Table 21: Concentration of 9-Hydroxyphenanthrene in ng/L found in urine and Anyone Smoke in the Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	563	79.97	65.87	97.09	<LOD	2510.00	39.00	87.00	245.00	476.00	663.00
No	2151	27.22	24.28	30.51	<LOD	4410.00	15.00	36.00	69.00	142.00	224.00

Table 22: 2, 4-D and Ever told that you have Diabetes?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	145	23.79	16.92	33.45	<LOD	990.00	8.00	30.00	66.00	150.00	306.00
No	2569	34.72	30.35	39.73	<LOD	4410.00	18.00	43.00	89.00	216.00	351.00

Table 23: Concentration of 9-Hydroxyphenanthrene in ng/L found in urine by Currently Taking Birth Control Pills?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	79	40.62	27.16	60.74	<LOD	1049.00	22.00	50.00	95.00	179.00	345.00
No	228	31.19	22.94	42.40	<LOD	1244.00	15.00	37.00	89.00	274.00	410.00

Table 24: Concentration of 9-Hydroxyphenanthrene in ng/L found in urine and Now Use Depo-Provera Injectables

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	29	56.80	34.75	92.83	<LOD	546.00	29.00	66.00	170.00	229.00	255.00
No	80	59.91	40.16	89.36	<LOD	900.00	34.00	69.00	153.00	300.00	391.00

Table 25: Concentration of 9-Hydroxyphenanthrene in ng/L found in urine and Currently Taking Estrogen Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	68	29.47	15.18	57.20	<LOD	764.00	10.00	36.00	101.00	314.00	464.00
No	62	23.38	15.36	35.59	<LOD	769.00	<LOD	31.00	84.00	208.00	311.00

Table 26: Concentration of 9-Hydroxyphenanthrene in ng/L found in urine and Currently Taking Projestin Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	12	44.95	<LOD	986.03	<LOD	481.00	26.00	77.00	169.00	224.00	481.00
No	31	17.03	10.22	28.39	<LOD	586.00	<LOD	14.00	53.00	165.00	464.00

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Table 27: Concentration of 9-Hydroxyphenanthrene in ng/L found in urine and Currently Taking Estrogen-Projestin Pills

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	25	42.30	22.83	78.36	<LOD	387.00	25.00	68.00	155.00	224.00	387.00
No	19	18.72	5.36	65.32	<LOD	314.00	10.00	15.00	77.00	126.00	130.00

Table 28: Concentration of 9-Hydroxyphenanthrene in ng/L found in urine and Number of Prescription Medications Taken

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	1649	36.12	30.10	43.34	<LOD	4410.00	20.00	43.00	85.00	191.00	309.00
1	421	30.30	24.21	37.92	<LOD	900.00	14.00	39.00	94.00	241.00	345.00
2	231	34.66	24.44	49.16	<LOD	1370.00	17.00	42.00	79.00	212.00	355.00
3	169	25.50	18.89	34.43	<LOD	1849.00	10.00	36.00	74.00	151.00	327.00
4	90	37.72	27.80	51.18	<LOD	559.00	15.00	51.00	119.00	175.00	464.00
5	62	28.22	18.68	42.64	<LOD	325.00	11.00	40.00	69.00	161.00	234.00
6+	119	36.98	21.57	63.41	<LOD	1023.00	15.00	48.00	126.00	465.00	764.00

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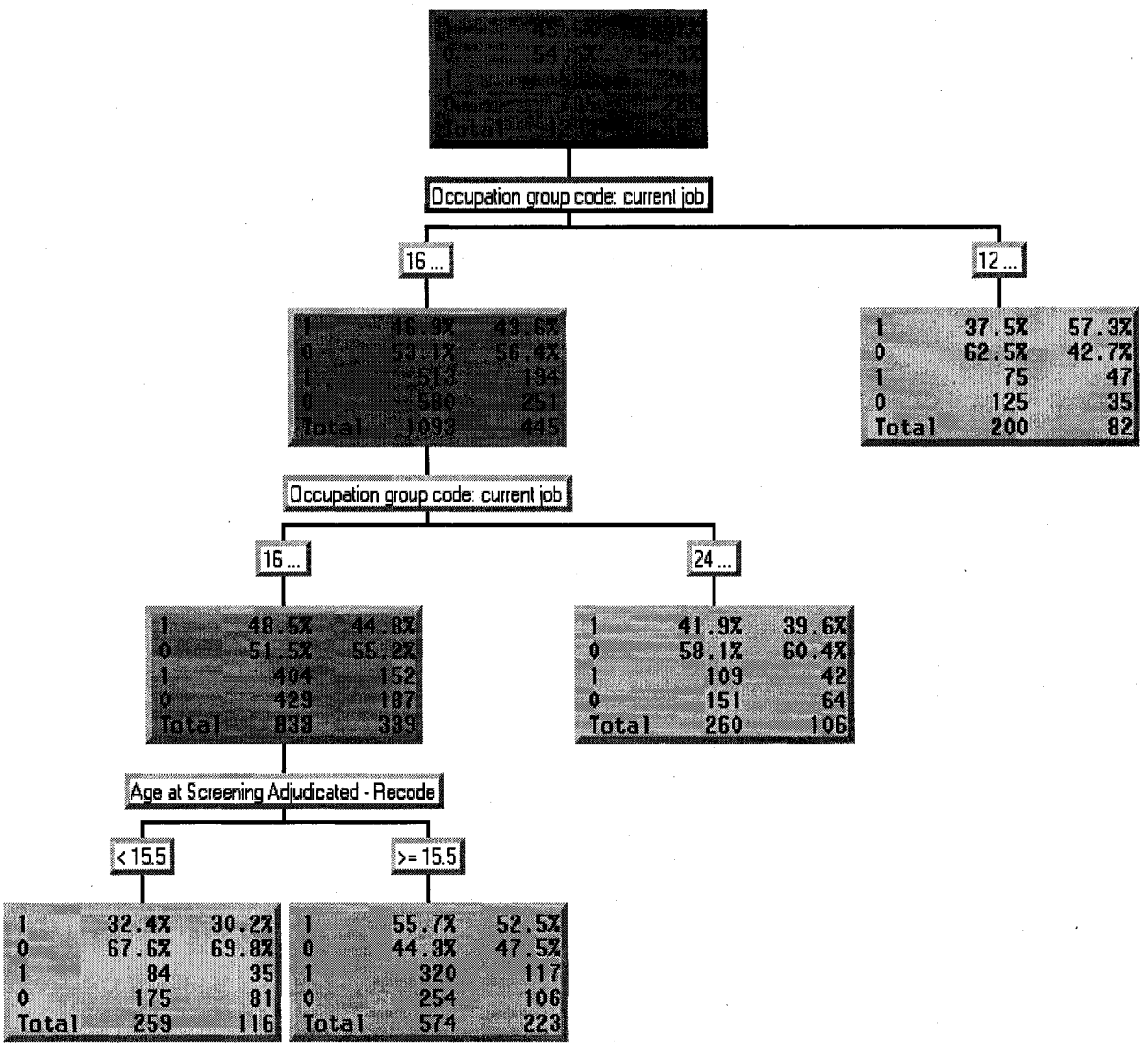
Classification and Regression Tree for 9-hydroxyphenanthrene



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APPENDIX 38: URINARY LEAD

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Table 1: Concentrations of Urinary Lead(μg/L) found in urine by age category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Age 5-11	708	0.88	0.81	0.96	<LOD	84.20	0.50	0.90	1.40	2.20	3.00
Age 12-19	1481	0.61	0.57	0.64	<LOD	20.20	0.40	0.60	1.00	1.70	2.20
Age 20-40	1087	0.67	0.62	0.72	<LOD	12.70	0.40	0.70	1.20	2.00	2.60
Age 41-55	723	0.76	0.69	0.84	<LOD	10.80	0.50	0.80	1.40	2.20	3.00
Age 55+	1156	0.76	0.70	0.84	<LOD	31.50	0.40	0.80	1.40	2.30	3.00

Table 2: Concentrations of Urinary Lead (μg/L) by Occupation

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Motor vehicle operators	55	0.85	0.64	1.13	0.20	9.00	0.60	0.80	1.40	2.80	3.20
Other transportation and material moving	23	0.71	0.47	1.07	0.20	4.80	0.50	0.70	1.10	1.70	2.00
Construction laborers	31	1.97	1.32	2.94	0.30	8.20	1.20	1.90	3.70	5.50	8.20
Laborers, except construction	11	1.22	0.47	3.20	0.40	4.00	0.80	0.90	2.90	2.90	4.00
Frieght, Stock, and Material Movers, hand	44	0.65	0.45	0.94	0.10	8.10	0.40	0.80	1.00	1.30	2.20
Other helpers, equipment cleaners, hand packages, laborers	36	1.16	1.06	1.27	0.30	8.40	0.70	1.20	2.20	2.90	3.30

Table 3: Concentrations of Urinary Lead (μg/L) by Employment Status

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Working at a Job or Business	1016	0.68	0.63	0.74	<LOD	11.80	0.40	0.70	1.20	1.90	2.80
With a Job but not at Work	41	0.60	0.35	1.02	<LOD	2.90	0.40	0.80	1.40	2.30	2.80
Looking for Work	59	0.94	0.70	1.26	<LOD	5.10	0.60	1.20	1.70	2.90	4.00
Not working at a job or Business	841	0.65	0.59	0.72	<LOD	13.10	0.40	0.70	1.20	2.00	2.50

Table 4: Concentrations of Urinary Lead (μg/L) by Income

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
$0-$4 999	124	0.95	0.78	1.17	<LOD	8.90	0.50	1.00	1.70	3.40	4.00
$ 5000-$9 999	284	0.60	0.35	1.02	<LOD	2.90	0.40	0.80	1.40	2.30	2.80
$10 000-$14 999	419	0.94	0.70	1.26	<LOD	5.10	0.60	1.20	1.70	2.90	4.00
$15 000-$19 999	406	0.65	0.59	0.72	<LOD	13.10	0.40	0.70	1.20	2.00	2.50
$20 000-$24 999	365	0.68	0.55	0.84	<LOD	8.50	0.40	0.80	1.30	2.30	2.90
$25 000-$34 999	599	0.73	0.66	0.81	<LOD	31.50	0.50	0.80	1.30	2.00	2.80
$35 000-$44 999	482	0.79	0.69	0.90	<LOD	84.20	0.50	0.80	1.50	2.20	2.90
$45 000-$54 999	398	0.68	0.60	0.76	<LOD	11.10	0.40	0.80	1.20	1.80	2.30
$55 000-$64 999	305	0.61	0.53	0.71	<LOD	10.70	0.40	0.70	1.10	1.70	2.10
$65 000-$74 999	218	0.70	0.59	0.85	<LOD	9.00	0.40	0.80	1.30	2.00	2.80
$75 000 and over	859	0.62	0.57	0.68	<LOD	20.20	0.40	0.70	1.10	1.70	2.20

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Table 5: Concentrations of Urinary Lead (µg/L) by Race/Ethnicity

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Non-Hispanic White	1954	0.65	0.61	0.69	<LOD	11.30	0.40	0.70	1.20	2.00	2.60
Non-Hispanic Black	1235	1.01	0.93	1.10	<LOD	84.20	0.60	1.00	1.70	2.90	4.00
Mexican American	1567	0.93	0.86	1.00	<LOD	31.50	0.50	1.00	1.60	2.70	3.60
Other Race-Including MultiRacial	135	0.74	0.65	0.85	<LOD	12.40	0.40	0.80	1.20	1.90	2.60
Other Hispanic	264	0.79	0.74	0.85	<LOD	7.60	0.50	0.90	1.40	1.80	2.30

Table 6: Concentrations of Urinary Lead (µg/L) by Gender

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Male	2562	0.86	0.81	0.92	<LOD	31.50	0.50	0.90	1.50	2.50	3.30
Female	2593	0.61	0.57	0.64	<LOD	84.20	0.40	0.60	1.10	1.80	2.30

Table 7: Concentrations of Urinary Lead (µg/L) by Education

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Less than High School	3020	0.79	0.75	0.84	<LOD	84.20	0.50	0.80	1.40	2.30	3.10
High School Diploma	845	0.74	0.68	0.80	<LOD	13.10	0.40	0.80	1.30	2.30	3.10
More than High School	1283	0.64	0.60	0.69	<LOD	12.40	0.40	0.70	1.20	1.80	2.30

Table 8: Concentrations of Urinary Lead (µg/L) by Marital Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Married	1647	0.71	0.66	0.76	<LOD	19.70	0.40	0.80	1.30	2.20	3.00
Widowed	262	0.72	0.63	0.82	<LOD	8.10	0.40	0.70	1.20	2.00	2.60
Divorced	241	0.78	0.68	0.89	<LOD	13.10	0.40	0.90	1.40	2.20	2.50
Separated	109	0.70	0.56	0.87	<LOD	7.90	0.40	0.80	1.30	2.00	2.20
Never Married	1464	0.65	0.60	0.71	<LOD	31.50	0.40	0.70	1.10	1.80	2.50
Living with Partner	183	0.74	0.58	0.93	<LOD	10.80	0.40	0.70	1.60	2.40	3.00

Table 9: Concentrations of Urinary Lead (µg/L) by Country of Birth

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Born in the US	4131	0.69	0.66	0.72	<LOD	20.20	0.40	0.70	1.20	2.00	2.70
Born in Mexico	641	1.18	1.09	1.28	<LOD	31.50	0.70	1.20	2.00	3.30	5.00
Born Elsewhere	366	0.84	0.74	0.96	<LOD	84.20	0.50	0.90	1.60	2.30	2.80

Table 10: Concentrations of Urinary Lead (µg/L) by Pregnancy Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Pregnant	183	0.80	0.66	0.98	<LOD	11.80	0.50	0.80	1.10	2.20	3.80
Not Pregnant	1301	0.58	0.54	0.62	<LOD	12.70	0.40	0.60	1.10	1.70	2.20

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Table 11: Concentrations of Urinary Lead (µg/L) by Type of Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
A Mobile Home or Trailer	409	0.75	0.67	0.84	<LOD	13.10	0.50	0.80	1.40	2.30	3.20
A detached single family home	3117	0.70	0.66	0.74	<LOD	31.50	0.40	0.70	1.30	2.00	2.80
Attached Single Family Home	398	0.76	0.66	0.89	<LOD	11.40	0.50	0.80	1.40	2.00	2.70
An Apartment	1104	0.78	0.70	0.86	<LOD	84.20	0.50	0.80	1.30	2.20	2.70
Something Else	39	0.59	0.36	0.96	<LOD	3.20	0.40	0.90	1.20	1.40	1.70
Dormitory	23	0.35	.	.	<LOD	1.60	0.20	0.40	0.80	1.20	1.60

Table 12: Concentrations of Urinary Lead (µg/L) by Year Home Built

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
1990-present	629	0.62	0.56	0.68	<LOD	11.80	0.40	0.70	1.20	1.70	2.30
1978-1989	793	0.65	0.61	0.70	<LOD	10.80	0.40	0.70	1.20	1.90	2.20
1960-1977	927	0.70	0.63	0.77	<LOD	10.50	0.40	0.70	1.20	2.00	2.70
1950-1959	527	0.75	0.68	0.83	<LOD	12.90	0.40	0.80	1.40	2.30	2.90
1940-1949	268	0.87	0.76	1.00	<LOD	11.30	0.50	0.90	1.40	2.50	3.60
before 1940	600	0.74	0.65	0.85	<LOD	19.70	0.40	0.80	1.30	2.20	3.20

Table 13: Concentrations of Urinary Lead (µg/L) by Water Source

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Private-Public Water Company	4610	0.74	0.70	0.78	<LOD	84.20	0.40	0.80	1.30	2.10	2.80
Private Public Well	438	0.62	0.56	0.69	<LOD	19.70	0.40	0.70	1.20	1.90	2.70
Some other Water Source	11	0.74	.	.	0.30	3.60	0.30	0.60	1.50	3.10	3.60

Table 14: Concentrations of Urinary Lead (µg/L) by Helpings of Protein per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	18	1.11	0.68	1.82	<LOD	31.50	0.80	1.20	1.70	1.70	1.70
1	208	0.95	0.73	1.23	<LOD	6.20	0.60	1.00	1.80	2.80	3.50
2	186	0.80	0.65	0.98	<LOD	8.10	0.50	0.90	1.40	2.40	3.10
3+	95	0.83	0.65	1.05	0.20	19.70	0.60	0.90	1.20	2.20	2.60

Table 15: Concentrations of Urinary Lead (µg/L) by Helpings of Milk/Dairy per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	99	0.87	0.66	1.13	<LOD	19.70	0.50	1.00	1.60	2.40	2.80
1	231	0.93	0.80	1.08	<LOD	31.50	0.50	1.00	1.60	2.70	3.20
2	123	0.79	0.57	1.09	<LOD	8.10	0.50	0.80	1.30	2.20	3.30
3+	56	0.75	0.57	1.00	<LOD	8.10	0.60	0.80	1.20	1.80	2.20

Table 16: Concentrations of Urinary Lead (µg/L) by Helpings of Fruit per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	61	1.13	0.86	1.49	<LOD	10.20	0.90	1.20	1.70	2.50	3.60
1	226	0.88	0.80	0.96	<LOD	31.50	0.60	0.90	1.60	2.50	3.20
2	126	0.73	0.57	0.94	0.10	8.50	0.40	0.80	1.10	2.00	2.60
3+	95	0.82	0.59	1.15	<LOD	7.20	0.50	0.80	1.50	2.30	2.80

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Table 17: Concentrations of Urinary Lead (µg/L) by Helpings of Vegetables per day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	48	0.95	0.65	1.39	<LOD	10.20	0.80	1.10	1.70	2.10	2.40
1	242	0.92	0.79	1.06	<LOD	31.50	0.50	0.90	1.60	2.60	3.50
2	186	0.80	0.65	0.98	<LOD	8.10	0.50	0.90	1.40	2.40	3.10
3+	67	0.89	0.70	1.14	0.20	6.60	0.60	0.90	1.40	2.20	2.80

Table 18: Concentrations of Urinary Lead (µg/L) by Helpings of Bread/grain per day

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	36	0.90	0.62	1.30	<LOD	6.20	0.70	1.00	1.40	2.80	3.90
1	211	0.92	0.79	1.07	<LOD	31.50	0.50	1.00	1.70	2.50	3.40
2	144	0.81	0.63	1.03	<LOD	10.20	0.50	0.90	1.40	2.00	2.70
3+	117	0.80	0.67	0.96	0.10	19.70	0.50	0.80	1.30	2.20	3.10

Table 19: Concentrations of Urinary Lead (µg/L) by Servings of Beans per month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
0	285	0.66	0.58	0.77	<LOD	6.90	0.40	0.80	1.20	1.80	2.40
1 to 5	995	0.65	0.61	0.71	<LOD	11.80	0.40	0.70	1.10	1.80	2.60
6 to 10	455	0.65	0.57	0.74	<LOD	11.00	0.40	0.70	1.10	1.70	2.30
11 to 15	355	0.73	0.62	0.86	<LOD	7.60	0.40	0.80	1.50	2.40	2.90
15+	523	0.71	0.62	0.81	<LOD	13.10	0.40	0.80	1.40	2.30	2.90

Table 20: Concentrations of Urinary Lead (µg/L) by Fish Consumed in Past Month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	1462	0.78	0.71	0.86	<LOD	12.70	0.50	0.90	1.40	2.20	3.10
No	908	0.78	0.71	0.85	<LOD	84.20	0.50	0.80	1.40	2.10	2.80

Table 21: Concentrations of Urinary Lead (µg/L) by Shellfish Consumed in Past Month

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Yes	991	0.82	0.75	0.89	<LOD	12.70	0.50	0.90	1.50	2.20	3.10
No	1379	0.75	0.68	0.82	<LOD	84.20	0.50	0.80	1.40	2.20	2.90

Table 22: Concentrations of Urinary Lead (µg/L) by Body Mass Index Category

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Under Weight	107	0.78	0.64	0.95	0.10	6.80	0.40	0.70	1.30	2.30	3.10
Healthy Weight	2126	0.71	0.68	0.74	<LOD	31.50	0.40	0.80	1.30	2.00	2.80
Over Weight	2807	0.73	0.69	0.77	<LOD	84.20	0.50	0.80	1.30	2.20	2.80

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Table 23: Concentrations of Urinary Lead (µg/L) by Ever told you have Weak/Failing Kidneys

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	36	1.06	0.60	1.87	0.20	12.40	0.70	1.20	1.80	3.10	6.00
No	1368	0.76	0.69	0.83	<LOD	31.50	0.50	0.80	1.40	2.20	2.90

Table 24: Concentrations of Urinary Lead (µg/L) by total number of beers consumed per month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	912	0.70	0.63	0.77	<LOD	31.50	0.40	0.70	1.30	2.20	2.90
0-5	281	0.83	0.74	0.93	<LOD	11.10	0.50	0.90	1.40	2.10	2.90
6 to 10	71	0.78	0.51	1.20	<LOD	12.40	0.40	1.00	1.60	2.40	2.90
11 to 15	26	0.81	0.46	1.42	0.20	7.90	0.60	0.80	1.80	2.30	3.30
16+	113	1.00	0.80	1.25	0.10	12.70	0.70	1.00	1.80	2.20	3.30

Table 25: Concentrations of Urinary Lead (µg/L) by Water (gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0 to 896	2228	0.74	0.70	0.79	<LOD	84.20	0.50	0.80	1.30	2.20	2.90
897-1792g	1256	0.70	0.64	0.77	<LOD	31.50	0.40	0.70	1.20	1.90	2.60
>1792g	861	0.62	0.56	0.68	<LOD	12.70	0.30	0.70	1.20	2.00	2.60

Table 26: Concentrations of Urinary Lead (µg/L) by Alcohol (gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	3987	0.68	0.65	0.71	<LOD	84.20	0.40	0.70	1.20	2.00	2.70
0-28	619	0.74	0.65	0.84	<LOD	12.70	0.50	0.80	1.30	2.00	2.80
>28	341	0.99	0.89	1.11	<LOD	13.10	0.60	1.10	1.80	2.50	3.40

Table 27: Concentrations of Urinary Lead (µg/L) by Caffeine(gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	975	0.81	0.73	0.88	<LOD	84.20	0.50	0.80	1.40	2.20	2.90
0-400	3668	0.70	0.66	0.73	<LOD	31.50	0.40	0.70	1.20	2.00	2.80
400+	304	0.77	0.70	0.85	<LOD	10.80	0.50	0.90	1.40	2.20	2.90

Table 28: Concentrations of Urinary Lead (µg/L) by Fiber (gm) /day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0g	4	0.43	-	-	0.20	2.10	0.20	0.20	1.20	1.20	1.20
1 to 10	1730	0.75	0.71	0.79	<LOD	84.20	0.40	0.80	1.40	2.20	3.00
11 to 24	2594	0.70	0.65	0.74	<LOD	12.70	0.40	0.70	1.20	2.00	2.70
25+	619	0.73	0.67	0.78	<LOD	10.90	0.40	0.70	1.30	2.10	2.80

Table 29: Concentrations of Urinary Lead (µg/L) by Breastfeeding Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Currently Breastfeeding	20	0.34	0.25	0.45	<LOD	3.60	<LOD	0.40	0.90	1.40	1.60
Not currently Breastfeeding	117	0.57	0.44	0.74	<LOD	3.60	0.30	0.60	1.00	1.70	1.80

Table 30: Concentrations of Urinary Lead (µg/L) by Liver Conditions

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Ever had a liver condition	100	0.76	0.61	0.96	<LOD	7.70	0.40	0.70	1.50	2.80	2.90
Never had a liver condition	2861	0.72	0.68	0.76	<LOD	31.50	0.40	0.80	1.30	2.20	2.80

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Table 31: Concentrations of Urinary Lead (µg/L) by Anyone Smoke in the Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	1109	0.84	0.78	0.91	<LOD	20.20	0.50	0.90	1.60	2.50	3.20
No	3986	0.69	0.65	0.72	<LOD	84.20	0.40	0.70	1.20	1.90	2.60

Table 32: Concentrations of Urinary Lead (µg/L) by Ever told that you have Diabetes?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	308	0.68	0.60	0.77	<LOD	7.60	0.40	0.70	1.20	1.90	2.50
No	4796	0.72	0.69	0.76	<LOD	84.20	0.40	0.80	1.30	2.10	2.80

Table 33: Concentrations of Urinary Lead (µg/L) by Currently Taking Birth Control Pills?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	133	0.43	0.36	0.52	<LOD	3.60	0.30	0.40	0.90	1.30	1.50
No	420	0.61	0.53	0.70	<LOD	12.70	0.40	0.70	1.20	1.80	2.30

Table 34: Concentrations of Urinary Lead (µg/L) by Now Use Depo-Provera Injectables

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	39	0.76	0.61	0.94	0.10	2.60	0.50	0.90	1.20	1.80	1.90
No	145	0.81	0.61	1.07	<LOD	11.80	0.50	0.90	1.30	2.60	3.60

Table 35: Concentrations of Urinary Lead (µg/L) by Currently Taking Estrogen Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	133	0.49	0.41	0.57	<LOD	4.30	0.30	0.50	0.90	1.50	1.60
No	120	0.57	0.47	0.68	<LOD	3.90	0.30	0.50	1.10	1.80	2.30

Table 36: Concentrations of Urinary Lead (µg/L) by Currently Taking Projestin Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	16	0.61	0.40	0.94	0.20	1.70	0.40	0.70	1.00	1.50	1.70
No	36	0.74	0.61	0.90	<LOD	4.00	0.50	0.80	1.30	1.70	1.80

Table 37: Concentrations of Urinary Lead (µg/L) by Currently Taking Estrogen-Projestin Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	33	0.55	0.32	0.94	<LOD	2.90	0.30	0.60	1.10	1.70	2.40
No	32	0.60	0.52	0.69	<LOD	2.20	0.40	0.70	1.00	1.50	1.80

Table 38: Concentrations of Urinary Lead (µg/L) by Number of Prescription Medications Taken

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	3123	0.78	0.74	0.83	<LOD	84.20	0.50	0.80	1.40	2.30	2.90
1	789	0.69	0.63	0.76	<LOD	11.30	0.40	0.80	1.30	2.00	2.70
2	430	0.68	0.59	0.78	<LOD	31.50	0.40	0.70	1.20	1.90	2.50
3	280	0.66	0.57	0.77	<LOD	8.10	0.40	0.70	1.20	2.00	2.40
4	178	0.64	0.55	0.74	<LOD	10.20	0.40	0.70	1.10	1.70	3.00
5	108	0.55	0.44	0.69	<LOD	4.30	0.30	0.70	1.00	1.30	1.90
6+	247	0.55	0.50	0.61	<LOD	19.70	0.30	0.50	1.10	1.70	2.40

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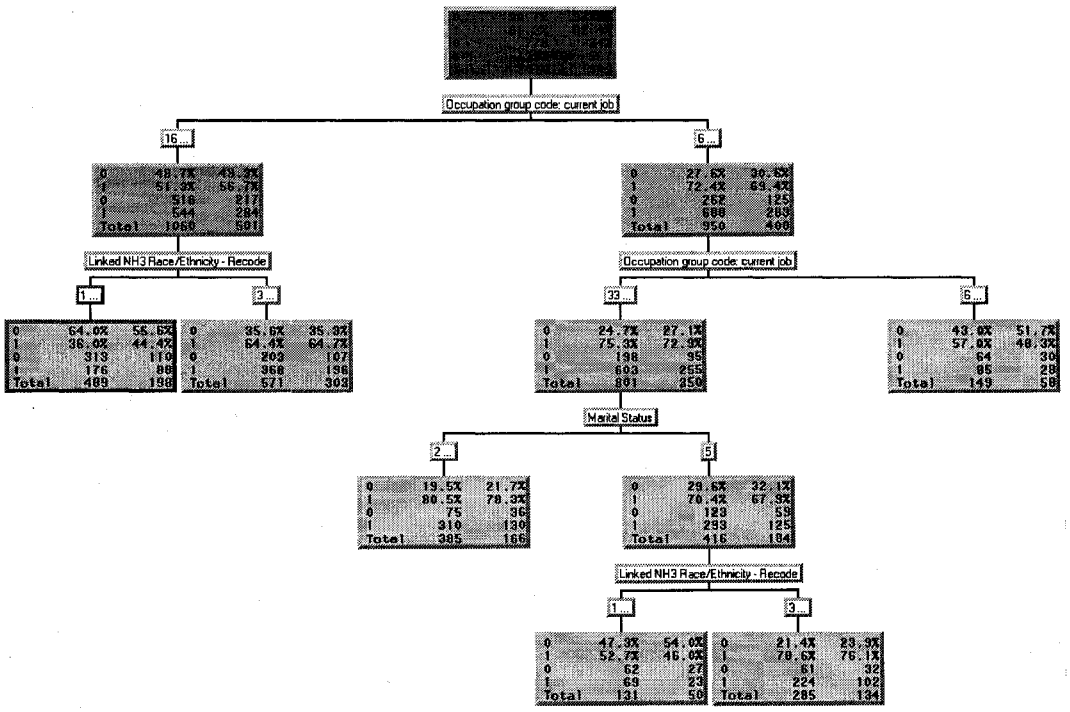
Classification and Regression Tree for Urinary Lead



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APPENDIX 39: URINARY CADMIUM

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Table 1: Concentrations of Urinary Cadmium (µg/L) by age category

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Age 5-11	647	0.08	0.07	0.09	<LOD	0.61	<LOD	0.08	0.14	0.22	0.28
Age 12-19	1390	0.13	0.12	0.14	<LOD	2.00	0.08	0.13	0.21	0.33	0.45
Age 20-40	1055	0.21	0.19	0.22	<LOD	5.06	0.12	0.22	0.40	0.71	0.97
Age 41-55	699	0.34	0.31	0.38	<LOD	36.78	0.18	0.34	0.64	1.10	1.50
Age 55+	1100	0.38	0.34	0.42	<LOD	10.90	0.21	0.39	0.73	1.21	1.71

Table 2: Concentrations of Urinary Cadmium (µg/L) by Occupation

	N	Geometric Mean	95% CI		Min	Max	Percentiles				
			Lower	Upper			25	50	75	90	95
Executive, Administrators, & Managers	113	0.23	0.18	0.28	<LOD	1.45	0.13	0.31	0.41	0.61	0.71
Management Related Occupations	49	0.20	0.14	0.29	<LOD	1.56	0.11	0.22	0.39	0.68	1.17
Engineers, Architects, and Scientists	56	0.21	0.15	0.28	<LOD	2.39	0.10	0.17	0.35	0.71	1.20
Health Diagnosing, Assessing & Treating Occupatic	38	0.23	0.16	0.32	<LOD	2.38	0.12	0.19	0.48	1.19	1.32
Teachers	73	0.19	0.14	0.27	<LOD	1.39	0.12	0.23	0.46	0.74	0.89
Writers, Artists, Entertainers & Athletes	43	0.20	0.16	0.25	<LOD	1.71	0.13	0.19	0.36	0.46	0.77
Other Professional Speciality Occupations	41	0.41	0.32	0.51	0.08	36.78	0.20	0.32	0.78	1.19	1.20
Technicians and Related Supported Occupations	48	0.23	0.17	0.30	<LOD	1.50	0.13	0.22	0.35	0.90	1.21
Supervisors and Proprietors, Sales Occupations	36	0.32	0.23	0.44	<LOD	3.71	0.23	0.27	0.48	1.63	2.14
Sales Representatives, finance, business & commodi	41	0.29	0.23	0.35	<LOD	1.33	0.16	0.27	0.54	0.90	0.97
Sales Workers, retail & personal services	135	0.21	0.17	0.27	<LOD	10.90	0.10	0.22	0.45	0.86	1.45
Secretaries, Stenographers, and typists	24	0.12	0.08	0.18	<LOD	2.56	<LOD	0.18	0.42	0.77	1.20
Information Clerks	36	0.20	0.12	0.35	<LOD	1.06	0.12	0.23	0.41	0.86	0.86
Records Processing Occupations	55	0.24	0.20	0.30	<LOD	1.20	0.10	0.30	0.53	0.66	0.70
Material Recording, Scheduling, and distributing cler	31	0.28	0.22	0.34	<LOD	1.13	0.16	0.31	0.39	1.03	1.08
Miscellaneous administrative support occupations	129	0.24	0.20	0.29	<LOD	2.52	0.12	0.29	0.46	0.59	0.80
Private Household Occupations	17	0.22	0.12	0.42	<LOD	1.32	0.14	0.32	0.49	0.55	0.56
Protective Service Occupations	30	0.31	0.24	0.40	0.07	3.21	0.17	0.23	0.50	1.10	1.42
Waiters and Waitresses	25	0.27	0.13	0.58	<LOD	1.36	0.13	0.24	0.81	1.13	1.36
Cooks	56	0.32	0.22	0.46	<LOD	1.51	0.18	0.31	0.71	1.21	1.34
Miscellaneous food preparation and service occupat	54	0.21	0.16	0.27	<LOD	5.06	0.10	0.19	0.38	0.65	2.29
Health Service Occupation	52	0.33	0.28	0.38	<LOD	1.62	0.19	0.31	0.55	0.78	1.07
Cleaning and Building Service Occupations	77	0.27	0.19	0.40	<LOD	3.33	0.13	0.32	0.43	0.91	1.79
Personal Service Occupations	45	0.25	0.21	0.30	<LOD	2.43	0.11	0.23	0.54	1.01	1.43
Farm Operators, Managers and Supervisors	10	0.14	<LOD	1.64	<LOD	1.17	<LOD	0.11	0.31	0.49	1.17
Farm and Nursery Workers	38	0.24	0.20	0.29	<LOD	1.60	0.08	0.36	0.73	0.77	0.93
Related Agricultural, Forestry and Fishing Occupati	40	0.23	0.16	0.34	<LOD	1.66	0.08	0.35	0.62	0.74	1.04
Vehicle, and Mobile Equipment Mechanics & Repai	24	0.39	0.27	0.56	<LOD	2.27	0.20	0.42	0.94	2.25	2.25
Other Mechanics and repairers	31	0.35	0.25	0.49	0.07	1.12	0.24	0.39	0.54	0.82	0.98
Construction traders	116	0.30	0.23	0.38	<LOD	4.73	0.17	0.29	0.52	0.79	1.04
Extractive and Precision Production Occupations	43	0.42	0.34	0.52	<LOD	2.24	0.20	0.40	0.70	1.55	2.04
Textile, apparel and furnishings machine operators	19	0.21	0.11	0.43	<LOD	3.01	0.08	0.20	0.46	0.81	0.81
Machine Operators, Assorted Materials	44	0.27	0.18	0.40	<LOD	12.83	0.10	0.20	0.35	2.43	12.83
Fabricators, Assemblers, Inspectors, and Samplers	50	0.29	0.23	0.38	<LOD	2.40	0.14	0.24	0.72	1.10	1.35
Motor vehicle operators	52	0.21	0.13	0.34	<LOD	1.82	0.10	0.23	0.41	0.74	0.99
Other transportation and material moving occupati	23	0.27	0.23	0.31	<LOD	2.08	0.20	0.25	0.33	0.69	1.22
Construction laborers	31	0.42	0.30	0.57	<LOD	1.93	0.21	0.57	0.98	1.38	1.38
Laborers, except constuction	11	0.48	<LOD	5.35	0.13	2.14	0.19	0.34	1.41	1.41	2.14
Frieght, Stock, and Material Movers, hand	44	0.23	0.14	0.35	<LOD	1.93	0.12	0.25	0.50	0.77	0.77
Other helpers, equipment cleaners, hand packages a	34	0.35	0.27	0.46	<LOD	1.18	0.19	0.27	0.74	1.00	1.15

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Table 3: Concentrations of Urinary Cadmium (µg/L) by Employment Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Working at a Job or Business	1016	0.25	0.23	0.28	<LOD	36.78	0.14	0.26	0.48	0.84	1.21
With a Job but not at Work	40	0.18	0.09	0.34	<LOD	1.04	0.08	0.20	0.42	0.58	1.04
Looking for Work	58	0.22	0.15	0.32	<LOD	1.51	0.10	0.22	0.64	0.94	1.07
Not working at a job or Business	835	0.30	0.27	0.34	<LOD	8.21	0.15	0.30	0.62	1.08	1.50

Table 4: Concentrations of Urinary Cadmium (µg/L) by Income

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
$0-$4 999	119	0.32	0.24	0.43	<LOD	5.50	0.14	0.38	0.61	1.29	1.53
$ 5000-$9 999	267	0.18	0.09	0.34	<LOD	1.04	0.08	0.20	0.42	0.58	1.04
$10 000-$14 999	391	0.22	0.15	0.32	<LOD	1.51	0.10	0.22	0.64	0.94	1.07
$15 000-$19 999	381	0.30	0.27	0.34	<LOD	8.21	0.15	0.30	0.62	1.08	1.50
$20 000-$24 999	347	0.24	0.19	0.30	<LOD	5.06	0.12	0.26	0.54	1.06	1.54
$25 000-$34 999	564	0.23	0.19	0.27	<LOD	8.21	0.12	0.23	0.48	0.84	1.21
$35 000-$44 999	461	0.25	0.21	0.29	<LOD	10.90	0.12	0.25	0.50	0.98	1.38
$45 000-$54 999	380	0.20	0.18	0.23	<LOD	3.12	0.11	0.21	0.40	0.78	0.96
$55 000-$64 999	295	0.21	0.18	0.25	<LOD	1.82	0.11	0.21	0.41	0.67	0.86
$65 000-$74 999	212	0.24	0.20	0.28	<LOD	3.76	0.11	0.23	0.48	0.87	1.30
$75 000 and over	823	0.20	0.17	0.23	<LOD	36.78	0.10	0.19	0.42	0.79	1.19

Table 5: Concentrations of Urinary Cadmium (µg/L) by Race/Ethnicity

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Non-Hispanic White	1866	0.22	0.20	0.23	<LOD	36.78	0.11	0.22	0.46	0.82	1.18
Non-Hispanic Black	1202	0.30	0.27	0.35	<LOD	8.21	0.16	0.31	0.63	1.15	1.51
Mexican American	1446	0.19	0.18	0.21	<LOD	4.98	0.10	0.19	0.36	0.71	0.97
Other Race-Including MultiRacial	130	0.28	0.23	0.34	<LOD	3.76	0.11	0.30	0.58	0.97	1.53
Other Hispanic	247	0.23	0.21	0.26	<LOD	2.40	0.12	0.25	0.49	0.79	1.20

Table 6: Concentrations of Urinary Cadmium (µg/L) by Gender

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Male	2425	0.22	0.21	0.24	<LOD	10.90	0.11	0.23	0.46	0.89	1.29
Female	2466	0.23	0.21	0.25	<LOD	36.78	0.11	0.24	0.49	0.82	1.16

Table 7: Concentrations of Urinary Cadmium (µg/L) by Education

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Less than High School	2828	0.18	0.17	0.20	<LOD	8.21	0.08	0.17	0.37	0.79	1.13
High School Diploma	813	0.29	0.26	0.32	<LOD	12.83	0.16	0.30	0.58	1.01	1.39
More than High School	1243	0.25	0.23	0.27	<LOD	36.78	0.13	0.26	0.47	0.84	1.20

Table 8: Concentrations of Urinary Cadmium (µg/L) by Marital Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Married	1589	0.28	0.26	0.30	<LOD	36.78	0.15	0.29	0.54	1.00	1.32
Widowed	252	0.43	0.37	0.51	<LOD	8.21	0.26	0.47	0.78	1.11	1.38
Divorced	230	0.35	0.30	0.41	<LOD	10.90	0.19	0.37	0.65	1.13	1.65
Separated	107	0.32	0.25	0.41	<LOD	5.50	0.21	0.34	0.66	0.90	1.20
Never Married	1388	0.18	0.16	0.20	<LOD	5.06	0.10	0.18	0.32	0.62	0.86
Living with Partner	179	0.27	0.21	0.36	<LOD	3.71	0.13	0.30	0.55	1.04	1.62

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Table 9: Concentrations of Urinary Cadmium (µg/L) by Country of Birth

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Born in the US	3923	0.22	0.21	0.24	<LOD	36.78	0.11	0.23	0.47	0.84	1.20
Born in Mexico	601	0.20	0.18	0.22	<LOD	3.25	0.11	0.21	0.36	0.68	0.93
Born Elsewhere	351	0.29	0.25	0.34	<LOD	3.76	0.14	0.30	0.61	1.02	1.50

Table 10: Concentrations of Urinary Cadmium (µg/L) by Pregnancy Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Pregnant	179	0.19	0.14	0.25	<LOD	2.04	0.12	0.21	0.32	0.55	0.85
Not Pregnant	1259	0.25	0.22	0.27	<LOD	36.78	0.12	0.26	0.50	0.81	1.16

Table 11: Concentrations of Urinary Cadmium (µg/L) by Type of Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
A Mobile Home or Trailer	390	0.24	0.21	0.29	<LOD	5.06	0.12	0.25	0.55	0.92	1.21
A detached single family home	2968	0.23	0.21	0.24	<LOD	36.78	0.11	0.23	0.47	0.86	1.20
Attached Single Family Home	376	0.25	0.23	0.29	<LOD	8.21	0.14	0.26	0.53	0.82	1.18
An Apartment	1037	0.22	0.19	0.26	<LOD	3.84	0.12	0.23	0.47	0.78	1.20
Something Else	35	0.17	0.09	0.33	<LOD	4.73	<LOD	0.10	0.42	1.05	1.45
Dormitory	22	0.09	.	.	<LOD	0.92	<LOD	0.08	0.13	0.39	0.47

Table 12: Concentrations of Urinary Cadmium (µg/L) by Year Home Built

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
1990-present	596	0.20	0.17	0.23	<LOD	3.12	0.10	0.20	0.42	0.84	1.19
1978-1989	746	0.22	0.20	0.24	<LOD	2.50	0.11	0.22	0.43	0.82	1.10
1960-1977	884	0.26	0.23	0.29	<LOD	5.53	0.13	0.27	0.54	0.90	1.21
1950-1959	500	0.26	0.22	0.30	<LOD	10.90	0.13	0.24	0.53	1.00	1.50
1940-1949	247	0.22	0.18	0.27	<LOD	8.21	0.10	0.22	0.42	0.77	1.39
before 1940	575	0.23	0.19	0.27	<LOD	36.78	0.11	0.24	0.45	0.81	1.24

Table 13: Concentrations of Urinary Cadmium (µg/L) by Water Source

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Private-Public Water Company	4368	0.23	0.21	0.24	<LOD	36.78	0.11	0.23	0.47	0.85	1.21
Private Public Well	424	0.23	0.21	0.26	<LOD	2.44	0.11	0.25	0.54	0.90	1.19
Some other Water Source	10	0.30	.	.	<LOD	0.98	0.21	0.27	0.57	0.69	0.98

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Table 14: Concentrations of Urinary Cadmium (µg/L) by Helpings of Protein per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	16	0.39	0.35	0.44	0.11	3.12	0.24	0.56	0.64	0.76	0.91
1	191	0.47	0.40	0.54	<LOD	10.90	0.27	0.46	0.85	1.27	1.79
2	164	0.36	0.29	0.44	<LOD	3.84	0.22	0.38	0.61	1.06	1.17
3+	84	0.42	0.31	0.57	<LOD	2.41	0.21	0.51	0.91	1.43	1.65

Table 15: Concentrations of Urinary Cadmium (µg/L) by Helpings of Milk/Dairy per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	84	0.44	0.30	0.65	<LOD	10.90	0.23	0.45	0.96	1.34	2.11
1	207	0.42	0.38	0.48	<LOD	4.98	0.26	0.47	0.72	1.16	1.47
2	115	0.39	0.30	0.52	<LOD	3.25	0.26	0.39	0.71	1.07	1.43
3+	51	0.30	0.22	0.40	<LOD	2.78	0.21	0.28	0.46	0.89	1.24

Table 16: Concentrations of Urinary Cadmium (µg/L) by Helpings of Fruit per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	56	0.62	0.51	0.74	0.10	10.90	0.34	0.59	1.06	1.34	2.16
1	197	0.40	0.34	0.47	<LOD	4.11	0.22	0.47	0.79	1.21	1.65
2	114	0.35	0.29	0.41	<LOD	4.98	0.21	0.39	0.57	0.82	1.33
3+	89	0.37	0.30	0.45	<LOD	2.32	0.24	0.35	0.63	1.07	1.43

Table 17: Concentrations of Urinary Cadmium (µg/L) by Helpings of Vegetables per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	40	0.53	0.40	0.70	<LOD	10.90	0.31	0.63	0.86	1.33	4.98
1	214	0.40	0.33	0.48	<LOD	4.11	0.24	0.37	0.69	1.16	1.57
2	164	0.36	0.29	0.44	<LOD	3.84	0.22	0.38	0.61	1.06	1.17
3+	67	0.35	0.28	0.44	<LOD	2.13	0.18	0.31	0.79	0.98	1.43

Table 18: Concentrations of Urinary Cadmium (µg/L) by Helpings of Bread/grain per day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	30	0.42	0.28	0.63	<LOD	1.34	0.26	0.50	0.86	1.31	1.33
1	187	0.39	0.32	0.47	<LOD	4.98	0.26	0.42	0.74	1.16	1.60
2	130	0.42	0.34	0.53	<LOD	2.78	0.25	0.47	0.69	1.16	1.48
3+	109	0.39	0.32	0.48	<LOD	10.90	0.21	0.39	0.69	1.10	1.89

Table 19: Concentrations of Urinary Cadmium (µg/L) by Servings of Beans per month

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	281	0.19	0.15	0.23	<LOD	2.63	0.09	0.22	0.36	0.63	0.90
1 to 5	987	0.23	0.21	0.25	<LOD	36.78	0.12	0.23	0.47	0.82	1.12
6 to 10	453	0.20	0.17	0.23	<LOD	2.56	0.11	0.21	0.39	0.84	1.20
11 to 15	352	0.28	0.25	0.33	<LOD	8.21	0.13	0.28	0.65	1.23	1.54
15+	515	0.21	0.19	0.24	<LOD	5.50	0.11	0.20	0.40	0.73	1.20

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Table 20: Concentrations of Urinary Cadmium (µg/L) by Fish Consumed in Past Month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	1324	0.25	0.23	0.27	<LOD	12.83	0.12	0.26	0.52	0.89	1.23
No	814	0.21	0.19	0.23	<LOD	4.98	0.10	0.21	0.42	0.80	1.19

Table 21: Concentrations of Urinary Cadmium(µg/L) by Shellfish Consumed in Past Month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	891	0.25	0.22	0.28	<LOD	5.06	0.13	0.26	0.48	0.95	1.23
No	1247	0.22	0.21	0.24	<LOD	12.83	0.10	0.23	0.50	0.79	1.16

Table 22: Concentrations of Urinary Cadmium (µg/L) by Body Mass Index Category

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Under Weight	100	0.25	0.19	0.34	<LOD	8.21	0.12	0.26	0.50	0.97	1.20
Healthy Weight	2006	0.19	0.18	0.21	<LOD	36.78	0.09	0.19	0.38	0.74	1.09
Over Weight	2671	0.25	0.24	0.27	<LOD	4.98	0.13	0.27	0.52	0.91	1.23

Table 23: Concentrations of Urinary Cadmium (µg/L) by Ever told you have Weak/Failing Kidneys

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
Yes	34	0.34	0.16	0.72	<LOD	2.66	0.30	0.36	0.55	0.97	1.48
No	1262	0.29	0.26	0.32	<LOD	12.83	0.15	0.31	0.56	1.01	1.33

Table 24: Concentrations of Urinary Cadmium (µg/L) by total number of beers consumed per month

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	848	0.30	0.27	0.33	<LOD	12.83	0.16	0.32	0.57	1.03	1.32
0-5	254	0.26	0.22	0.32	<LOD	4.98	0.14	0.29	0.50	0.89	1.07
6 to 10	64	0.23	0.15	0.35	<LOD	10.90	0.10	0.20	0.54	1.41	1.55
11 to 15	24	0.32	0.26	0.41	0.09	2.13	0.16	0.30	0.81	1.02	1.66
16+	105	0.30	0.22	0.42	<LOD	3.21	0.17	0.31	0.57	1.08	1.57

Table 25: Concentrations of Urinary Cadmium (µg/L) by Water (gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0 to 896	2100	0.22	0.19	0.24	<LOD	8.21	0.10	0.23	0.47	0.86	1.23
897-1792g	1193	0.25	0.23	0.27	<LOD	36.78	0.13	0.26	0.48	0.84	1.17
>1792g	821	0.22	0.20	0.24	<LOD	12.83	0.12	0.20	0.44	0.80	1.19

Table 26: Concentrations of Urinary Cadmium (µg/L) by Alcohol (gm)/day

	N	Geometric	95% CI		Min	Max	Percentiles				
		Mean	Lower	Upper			25	50	75	90	95
0	3796	0.22	0.21	0.23	<LOD	36.78	0.11	0.23	0.46	0.81	1.18
0-28	572	0.23	0.20	0.27	<LOD	5.06	0.12	0.23	0.52	0.89	1.17
>28	324	0.29	0.24	0.34	<LOD	10.90	0.15	0.29	0.57	1.23	1.93

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Table 27: Concentrations fo Urinary Cadmium (ug/L) by Caffeine(gm)/day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	920	0.20	0.18	0.23	<LOD	10.90	0.10	0.19	0.39	0.74	1.20
0-400	3485	0.22	0.21	0.23	<LOD	36.78	0.11	0.23	0.47	0.82	1.19
400+	287	0.35	0.32	0.40	<LOD	3.12	0.19	0.35	0.69	1.15	1.60

Table 28: Concentrations of Urinary Cadmium (µg/L) by Fiber (gm) /day

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0g	3	0.23	-	-	0.12	0.47	0.12	0.12	0.47	0.47	0.47
1 to 10	1647	0.24	0.21	0.26	<LOD	12.83	0.11	0.24	0.52	0.97	1.36
11 to 24	2456	0.23	0.21	0.24	<LOD	36.78	0.11	0.23	0.47	0.80	1.16
25+	586	0.22	0.20	0.25	<LOD	5.06	0.12	0.22	0.42	0.82	1.03

Table 29: Concentrations of Urinary Cadmium (µg/L) by Breastfeeding Status

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Currently Breastfeeding	20	0.14	0.12	0.17	<LOD	0.73	<LOD	0.12	0.46	0.46	0.65
Not currently Breastfeeding	114	0.21	0.16	0.27	<LOD	2.00	0.10	0.26	0.39	0.68	0.70

Table 30: Concentrations of Urinary Cadmium (µg/L) by Liver Conditions

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Ever had a liver condition	96	0.42	0.35	0.52	<LOD	2.25	0.25	0.41	0.82	1.41	1.48
Never had a liver condition	2753	0.28	0.26	0.30	<LOD	36.78	0.15	0.29	0.55	0.97	1.30

Table 31: Concentrations of Urinary Cadmium (µg/L) by Anyone Smoke in the Home

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	1060	0.29	0.27	0.31	<LOD	12.83	0.13	0.28	0.64	1.21	1.70
No	3772	0.21	0.20	0.23	<LOD	36.78	0.11	0.22	0.44	0.78	1.06

Table 32:Concentrations of Urinary Cadmium (µg/L) by Ever told that you have Diabetes?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	293	0.29	0.24	0.35	<LOD	2.66	0.15	0.31	0.62	0.94	1.25
No	4548	0.22	0.21	0.24	<LOD	36.78	0.11	0.23	0.47	0.84	1.20

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Table 33: Concentrations of Urinary Cadmium (µg/L) by Currently Taking Birth Control Pills?

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	128	0.20	0.16	0.26	<LOD	1.48	0.08	0.21	0.44	0.86	0.97
No	410	0.26	0.23	0.29	<LOD	2.39	0.12	0.28	0.55	0.80	1.12

Table 34: Concentrations of Urinary Cadmium (µg/L) by Now Use Depo-Provera Injectables

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	37	0.23	0.14	0.39	<LOD	2.00	0.10	0.31	0.54	0.66	1.12
No	142	0.29	0.20	0.40	<LOD	2.04	0.15	0.34	0.59	0.97	1.21

Table 35: Concentrations of Urinary Cadmium (µg/L) by Currently Taking Estrogen Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	128	0.29	0.24	0.36	<LOD	2.56	0.16	0.34	0.57	0.85	1.16
No	115	0.29	0.23	0.36	<LOD	3.12	0.16	0.27	0.65	1.10	1.47

Table 36: Concentrations of Urinary Cadmium (µg/L) by Currently Taking Projestin Only Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	16	0.24	0.16	0.36	<LOD	1.46	0.18	0.25	0.46	0.59	0.59
No	36	0.45	0.35	0.57	0.06	1.53	0.30	0.45	0.94	1.19	1.23

Table 37: Concentrations of Urinary Cadmium (µg/L) by Currently Taking Estrogen-Projestin Pills

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
Yes	33	0.37	0.30	0.46	0.08	1.44	0.18	0.49	0.70	0.90	1.10
No	31	0.29	0.24	0.36	<LOD	1.65	0.16	0.31	0.59	0.94	1.47

Table 38: Concentrations of Urinary Cadmium (µg/L) by Number of Prescription Medications Taken

	N	Geometric Mean	95% CI Lower	95% CI Upper	Min	Max	Percentiles 25	50	75	90	95
0	2952	0.20	0.18	0.21	<LOD	8.21	0.10	0.20	0.38	0.77	1.10
1	752	0.23	0.20	0.26	<LOD	36.78	0.11	0.24	0.44	0.82	1.16
2	413	0.28	0.24	0.32	<LOD	4.98	0.14	0.30	0.55	0.98	1.33
3	269	0.28	0.22	0.36	<LOD	2.78	0.16	0.32	0.59	1.18	1.50
4	165	0.33	0.28	0.37	<LOD	3.01	0.17	0.36	0.63	1.09	1.47
5	102	0.33	0.26	0.41	<LOD	3.29	0.19	0.34	0.73	1.01	1.21
6+	238	0.32	0.27	0.38	<LOD	12.83	0.18	0.36	0.65	0.98	1.38

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Classification and Regression Tree presented in the text

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APPENDIX 40: SCATTERPLOTS BY AGE

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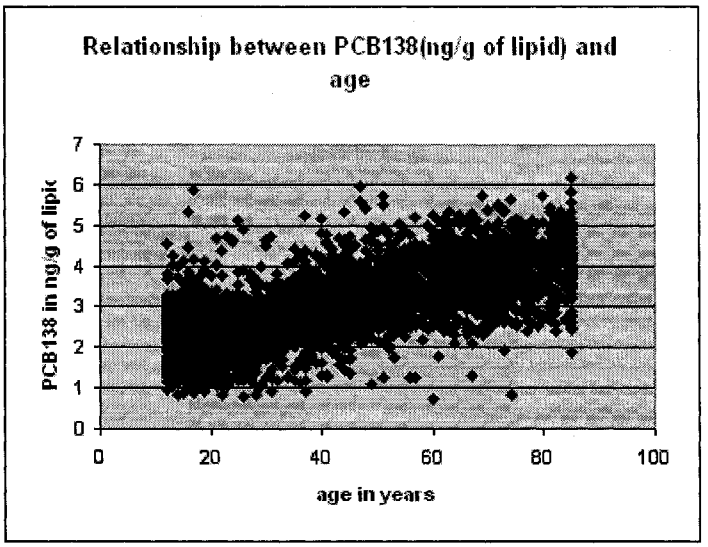

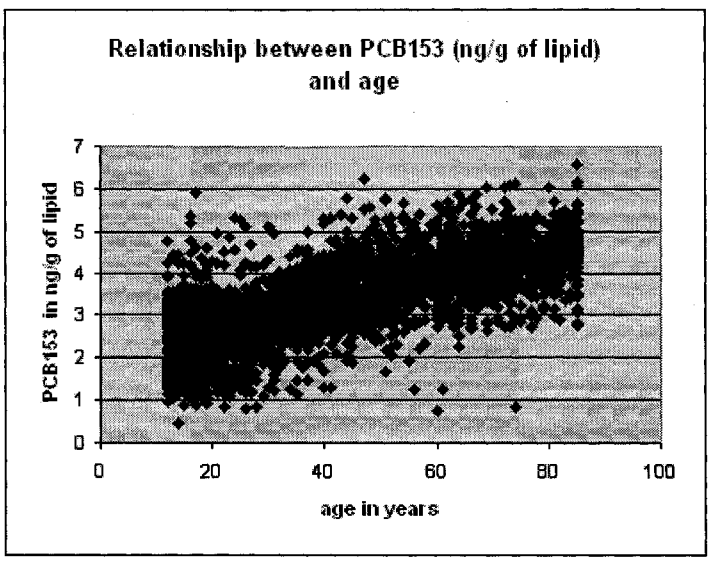

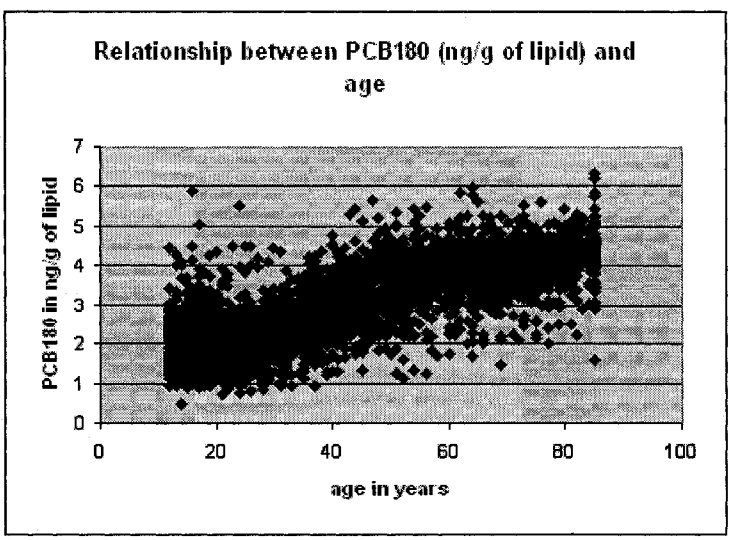

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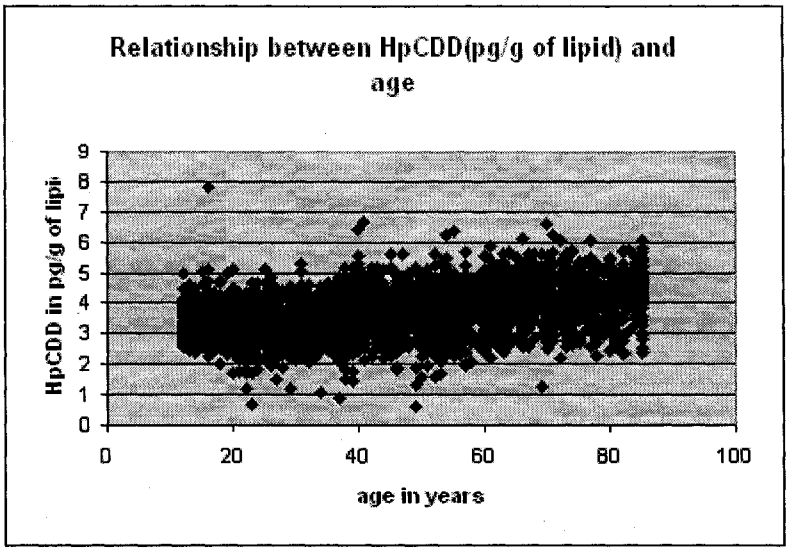

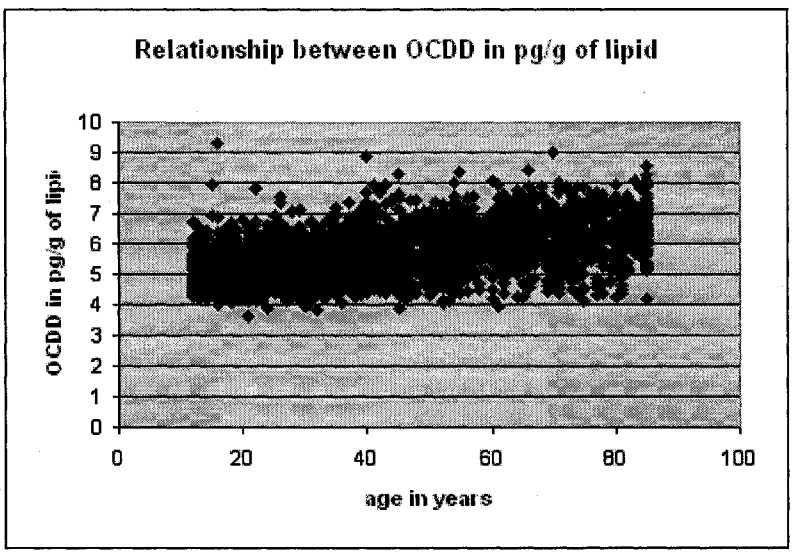

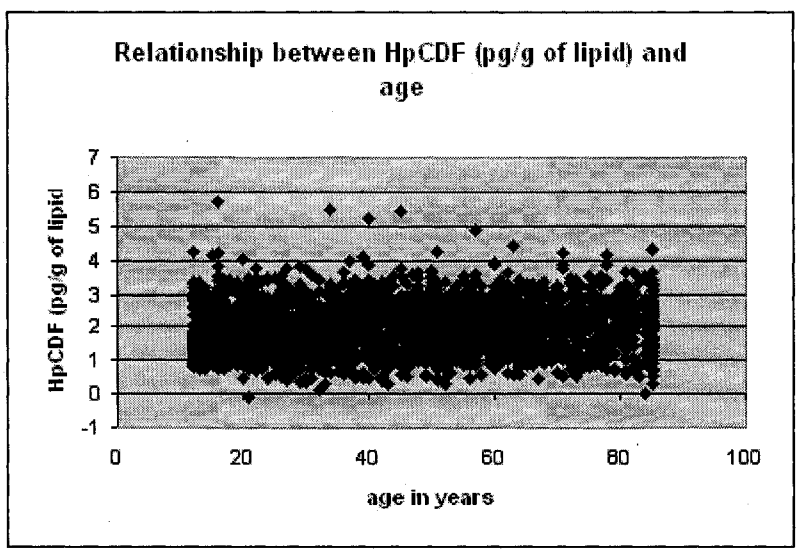

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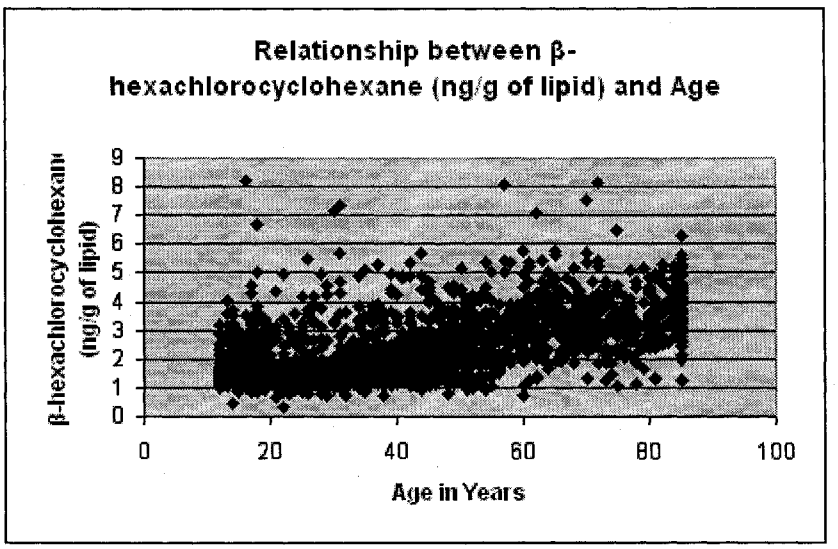

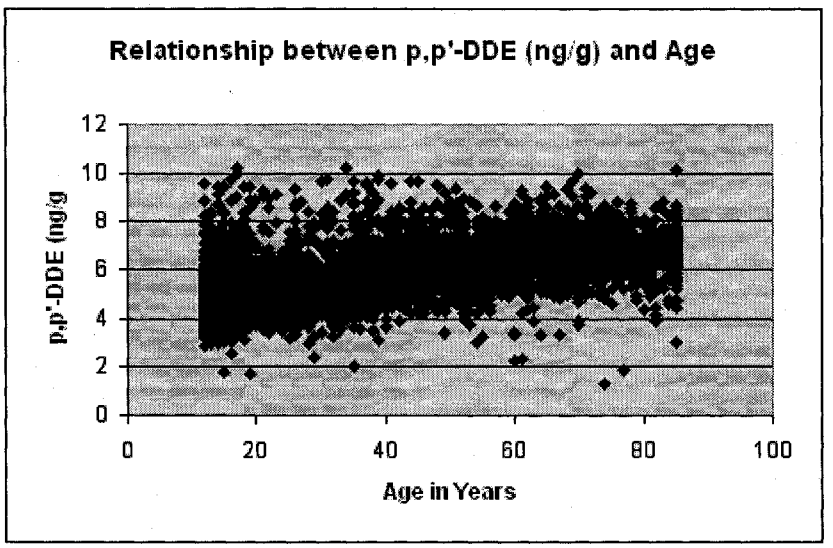

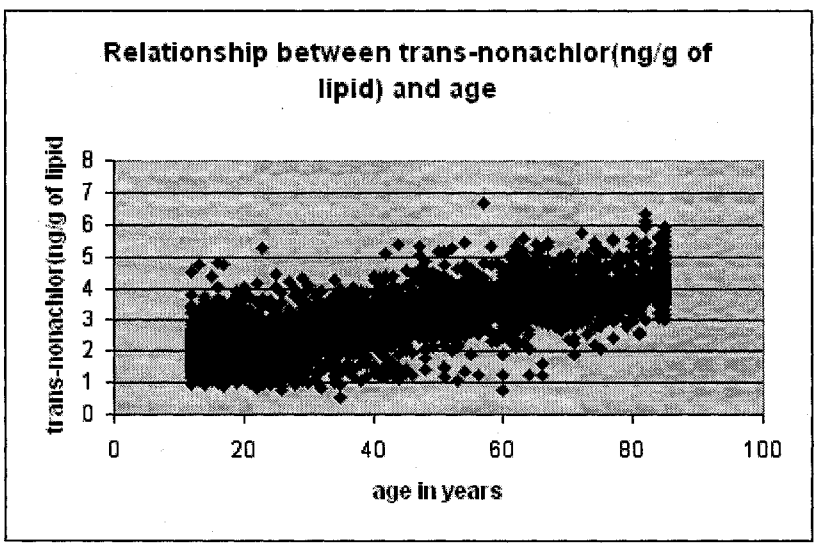

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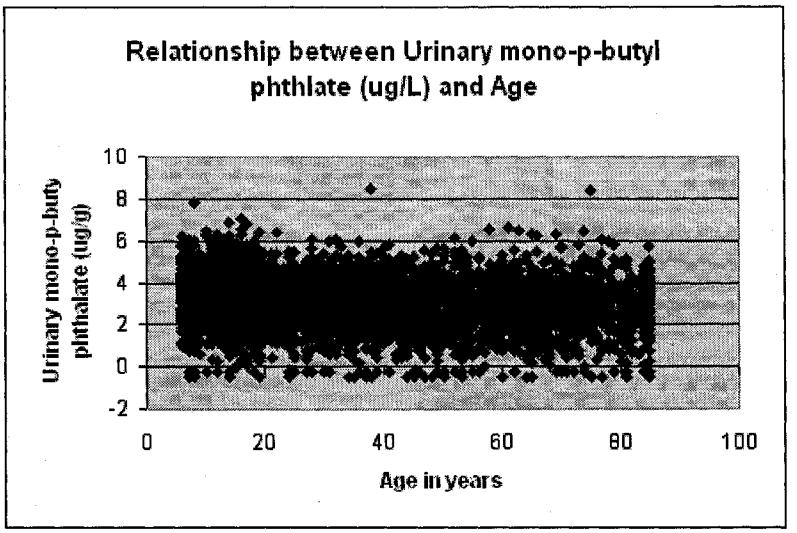

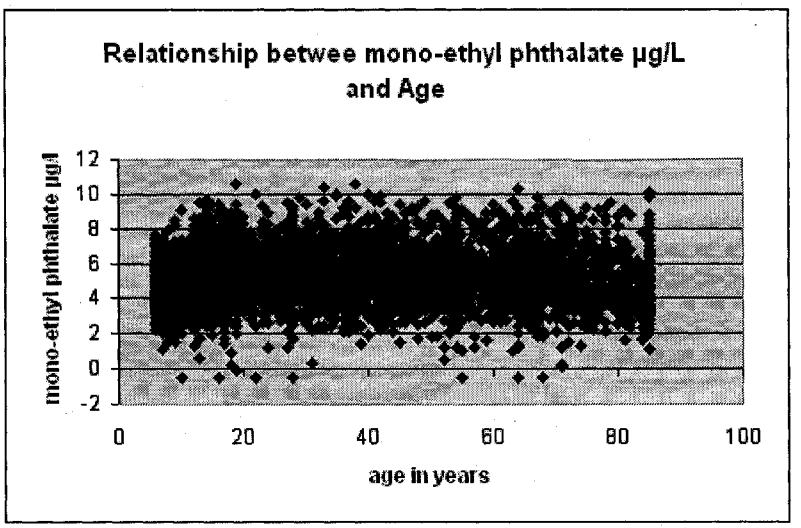

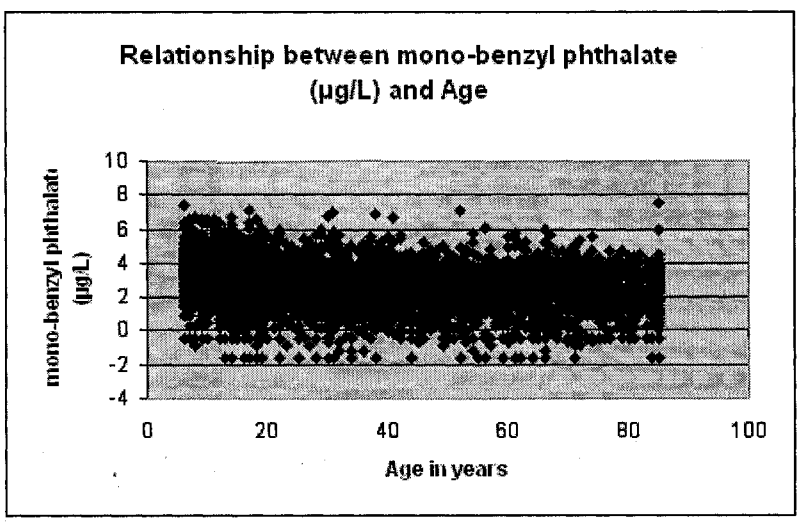

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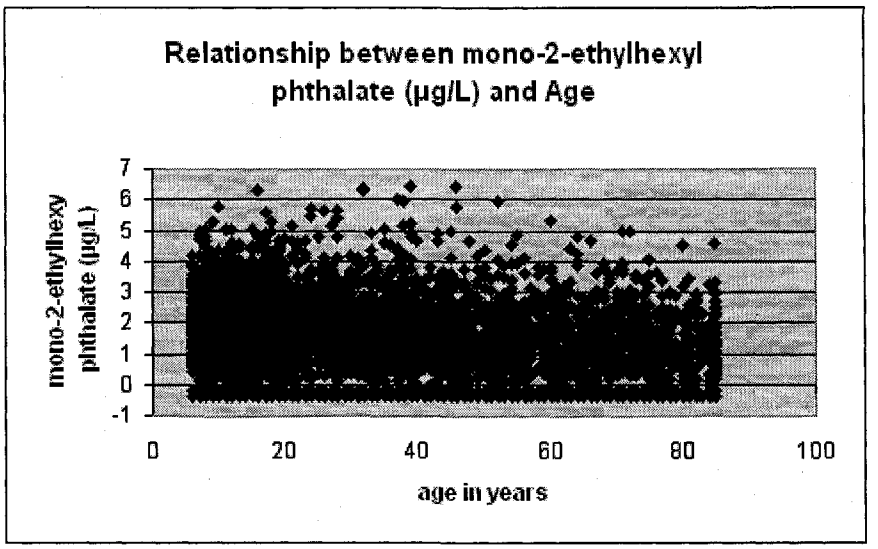

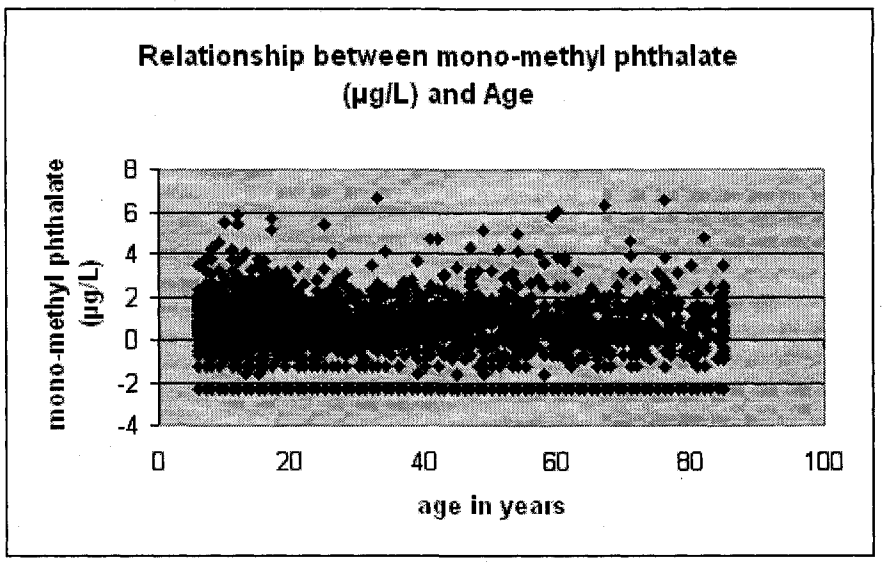

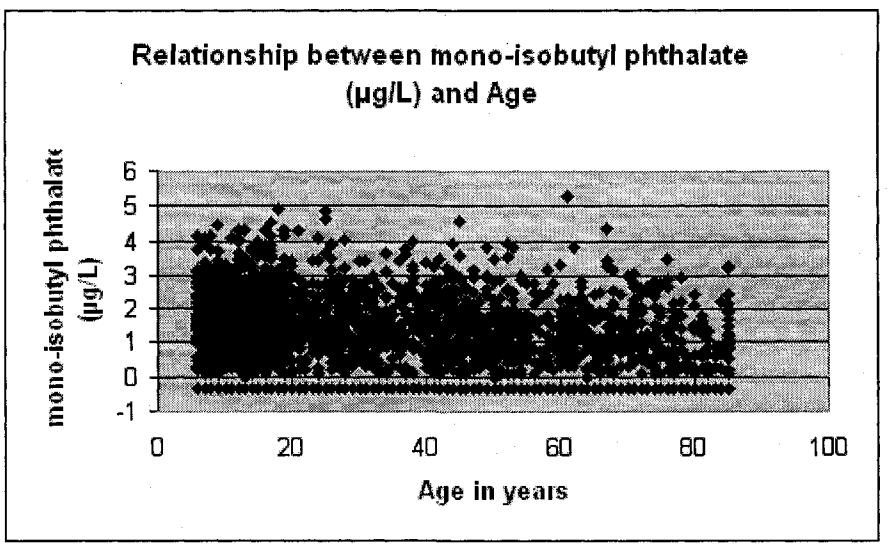

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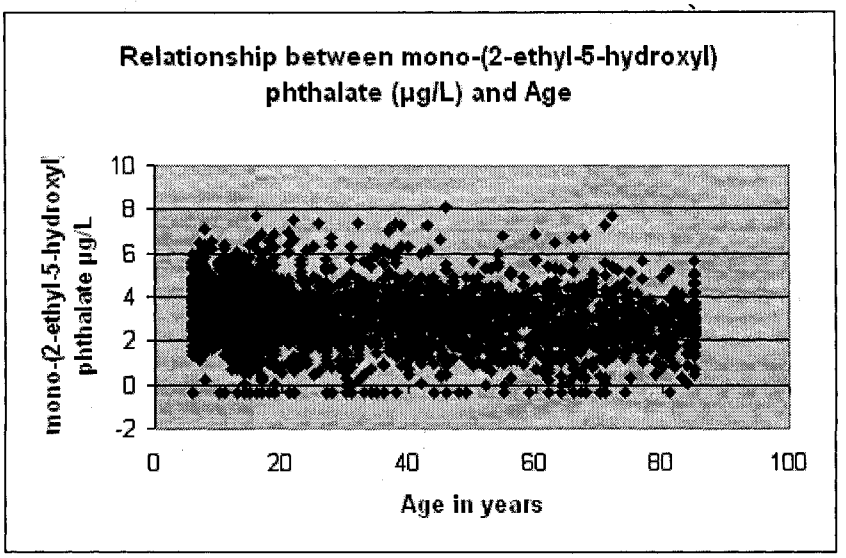

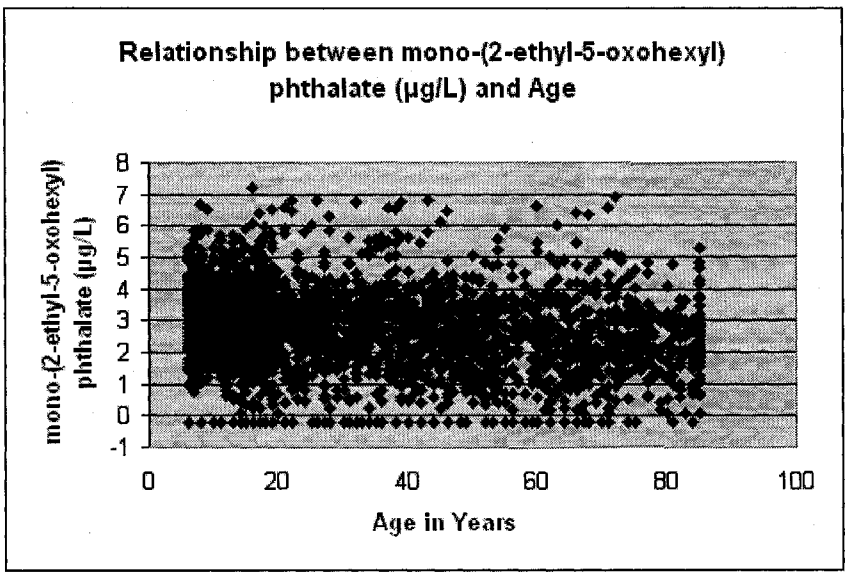

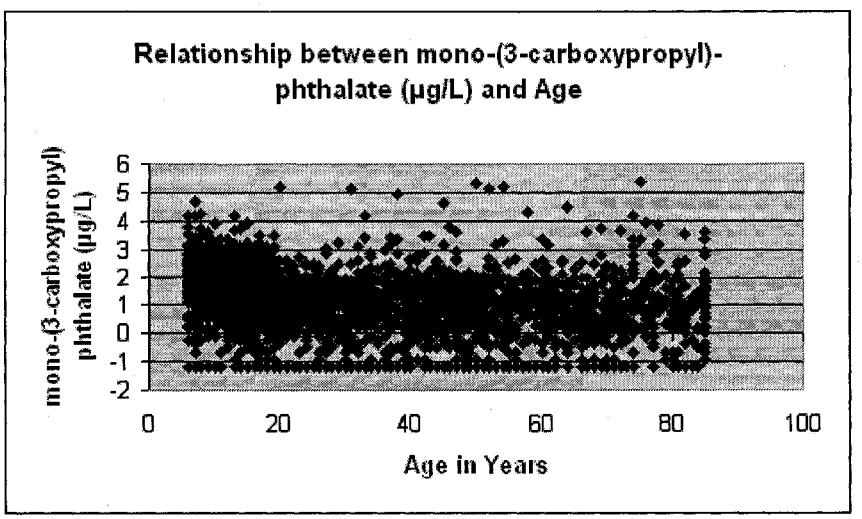

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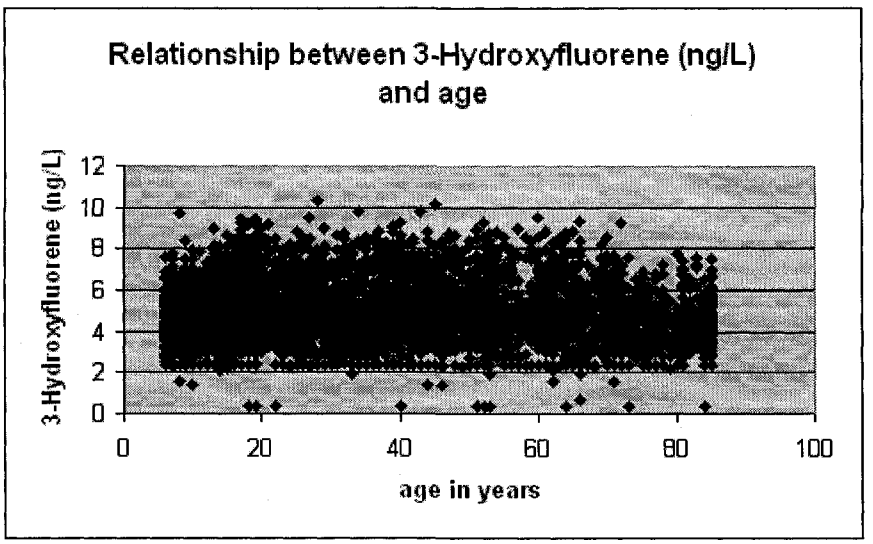

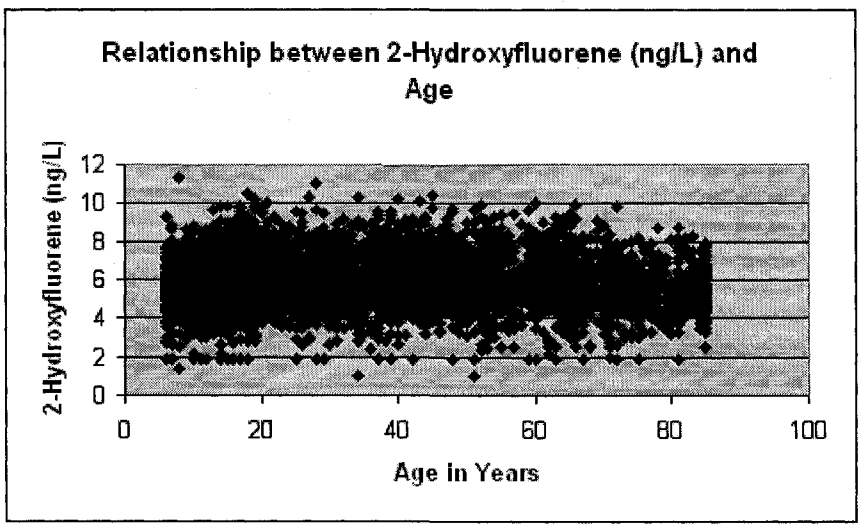

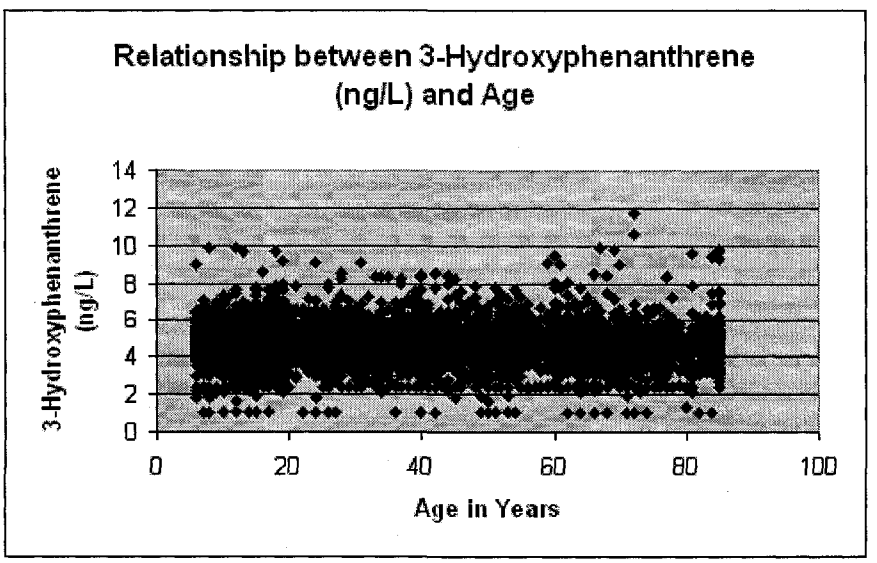

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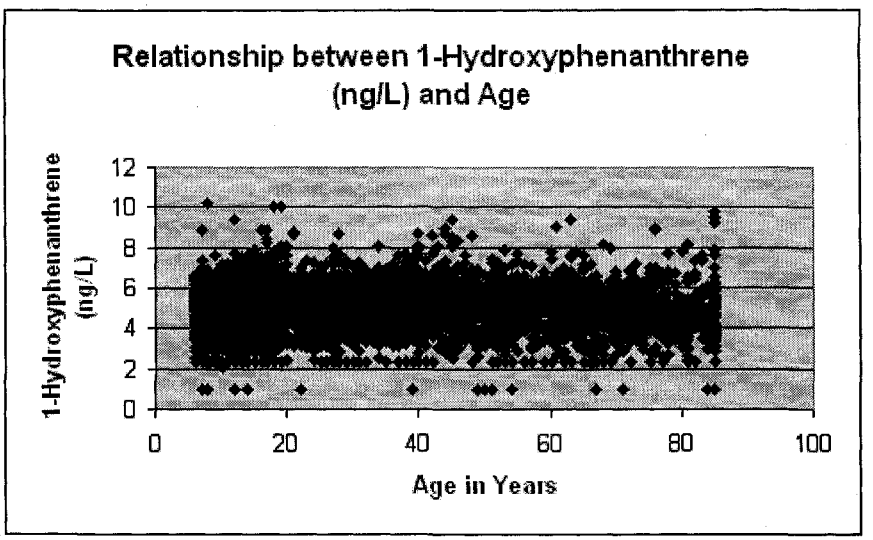

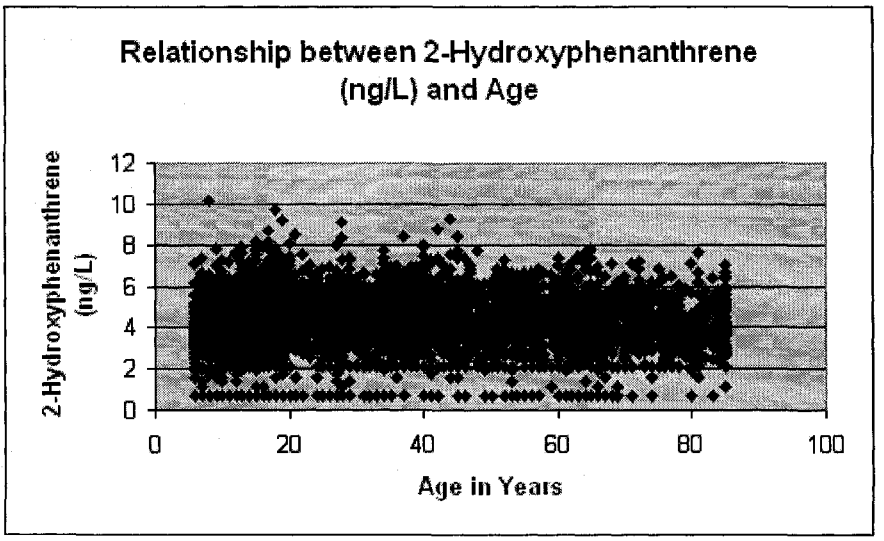

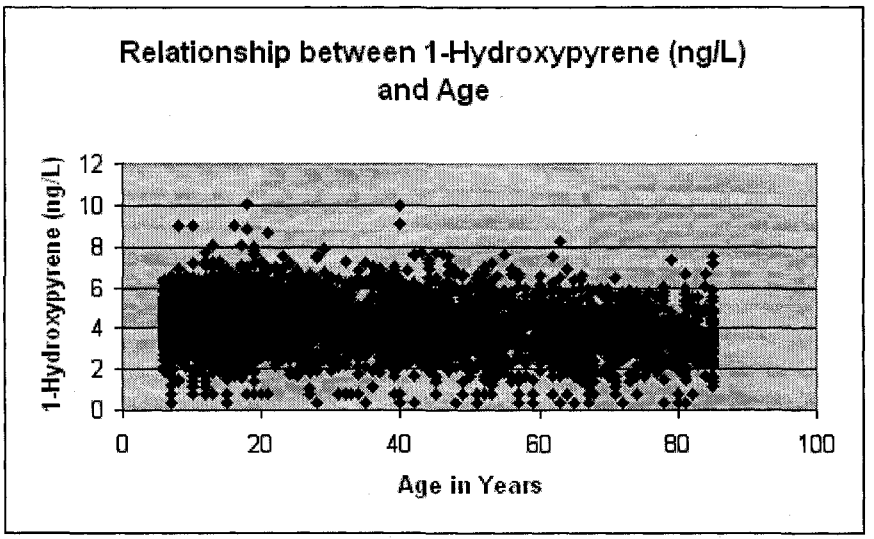

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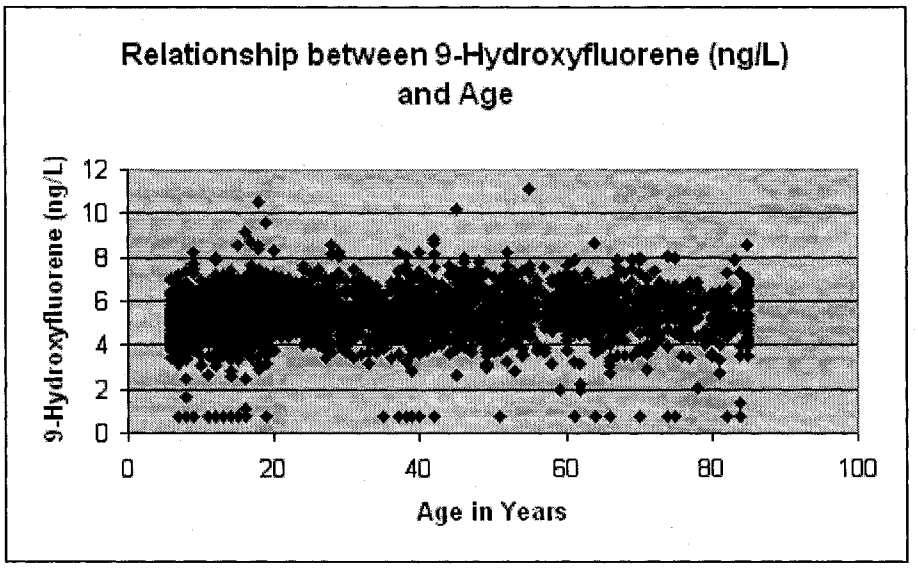

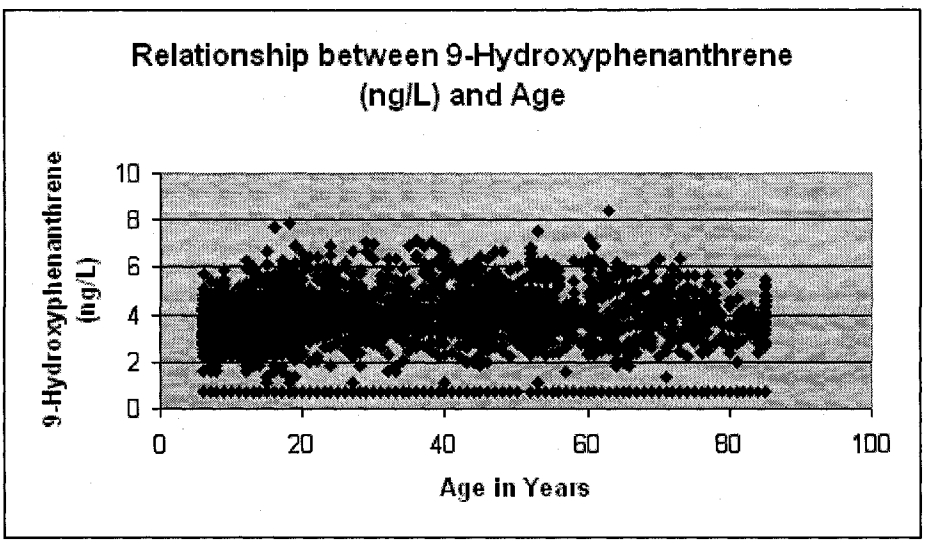

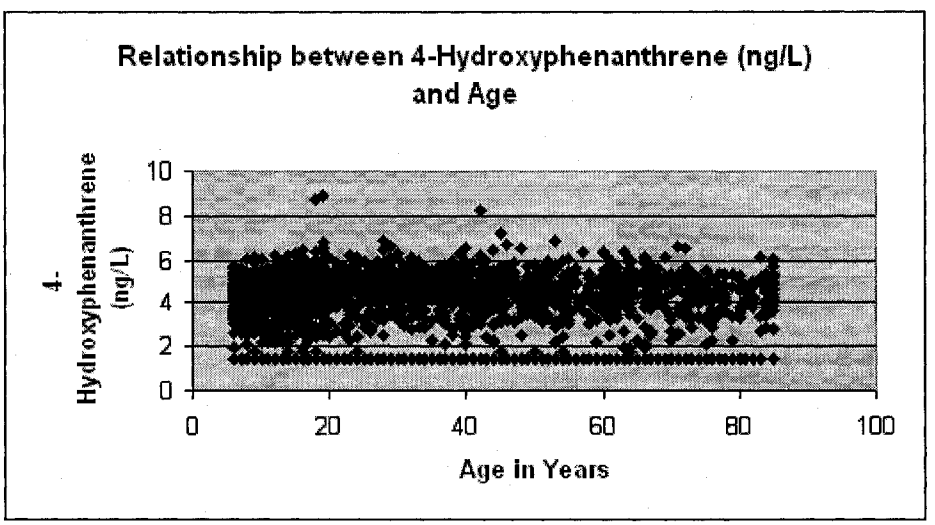

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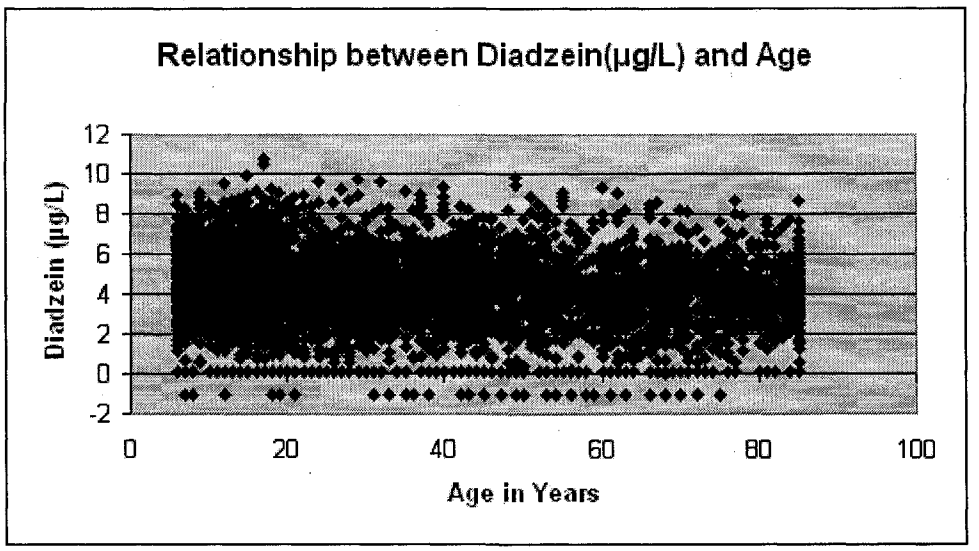

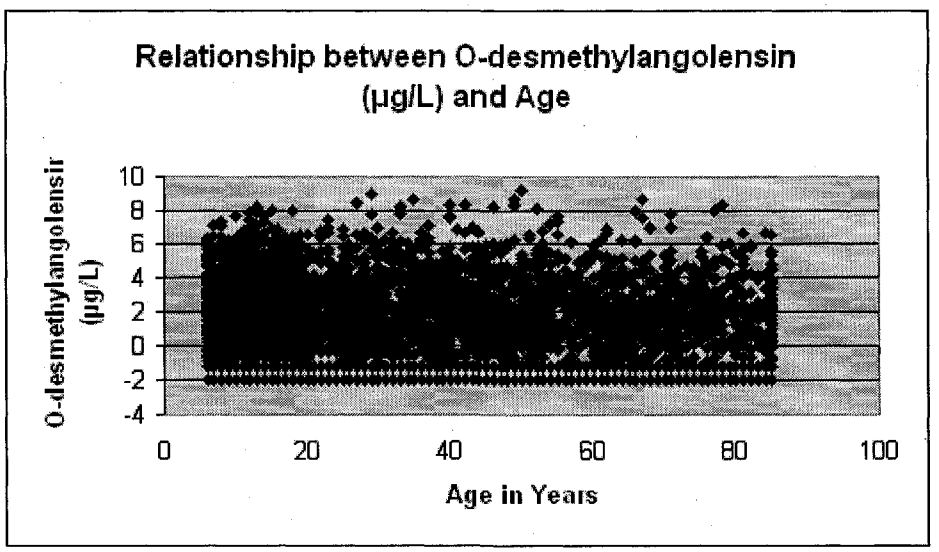

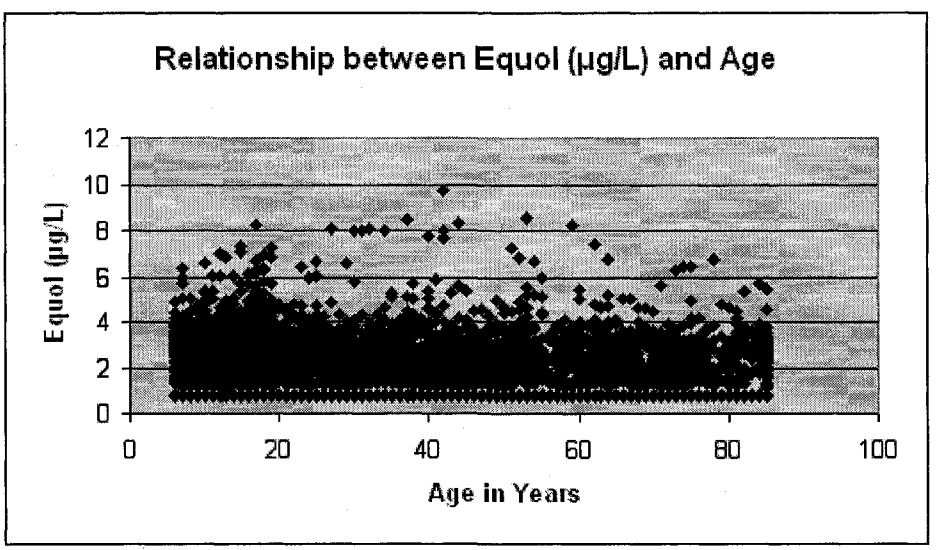

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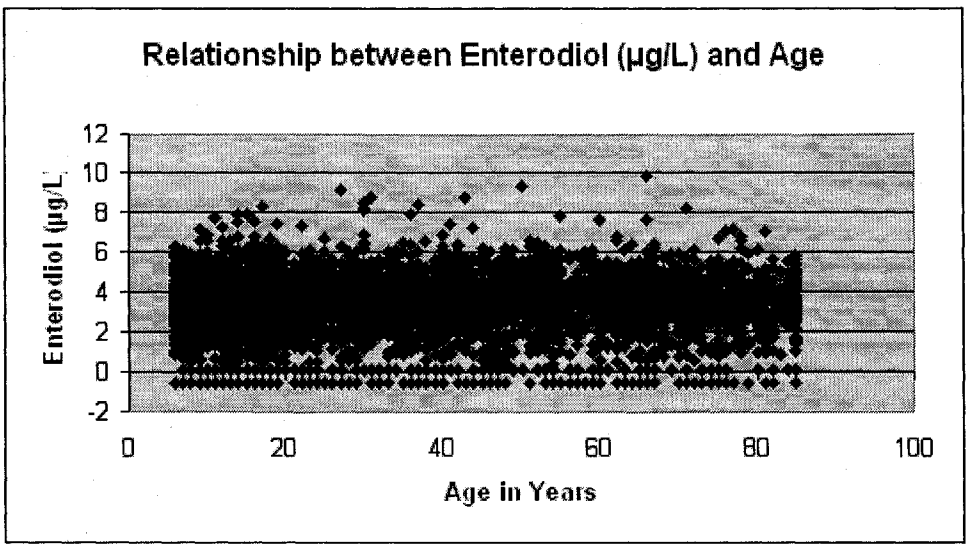

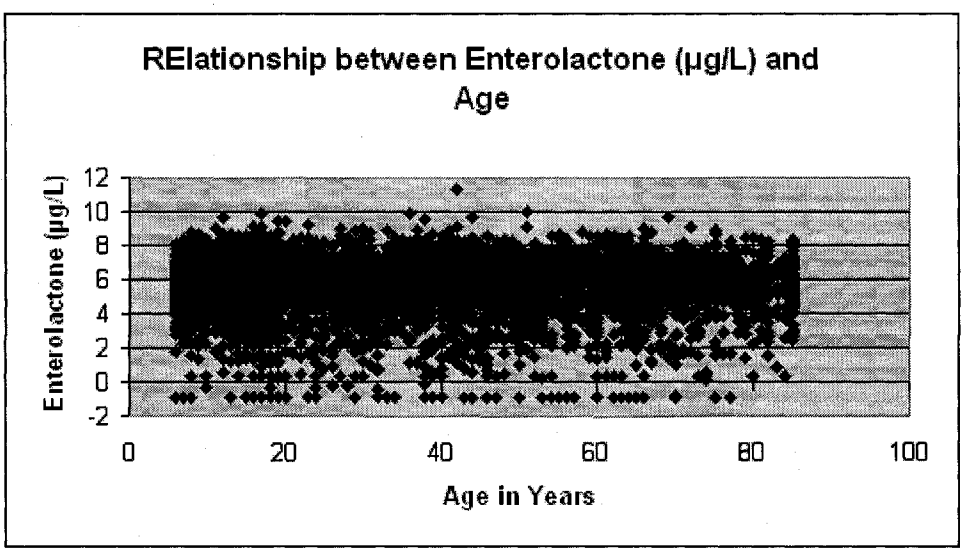

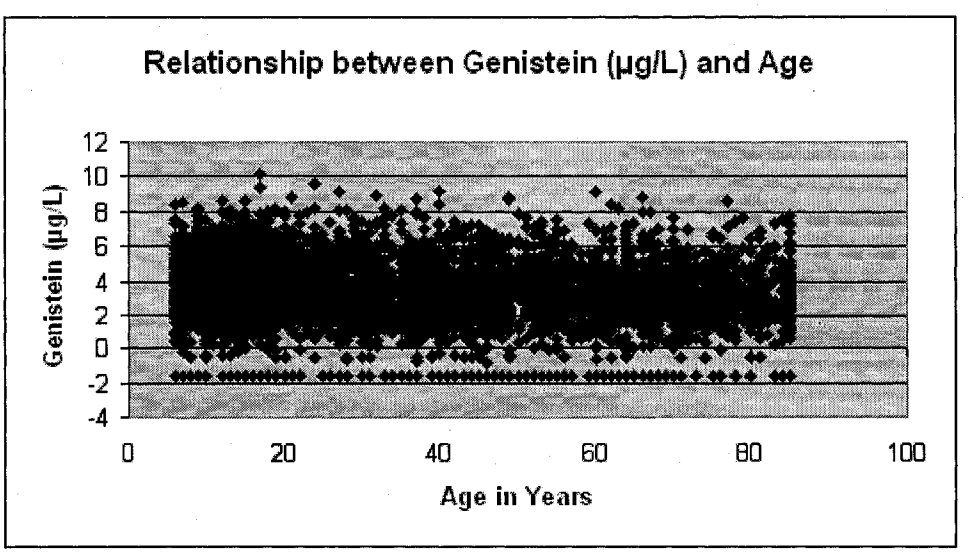

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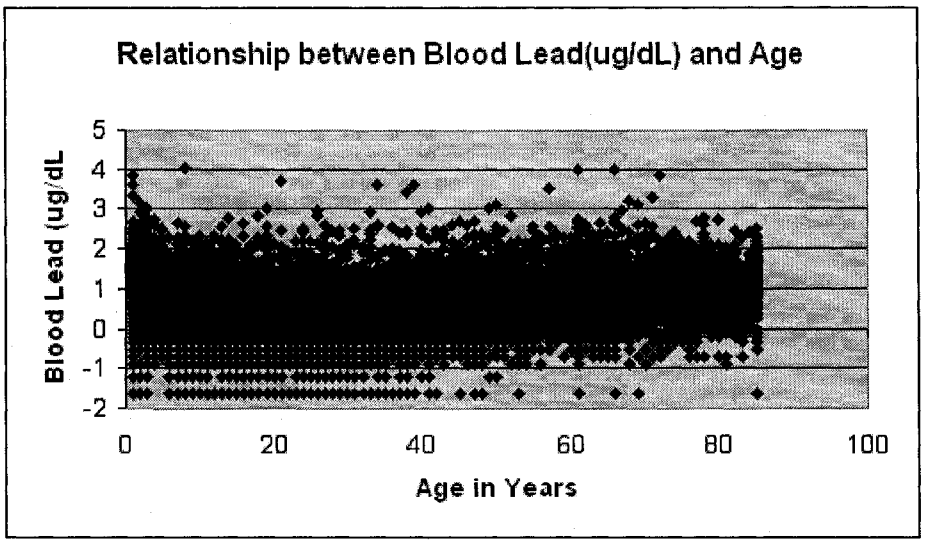

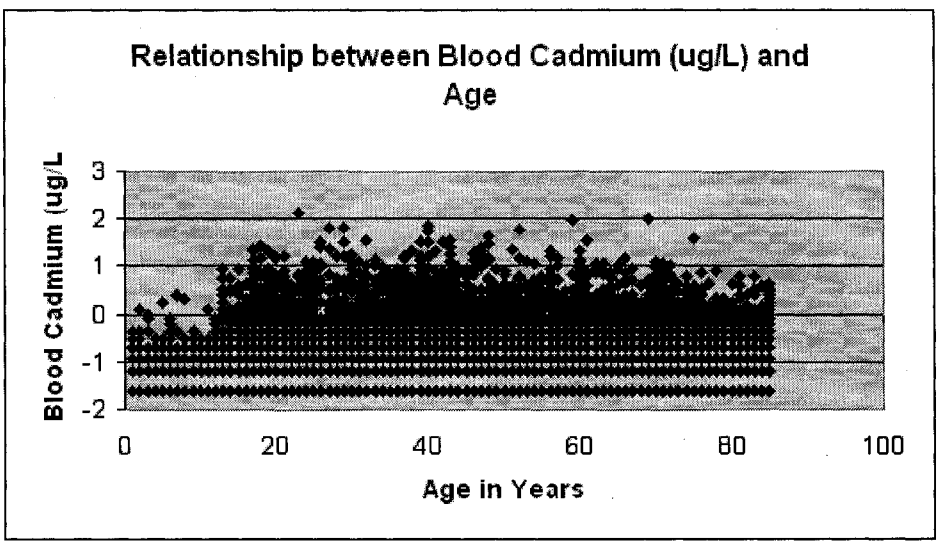

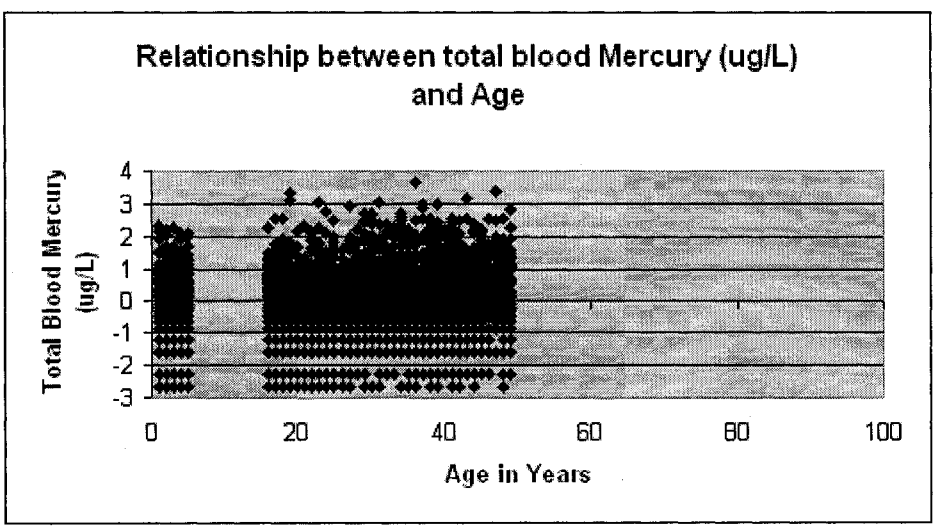

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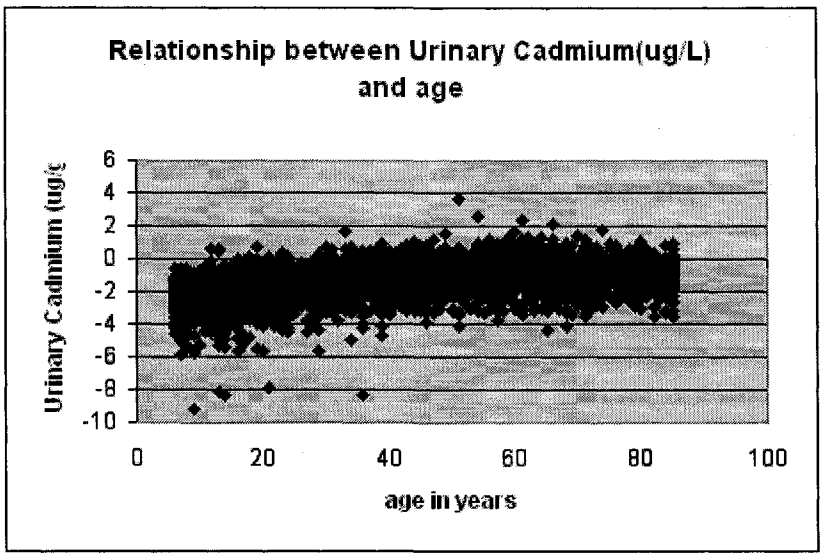

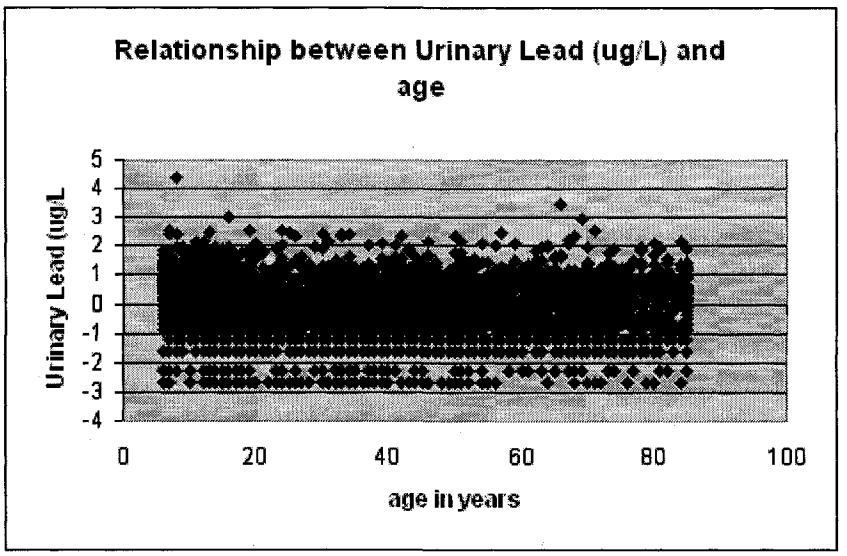

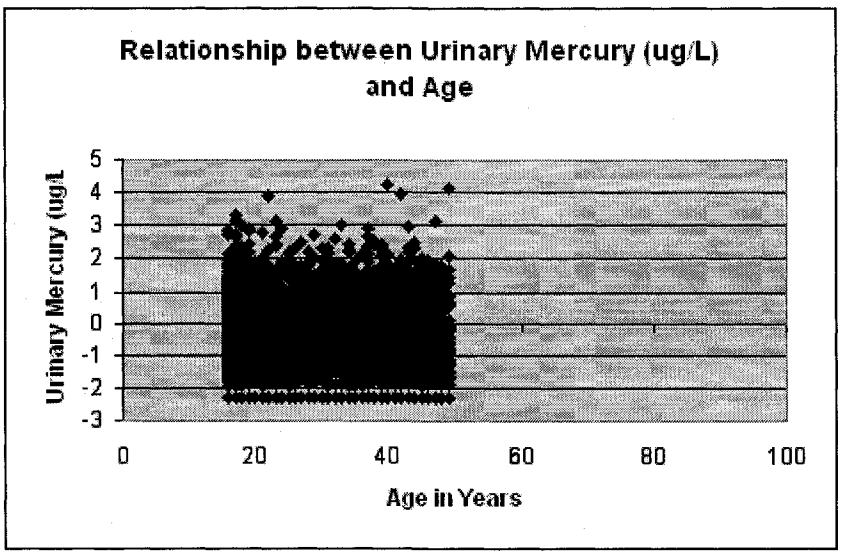

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APPENDIX 41: CORRELATIONS AMONG ALL ENDOCRINE DISRUPTING CHEMICALS

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	Urinary Cadmium	Blood Cadmium	Urinary Lead	Blood Lead	Total Mercury	Urinary Mercury
Diadzein	-	-0.06239	-	-0.06211	-0.01127	0.16813
Desmethylangolensin	-	-0.09836	-	-0.08062	0.01842	0.09915
Equol	-	-0.08669	-	-0.06743	-0.03502	0.1566
Enterodiol	-	-0.05635	-	-0.05672	0.02945	0.15332
Enterolactone	-	-0.11309	-	-0.00476	0.0439	0.12036
Genistein	-	-0.03426	-	-0.04431	-0.03245	0.18426
Urinary Cadmium	1.00	0.46982	0.41999	0.25688	0.07157	0.37465
Blood Cadmium	-	1.00	0.09941	0.28433	0.15682	0.00714
Urinary Lead	-	-	1.00	0.54485	0.0582	0.33838
Blood Lead	-	-	-	1.00	-0.06005	0.0228
Total Mercury	-	-	-	-	1.00	0.41168
Urinary Mercury	-	-	-	-	-	1.00
PCB138	-	-	-	-	-	-
PCB153	-	-	-	-	-	-
PCB180	-	-	-	-	-	-
OCDD	-	-	-	-	-	-
HPCDD	-	-	-	-	-	-
HPCDF	-	-	-	-	-	-
β-hexachlorocyclohexane	-	-	-	-	-	-
p-p'-DDE	-	-	-	-	-	-
trans-nonachlor	-	-	-	-	-	-
mono-n-butyl phthalate	-	-	-	-	-	-
mono-benzyl phthalate	-	-	-	-	-	-
mono-ethyl phthalate	-	-	-	-	-	-
mono-2-ethylhexyl phthalate	-	-	-	-	-	-
mono- methyl phthalate	-	-	-	-	-	-
mono-isobutyl phtalate	-	-	-	-	-	-
mono-(2-ethyl-5-hydroxyhexyl) phthalate	-	-	-	-	-	-
mono-(2-ethyl-5-oxohexyl) phthalate	-	-	-	-	-	-
mono-3-carboxypropyl phthalate	-	-	-	-	-	-
2-hydroxyfluorene	-	-	-	-	-	-
3-hydroxyfluorene	-	-	-	-	-	-
1-hydroxyphenanthrene	-	-	-	-	-	-
2-hydroxyphenanthrene	-	-	-	-	-	-
3-hydroxyphenanthrene	-	-	-	-	-	-
1-hydroxypyrene	-	-	-	-	-	-
9-hydroxyfluorene	-	-	-	-	-	-
4-hydroxyphenanthrene	-	-	-	-	-	-
9-hydroxyphenanthrene	-	-	-	-	-	-

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	PCB138	PCB153	PCB180	OCDD	HPCDD	HPCDF	β-hexachloro cyclohexane	p,p'-DDE	trans-nonachlor
Diadzein	-	-	-	-	-	-	-	-	-
Desmethylangolensin	-	-	-	-	-	-	-	-	-
Equol	-	-	-	-	-	-	-	-	-
Enterodiol	-	-	-	-	-	-	-	-	-
Enterolactone	-	-	-	-	-	-	-	-	-
Genistein	-	-	-	-	-	-	-	-	-
Urinary Cadmium	-	-	-	-	-	-	-	-	-
Blood Cadmium	0.26078	0.2821	0.30282	0.06558	-0.13986	-0.00262	-	-	0.27066
Urinary Lead	-	-	-	-	-	-	-	-	-
Blood Lead	0.37028	0.3946	0.42983	0.20758	0.15137	0.11927	-	-	0.3824
Total Mercury	0.26499	0.2915	0.28453	0.07067	0.0613	0.07366	-	-	0.22073
Urinary Mercury	0.11631	0.1351	0.11441	-0.02168	0.01773	-0.00633	-	-	0.05586
PCB138	1.00	0.9719	0.89927	0.47913	0.41337	0.25437	-	-	0.72321
PCB153	-	1.00	0.94077	0.47577	0.409	0.23396	-	-	0.74547
PCB180	-	-	1.00	0.49229	0.39796	0.2384	-	-	0.77356
OCDD	-	-	-	1.00	0.80263	0.49603	-	-	0.57891
HPCDD	-	-	-	-	1.00	0.45158	-	-	0.4979
HPCDF	-	-	-	-	-	1.00	-	-	0.23541
β-hexachlorocyclohexane	-	-	-	-	-	-	1.00	-	-
p-p'-DDE	-	-	-	-	-	-	-	1.00	-
trans-nonachlor	-	-	-	-	-	-	-	-	1.00
mono-n-butyl phthalate	-	-	-	-	-	-	-	-	-
mono-benzyl phthalate	-	-	-	-	-	-	-	-	-
mono-ethyl phthalate	-	-	-	-	-	-	-	-	-
mono-2-ethylhexyl phthalate	-	-	-	-	-	-	-	-	-
mono- methyl phthalate	-	-	-	-	-	-	-	-	-
mono-isobutyl phtalate	-	-	-	-	-	-	-	-	-
mono-(2-ethyl-5-hydroxyhexyl) phthalate	-	-	-	-	-	-	-	-	-
mono-(2-ethyl-5-oxohexyl) phthalate	-	-	-	-	-	-	-	-	-
mono-3-carboxypropyl phthalate	-	-	-	-	-	-	-	-	-
2-hydroxyfluorene	-	-	-	-	-	-	-	-	-
3-hydroxyfluorene	-	-	-	-	-	-	-	-	-
1-hydroxyphenanthrene	-	-	-	-	-	-	-	-	-
2-hydroxyphenanthrene	-	-	-	-	-	-	-	-	-
3-hydroxyphenanthrene	-	-	-	-	-	-	-	-	-
1-hydroxypyrene	-	-	-	-	-	-	-	-	-
9-hydroxyfluorene	-	-	-	-	-	-	-	-	-
4-hydroxyphenanthrene	-	-	-	-	-	-	-	-	-
9-hydroxyphenanthrene	-	-	-	-	-	-	-	-	-

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	mono-n-butyl phthalate	mono-benzyl phthalate	mono-ethyl phthalate	mono-2-ethylhexyl phthalate	mono-methyl phthalate	mono-isobutyl phtalate	mono-(2-ethyl-5-hydroxy hexyl) phthalate	mono-(2-ethyl-5-oxohexyl) phthalate	mono-3-carboxypropyl phthalate
Diadzein	0.25373	0.25916	0.10228	0.18805	0.13151	0.24932	0.27083	0.27567	0.27139
Desmethylangolensin	0.15916	0.18748	0.05911	0.11497	0.09562	0.13459	0.15183	0.15495	0.17257
Equol	0.19018	0.19581	0.07265	0.16152	0.12568	0.16138	0.22288	0.23145	0.25016
Enterodiol	0.1652	0.13386	0.0985	0.13657	0.11364	0.13945	0.16621	0.17708	0.17466
Enterolactone	0.15584	0.15203	0.08326	0.10906	0.13158	0.13054	0.15387	0.16842	0.17393
Genistein	0.26296	0.26744	0.12923	0.20729	0.14583	0.27396	0.27779	0.28216	0.28204
Urinary Cadmium	-	-	-	-	-	-	-	-	-
Blood Cadmium	-0.06088	-0.11695	0.00721	-0.0828	-0.0571	-0.10456	-0.11654	-0.13086	-0.12661
Urinary Lead	-	-	-	-	-	-	-	-	-
Blood Lead	-0.02844	-0.04233	-0.00165	-0.06071	-0.01439	-0.01566	-0.00555	-0.02692	-0.01826
Total Mercury	-0.02806	-0.10842	-0.03173	0.00281	-0.0071	-0.02893	-0.03446	-0.03823	-0.14081
Urinary Mercury	0.32997	0.26397	0.26432	0.23273	0.18162	0.29697	0.26625	0.27286	0.27823
PCB138	-	-	-	-	-	-	-	-	-
PCB153	-	-	-	-	-	-	-	-	-
PCB180	-	-	-	-	-	-	-	-	-
OCDD	-	-	-	-	-	-	-	-	-
HPCDD	-	-	-	-	-	-	-	-	-
HPCDF	-	-	-	-	-	-	-	-	-
β-hexachlorocyclohexane	-	-	-	-	-	-	-	-	-
p-p'-DDE	-	-	-	-	-	-	-	-	-
trans-nonachlor	-	-	-	-	-	-	-	-	-
mono-n-butyl phthalate	1.00	0.69497	0.40102	0.44392	0.37126	0.67453	0.61149	0.62766	0.67241
mono-benzyl phthalate	-	1.00	0.35854	0.38946	0.31911	0.55244	0.60596	0.61165	0.65941
mono-ethyl phthalate	-	-	1.00	0.23536	0.30513	0.35746	0.35177	0.35459	0.32024
mono-2-ethylhexyl phthalate	-	-	-	1.00	0.15745	0.40002	0.66792	0.67468	0.39406
mono- methyl phthalate	-	-	-	-	1.00	0.31816	0.31311	0.31673	0.34711
mono-isobutyl phtalate	-	-	-	-	-	1.00	0.49734	0.51684	0.52426
mono-(2-ethyl-5-hydroxyhexyl) phthalate	-	-	-	-	-	-	1.00	0.98241	0.63004
mono-(2-ethyl-5-oxohexyl) phthalate	-	-	-	-	-	-	-	1.00	0.64871
mono-3-carboxypropyl phthalate	-	-	-	-	-	-	-	-	1.00
2-hydroxyfluorene	-	-	-	-	-	-	-	-	-
3-hydroxyfluorene	-	-	-	-	-	-	-	-	-
1-hydroxyphenanthrene	-	-	-	-	-	-	-	-	-
2-hydroxyphenanthrene	-	-	-	-	-	-	-	-	-
3-hydroxyphenanthrene	-	-	-	-	-	-	-	-	-
1-hydroxypyrene	-	-	-	-	-	-	-	-	-
9-hydroxyfluorene	-	-	-	-	-	-	-	-	-
4-hydroxyphenanthrene	-	-	-	-	-	-	-	-	-
9-hydroxyphenanthrene	-	-	-	-	-	-	-	-	-

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	2-hydroxy fluorene	3-hydroxy fluorene	1-hydroxy phenanthrene	2-hydroxy phenanthrene	3-hydroxy phenanthrene	1-hydroxy pyrene	9-hydroxy fluorene	4-hydroxy phenanthrene	9-hydroxy phenanthrene
Diadzein	0.13524	0.12907	0.14154	0.15974	0.19014	0.20121	0.15578	0.06682	0.13621
Desmethylangolensin	0.10712	0.09179	0.10856	0.10019	0.11539	0.10127	0.08977	0.03366	0.06325
Equol	0.10076	0.09542	0.17138	0.12011	0.15172	0.13606	0.14299	0.11158	0.15634
Enterodiol	0.07801	0.0645	0.13093	0.07765	0.11803	0.10295	0.14602	0.05721	0.13545
Enterolactone	0.04349	0.0116	0.08756	0.04209	0.08283	0.06968	0.12631	0.0149	0.09024
Genistein	0.16658	0.16324	0.17605	0.16097	0.21657	0.20028	0.20499	0.12243	0.19
Urinary Cadmium	-	-	-	-	-	-	-	-	-
Blood Cadmium	0.2984	0.33721	0.12034	0.1372	0.13734	0.14355	0.13402	0.06566	0.23083
Urinary Lead	-	-	-	-	-	-	-	-	-
Blood Lead	0.13176	0.14883	0.06658	0.11596	0.1041	0.10017	0.12783	0.02899	0.09459
Total Mercury	-0.07572	-0.08519	-0.05201	-0.05021	-0.07865	-0.11045	-0.08465	-0.03713	-0.0918
Urinary Mercury	0.20103	0.19385	0.23415	0.20095	0.21612	0.20397	0.17438	0.06168	0.17481
PCB138	-	-	-	-	-	-	-	-	-
PCB153	-	-	-	-	-	-	-	-	-
PCB180	-	-	-	-	-	-	-	-	-
OCDD	-	-	-	-	-	-	-	-	-
HPCDD	-	-	-	-	-	-	-	-	-
HPCDF	-	-	-	-	-	-	-	-	-
β-hexachlorocyclohexane	-	-	-	-	-	-	-	-	-
p-p'-DDE	-	-	-	-	-	-	-	-	-
trans-nonachlor	-	-	-	-	-	-	-	-	-
mono-n-butyl phthalate	0.37801	0.3512	0.38956	0.39566	0.42696	0.44949	0.43661	0.20093	0.35137
mono-benzyl phthalate	0.33681	0.3198	0.34301	0.34083	0.38403	0.41773	0.40885	0.16691	0.29763
mono-ethyl phthalate	0.28955	0.27048	0.28325	0.27641	0.28237	0.27303	0.32761	0.10072	0.20629
mono-2-ethylhexyl phthale	0.25586	0.25578	0.25674	0.26811	0.29549	0.31295	0.25866	0.10812	0.22297
mono- methyl phthalate	0.2254	0.19201	0.24062	0.17925	0.22185	0.24775	0.23496	0.16756	0.12855
mono-isobutyl phtalate	0.35515	0.33885	0.38916	0.32949	0.3676	0.43823	0.38346	0.17224	0.30438
mono-(2-ethyl-5-hydroxyh	0.3454	0.33655	0.38293	0.32917	0.36875	0.41156	0.36787	0.18872	0.27658
mono-(2-ethyl-5-oxohexyl)	0.33595	0.32354	0.38966	0.32953	0.36729	0.41686	0.36683	0.19735	0.2778
mono-3-carboxypropyl pht	0.35368	0.33404	0.4163	0.31032	0.37746	0.43601	0.35392	0.16966	0.31111
2-hydroxyfluorene	1.00	0.91236	0.7655	0.73891	0.72627	0.70751	0.6613	0.2498	0.59323
3-hydroxyfluorene	-	1.00	0.70265	0.68214	0.70349	0.68997	0.6069	0.2284	0.60001
1-hydroxyphenanthrene	-	-	1.00	0.75515	0.72954	0.70368	0.70473	0.27258	0.61911
2-hydroxyphenanthrene	-	-	-	1.00	0.71673	0.69935	0.61598	0.29534	0.52651
3-hydroxyphenanthrene	-	-	-	-	1.00	0.72698	0.60368	0.27629	0.56004
1-hydroxypyrene	-	-	-	-	-	1.00	0.63245	0.25313	0.58611
9-hydroxyfluorene	-	-	-	-	-	-	1.00	0.25545	0.51268
4-hydroxyphenanthrene	-	-	-	-	-	-	-	1.00	0.24289
9-hydroxyphenanthrene	-	-	-	-	-	-	-	-	1.00

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APPENDIX 42: TYPES OF DATA EXAMINED FROM THE NHANES DATASET

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Characteristics of Interest
▪ Age ▪ Sex ▪ Ethnicity ▪ Citizenship ▪ Marital status ▪ Education ▪ Income ▪ Occupation ▪ Employment Status ▪ Pregnancy Status ▪ Military Status ▪ Elimination disorders ▪ Total chloresterol levels ▪ Kidney/uro health ▪ Menopausal status ▪ Body measurements ▪ Diet behavior and nutrition ▪ Food security ▪ Food Frequency ▪ Dietary Supplements and medication ▪ Breastfeeding history and duration ▪ Alcohol, drug and tobacco use ▪ Eating disorders ▪ Housing Characteristics ▪ Citizenship ▪ Water Source/Intake/Treatment ▪ Pesticide Application Practices

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