

# National Health and Nutrition Examination Survey 1999–2000

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## Documentation, Codebook, and Frequencies

MEC Laboratory Component:  
Volatile Organic Compounds in  
Blood and Water

**Survey Years:**  
**1999 to 2000**

**SAS Export File:**  
**Lab04.XPT**



First Published: December 2006  
Last Revised: N/A

# NHANES 1999–2000 Data Documentation

## Laboratory Assessment: Lab 04 Volatile Organic Compounds in Blood and Water

Years of Coverage: 1999-2000

First Published: December 2006

Last Revised: N/A

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### Component Description

#### **Volatile Organic Compounds (Human Blood):**

Exposure to volatile organic compounds (VOCs) is ubiquitous. Chronic exposure to extremely high levels of some VOCs can lead to cancer and neurocognitive dysfunction (1,2).

Nearly 200 air toxics have been associated with adverse health effects in occupational studies or laboratory studies, but have not been monitored in general population groups. Information on levels of exposure to these compounds as measured by their levels in blood is essential to determine the need for regulatory mechanisms to reduce the levels of hazardous air pollutants to which the general population is exposed.

#### **Volatile Organic Compounds (Home Tap Water):**

In addition to assessing levels of VOCs in blood, VOC levels will be measured in home tap water specimens provided by NHANES participants. Specifically, trihalomethanes (THMs) and the fuel additive methyl tertiary-butyl ether (MTBE) are measured in these samples.

### Eligible Sample

In 1999, the eligible sample was a one-fourth subsample of persons 20–59 years; in 2000, it was a one-third subsample of persons 20–59 years. There were no component-specific exclusions.

### Description of Laboratory Methodology

#### **Measurements of Trihalomethanes (THMs) and MTBE in Tap Water:**

The prevalence of water disinfection by-products in drinking water supplies has raised concerns about possible health effects from chronic exposure to these compounds. The objective is to support studies exploring the relationship between exposure to THMs and health effects.

This automated analytical method uses headspace solid-phase microextraction (SPME) coupled with capillary gas chromatography and mass spectrometry (3). This method quantitates trace levels of THMs (chloroform, bromodichloromethane, dibromochloromethane, and

bromoform) and MTBE in tap water. Detection limits of less than 100 pg/mL for all analytes and linear ranges of three orders of magnitude are adequate for measuring the THMs in tap water samples tested from across the United States. THMs are stable for extended periods in tap water samples after quenching of residual chlorine and buffering to pH 6.5, thus enabling larger epidemiologic field studies with simplified sample collection protocols.

### **Measurements of THMs and MTBE in Whole Blood**

The prevalence of water disinfection by-products (e.g. THMs) in tap water has raised concerns about possible health effects from chronic exposure to these compounds. Exposure to the fuel oxygenate MTBE has also raised concerns. People can be exposed to THMs and MTBE through a variety of sources, including use of household tap water that contains these chemicals. The objective of this study is to support studies exploring the relationship between health effects and exposure to THMs and MTBE. THMs and MTBE were quantified in human blood using capillary gas chromatography (GC) and high-resolution mass spectrometry (MS) with selected ion mass detection and isotope-dilution techniques (4). This method quantified trace levels of THMs (chloroform, bromodichloromethane, dibromochloromethane, and bromoform) and MTBE in human blood. Analyte responses were adequate for measuring background levels after extraction of these volatile organic compounds with either purge-and-trap extraction or headspace SPME. Detection limits ranged from 0.3–2.4 pg/mL, with linear ranges of three orders of magnitude. This method provided adequate sensitivity for measuring the THMs and MTBE in most blood samples tested from diverse U.S. reference population.

### **Measurements of other VOCs in Whole Blood**

An additional 11 VOCs were measured in human blood using SPME in conjunction with gas chromatography and bench top quadrupole mass spectrometer (5). A combination of SPME and multiple single-ion monitoring minimizes the interferences and chemical noise associated with whole-blood samples. Detection limits are below 50 ppt (pg/mL) for a majority of the VOCs tested.

## **Laboratory Quality**

### **Mobile Examination Centers (MECs)**

Laboratory team performance is monitored using several techniques.

## **Control and Monitoring**

NCHS and contract consultants use a structured quality assurance evaluation during unscheduled visits to evaluate both the quality of the laboratory work and the quality-control procedures. Each laboratory staff person is observed for equipment operation, specimen collection and preparation; testing procedures and constructive feedback are given to each staff. Formal retraining sessions are conducted annually to ensure that required skill levels were maintained.

The NHANES QA/QC protocols meet the 1988 Clinical Laboratory Improvement Act mandates. Detailed QA/QC instructions are discussed in the NHANES LPM.

### **Analytical Laboratories**

NHANES uses several methods to monitor the quality of the analyses performed by the contract laboratories. In the MEC, these methods include performing second examinations on previously examined participants and blind split samples collected on “dry run” sessions. In addition, contract laboratories randomly perform repeat testing on 2.0% of all specimens.

NCHS developed and distributed a quality control protocol for all the contract laboratories which outlined the Westgard rules used when running NHANES specimens. Progress reports containing any problems encountered during shipping or receipt of specimens, summary statistics for each control pool, QC graphs, instrument calibration, reagents, and any special considerations are submitted to NCHS and Westat quarterly. The reports are reviewed for trends or shifts in the data. The laboratories are required to explain any identified areas of concern.

NCHS/Westat is currently reviewing these reports.

## **Data Processing and Editing**

Automated data collection procedures for the survey were introduced in NHANES 1999–2000. In the MECs and analytical laboratories, data for the laboratory component are recorded directly onto a computerized data collection form. The system is centrally integrated, and it allows for ongoing monitoring of much of the data. Although the complete blood count and pregnancy analyses are performed in the MEC laboratory, most analyses are conducted elsewhere by approximately 21 laboratories across the United States.

Guidelines have been developed that provide standards for naming variables, filling missing values, and handling missing records. NCHS staff, assisted by contract staff, has developed data-editing specifications that check data sets for valid codes, ranges, and skip-pattern consistencies and examine the consistency of values between interrelated variables. Comments have been reviewed and recoded. NCHS staff verifies extremely high and low values whenever possible, and numerous consistency checks are performed. Nonetheless, users should examine the range and frequency of values before analyzing data.

### **Data Editing**

The data editing specifications are as follows:

- Age and gender checks
- Total number of observations complete for each field
- No field overlap, truncated values, or weird results
- Direct data entry (DDE) errors
- Abnormal results confirmed by lab
- Test algorithm performed
- Checked comment codes to resolve missing results and missing records
- All missing results and missing MEC-examined records are accounted
- Duplicate records were verified and deleted

### **Analytic Notes**

Measures of volatile organic compounds in blood and water were assessed in a subsample of participants aged 20–59. Use the special weights included in this data file when analyzing data. Please refer to the Analytic Guidelines for further details on the use of sample weights and other analytic issues.

The analysis of NHANES 1999-2000 laboratory data must be conducted with the key survey design and basic demographic variables. The recommended procedure for variance estimation requires use of stratum and PSU variables (SDMVSTRA and SDMVPSU, respectively), which are included in the demographic data file for each data release. The NHANES 1999-2000 Household Questionnaire and Demographic Data Files contain demographic data, health indicators, and other related information collected during household interviews. The phlebotomy file includes auxiliary information such as the conditions precluding venipuncture. The demographic, household questionnaire and phlebotomy files may be linked to the laboratory data file using the unique survey participant identifier SEQN.

### Detection limits

The detection limit was variable for many of the analytes in the data set. In addition two variables are provided for each of these analytes. The variable named LBD\_\_\_LC indicates whether the result was below the limit of detection. There are three values: "0", "1", and "2". "0" means that the result was at or above the limit of detection. "1" indicates that the result was below the limit of detection. "2" means the result was above the limit of detection.

The other variable named LBX\_\_\_ provides the analytic result for that analyte. In cases, where the result was below the limit of detection, the value for that variable is the detection limit divided by the square root of two.

## References

1. U.S. Occupational Safety and Health Administration (OSHA). Organic Vapors, Method 07 in Analytical Methods Manual. Salt Lake City, Utah; OSHA Analytical Laboratory: 1985.
2. Morandi MT, Stock TH. Personal Exposures to Toxic Air Pollutants, Vol. 2. Houston, TX; The University of Texas – Houston, Health Science Center, School of Public Health: 1998.
3. Cardinali FL, Ashley DL, Morrow JC, Moll DM, Blount BC (2004), Measurement of Trihalomethanes and Methyl Tertiary-Butyl Ether in Tap Water Using Solid-Phase Microextraction GC/MS, Journal of Chromatographic Sciences, 42:200-206.
4. Bonin MA, Silva LK, Smith MM, Ashley DL, Blount BC (2005) Measurement of trihalomethanes and methyl tert-butyl ether in whole blood using gas chromatography with high-resolution mass spectrometry. J Anal Toxicol. 29(2):81-89.
5. Blount BC, Kobelski RJ, McElprang DO, Ashley DL, Morrow JC, Chambers DM, Cardinali FL (2006) Quantification of 31 Volatile Organic Compounds in Whole Blood Using Solid-Phase Microextraction and Gas Chromatography/Mass Spectrometry. J. Chromatography B. 832(2):292-301.

## Locator Fields

**Title:** Lab 04 Volatile Organic Compounds in Blood and Water

**Contact Number:** 1-866-441-NCHS

**Years of Content:** 1999-2000

**First Published:** December 2006

**Revised:** N/A

**Access Constraints:** None

**Use Constraints:** None

**Geographic Coverage:** National

**Subject:** Lab 04 Volatile Organic Compounds in Blood and Water

**Record Source:** NHANES 1999-2000

**Survey Methodology:** NHANES 1999-2000 is a stratified multistage probability sample of the civilian non-institutionalized population of the U.S.

**Medium:** NHANES Web site; SAS transport files

**National Health and Nutrition Examination Survey  
Codebook for Data Production (1999-2000)**

**Water and Blood VOC (LAB04)  
Person Level Data**

First Published: December 2006

Last Revised: N/A



<b>SEQN</b>	<b>Target</b>
	B(20 Yrs. to 59 Yrs.)
<b>Hard Edits</b>	<b>SAS Label</b>
	Respondent sequence number
<b>English Text:</b> Respondent sequence number.	
<b>English Instructions:</b>	

<b>WTSVOC2Y</b>	<b>Target</b>
	B(20 Yrs. to 59 Yrs.)
<b>Hard Edits</b>	<b>SAS Label</b>
	VOC subsample 2 yr MEC Weight
<b>English Text:</b>	
<b>English Instructions:</b>	

Code or Value	Description	Count	Cumulative	Skip to Item
6703.435144 to 992877.35227	Range of Values	669	669	
0	Non-Respondent	182	851	
.	Missing	0	851	

<b>WTSVOC4Y</b>		<b>Target</b>		
		B(20 Yrs. to 59 Yrs.)		
<b>Hard Edits</b>		<b>SAS Label</b>		
		VOC subsample 4 yr MEC Weight		
<b>English Text:</b>				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
2836.3452371 to 306407.42974	Range of Values	669	669	
0	Non-Respondent	182	851	
.	Missing	0	851	

<b>LBXWBF</b>		<b>Target</b>		
		B(20 Yrs. to 59 Yrs.)		
<b>Hard Edits</b>		<b>SAS Label</b>		
		Water Bromoform (ng/ml)		
<b>English Text:</b> Bromoform Result				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0.0327 to 48.3	Range of Values	617	617	
.	Missing	234	851	

<b>LBXWCF</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Water Chloroform (ng/ml)			
<b>English Text:</b> Chloroform Result				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0.1506 to 233	Range of Values	630	630	
.	Missing	221	851	

<b>LBXWBM</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Water Bromodichloromethane (ng/ml)			
<b>English Text:</b> Bromodichloromethane Result				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0.0785 to 39.3	Range of Values	622	622	
.	Missing	229	851	

<b>LBXWCM</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Water Dibromochloromethane (ng/ml)			
<b>English Text:</b> Dibromochloromethane Result				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0.0785 to 31.7	Range of Values	617	617	
.	Missing	234	851	

<b>LBXWME</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Water MTBE (ng/ml)			
<b>English Text:</b> Methyl tert. butyl ether (MTBE) Result				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0.0484 to 25.4	Range of Values	620	620	
.	Missing	231	851	

<b>LBXV4C</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood Tetrachloroethene (ng/ml)			
<b>English Text:</b> Tetrachloroethene Result				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0.0144 to 9.7	Range of Values	286	286	
.	Missing	565	851	

<b>LBXVBF</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood Bromoform (pg/ml)			
<b>English Text:</b> Bromoform Result				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0.3543 to 20.3	Range of Values	330	330	
.	Missing	521	851	

<b>LBXVBM</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood Bromodichloromethane (pg/ml)			
<b>English Text:</b> Bromodichloromethane Result				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0.1563 to 47.4	Range of Values	354	354	
.	Missing	497	851	

<b>LBXVBZ</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood Benzene (ng/ml)			
<b>English Text:</b> Benzene Result				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0.0323 to 1.69	Range of Values	300	300	
.	Missing	551	851	

<b>LBXVCF</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood Chloroform (pg/ml)			
<b>English Text:</b> Chloroform Result				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
6.42 to 1570	Range of Values	255	255	
.	Missing	596	851	

<b>LBXVCM</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood Dibromochloromethane (pg/ml)			
<b>English Text:</b> Dibromochloromethane Result				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0.152 to 57	Range of Values	350	350	
.	Missing	501	851	

<b>LBXVCT</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood Carbon Tetrachloride (ng/ml)			
<b>English Text:</b> Carbon Tetrachloride Result				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0.007 to 0.116	Range of Values	287	287	
.	Missing	564	851	

<b>LBXVDB</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood 1,4-Dichlorobenzene (ng/ml)			
<b>English Text:</b> 1,4-Dichlorobenzene Result				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0.026 to 249	Range of Values	304	304	
.	Missing	547	851	

<b>LBXVEB</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood Ethylbenzene (ng/ml)			
<b>English Text:</b> Ethylbenzene Result				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0.01 to 5.16	Range of Values	262	262	
.	Missing	589	851	

<b>LBXVME</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood MTBE (pg/ml)			
<b>English Text:</b> Methyl t-Butyl Ether (MTBE) Result				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0.784 to 6270	Range of Values	284	284	
.	Missing	567	851	

<b>LBXVOX</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood o-Xylene (ng/ml)			
<b>English Text:</b> o-Xylene Result				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0.021 to 6.42	Range of Values	309	309	
.	Missing	542	851	

<b>LBXVST</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood Styrene (ng/ml)			
<b>English Text:</b> Styrene Result				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0.0066 to 9.45	Range of Values	284	284	
.	Missing	567	851	

<b>LBXVTC</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood Trichloroethene (ng/ml)			
<b>English Text:</b> Trichloroethene Result				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0.0066 to 0.923	Range of Values	303	303	
.	Missing	548	851	

<b>LBXV3A</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood 1,1,1-Trichloroethene (ng/ml)			
<b>English Text:</b> 1,1,1-Trichloroethene Result				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0.0161 to 4.26	Range of Values	286	286	
.	Missing	565	851	

<b>LBXVTO</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood Toluene (ng/ml)			
<b>English Text:</b> Toluene Result				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0.0231 to 10.2	Range of Values	304	304	
.	Missing	547	851	

<b>LBXVXY</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood m-/p-Xylene (ng/ml)			
<b>English Text:</b> m-/p-Xylene Result				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0.0358 to 14.3	Range of Values	296	296	
.	Missing	555	851	

<b>LBDWBFLC</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Water Bromoform Comment Code			
<b>English Text:</b> Bromoform Comment				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0	Detectable Result	428	428	
1	Below Detectable Limit	188	616	
2	Detectable Result and Exceeds the Calibrated Range of Assay	1	617	
.	Missing	234	851	

<b>LBDWCFLC</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Water Chloroform Comment Code			
<b>English Text:</b> Chloroform Comment				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0	Detectable Result	526	526	
1	Below Detectable Limit	103	629	
2	Detectable Result and Exceeds the Calibrated Range of Assay	1	630	
.	Missing	221	851	

<b>LBDWBMLC</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Water Bromodichloromethane Comment Code			
<b>English Text:</b> Bromodichloromethane Comment				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0	Detectable Result	521	521	
1	Below Detectable Limit	101	622	
2	Detectable Result and Exceeds the Calibrated Range of Assay	0	622	
.	Missing	229	851	

<b>LBDWCMLC</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Water Dibromochloromethane Comment Code			
<b>English Text:</b>				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0	Detectable Result	531	531	
1	Below Detectable Limit	86	617	
2	Detectable Result and Exceeds the Calibrated Range of Assay	0	617	
.	Missing	234	851	

<b>LBDWMELC</b>		<b>Target</b>		
		B(20 Yrs. to 59 Yrs.)		
<b>Hard Edits</b>		<b>SAS Label</b>		
		Water MTBE Comment Code		
<b>English Text:</b> Methyl tert. butyl ether (MTBE) Comment				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0	Detectable Result	180	180	
1	Below Detectable Limit	440	620	
2	Detectable Result and Exceeds the Calibrated Range of Assay	0	620	
.	Missing	231	851	

<b>LBDV4CLC</b>		<b>Target</b>		
		B(20 Yrs. to 59 Yrs.)		
<b>Hard Edits</b>		<b>SAS Label</b>		
		Blood Tetrachloroethene Comment Code		
<b>English Text:</b> Tetrachloroethene Comment				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0	Detectable Result	218	218	
1	Below Detectable Limit	65	283	
2	Detectable Result and Exceeds the Calibrated Range of Assay	3	286	
.	Missing	565	851	

<b>LBDVBFLC</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood Bromoform Comment Code			
<b>English Text:</b> Bromoform Comment				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0	Detectable Result	251	251	
1	Below Detectable Limit	79	330	
2	Detectable Result and Exceeds the Calibrated Range of Assay	0	330	
.	Missing	521	851	

<b>LBDVBMLC</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood Bromodichloromethane Comment Code			
<b>English Text:</b> Bromodichloromethane Comment				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0	Detectable Result	336	336	
1	Below Detectable Limit	18	354	
2	Detectable Result and Exceeds the Calibrated Range of Assay	0	354	
.	Missing	497	851	

<b>LBDVBZLC</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood Benzene Comment Code			
<b>English Text:</b> Benzene Comment				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0	Detectable Result	300	300	
1	Below Detectable Limit	0	300	
2	Detectable Result and Exceeds the Calibrated Range of Assay	0	300	
.	Missing	551	851	

<b>LBDVCFLC</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood Chloroform Comment Code			
<b>English Text:</b> Chloroform Comment				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0	Detectable Result	253	253	
1	Below Detectable Limit	0	253	
2	Detectable Result and Exceeds the Calibrated Range of Assay	2	255	
.	Missing	596	851	

<b>LBDVCMLC</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood Dibromochloromethane Comment Code			
<b>English Text:</b> Dibromochloromethane Comment				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0	Detectable Result	303	303	
1	Below Detectable Limit	47	350	
2	Detectable Result and Exceeds the Calibrated Range of Assay	0	350	
.	Missing	501	851	

<b>LBDVCTLC</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood Carbon Tetrachloride Comment Code			
<b>English Text:</b> Carbon Tetrachloride Comment				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0	Detectable Result	87	87	
1	Below Detectable Limit	200	287	
2	Detectable Result and Exceeds the Calibrated Range of Assay	0	287	
.	Missing	564	851	

<b>LBDVDBLC</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood 1,4-Dichlorobenzene Comment Code			
<b>English Text:</b> 1,4-Dichlorobenzene Comment				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0	Detectable Result	253	253	
1	Below Detectable Limit	34	287	
2	Detectable Result and Exceeds the Calibrated Range of Assay	17	304	
.	Missing	547	851	

<b>LBDVEBLC</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood Ethylbenzene Comment Code			
<b>English Text:</b> Ethylbenzene Comment				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0	Detectable Result	235	235	
1	Below Detectable Limit	26	261	
2	Detectable Result and Exceeds the Calibrated Range of Assay	1	262	
.	Missing	589	851	

<b>LBDVMELC</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood MTBE Comment Code			
<b>English Text:</b> MTBE Comment				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0	Detectable Result	247	247	
1	Below Detectable Limit	4	251	
2	Detectable Result and Exceeds the Calibrated Range of Assay	33	284	
.	Missing	567	851	

<b>LBDVOXLC</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood o-Xylene Comment Code			
<b>English Text:</b> o-Xylene Comment				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0	Detectable Result	180	180	
1	Below Detectable Limit	128	308	
2	Detectable Result and Exceeds the Calibrated Range of Assay	1	309	
.	Missing	542	851	

<b>LBDVSTLC</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood Styrene Comment Code			
<b>English Text:</b> Styrene Comment				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0	Detectable Result	268	268	
1	Below Detectable Limit	15	283	
2	Detectable Result and Exceeds the Calibrated Range of Assay	1	284	
.	Missing	567	851	

<b>LBDVTCLC</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood Trichloroethene Comment Code			
<b>English Text:</b> Trichloroethene Comment				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0	Detectable Result	34	34	
1	Below Detectable Limit	268	302	
2	Detectable Result and Exceeds the Calibrated Range of Assay	1	303	
.	Missing	548	851	

<b>LBDV3ALC</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood 1,1,1-Trichloroethene Comment Code			
<b>English Text:</b> 1,1,1-Trichloroethene Comment				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0	Detectable Result	11	11	
1	Below Detectable Limit	274	285	
2	Detectable Result and Exceeds the Calibrated Range of Assay	1	286	
.	Missing	565	851	

<b>LBDVTOLC</b>	<b>Target</b>			
	B(20 Yrs. to 59 Yrs.)			
<b>Hard Edits</b>	<b>SAS Label</b>			
	Blood Toluene Comment Code			
<b>English Text:</b> Toluene Comment				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0	Detectable Result	294	294	
1	Below Detectable Limit	4	298	
2	Detectable Result and Exceeds the Calibrated Range of Assay	6	304	
.	Missing	547	851	

<b>LBDVXYLC</b>		<b>Target</b>		
		B(20 Yrs. to 59 Yrs.)		
<b>Hard Edits</b>		<b>SAS Label</b>		
		Blood m-/p-Xylene Comment Code		
<b>English Text:</b> m-/p-Xylene Comment				
<b>English Instructions:</b>				
<b>Code or Value</b>	<b>Description</b>	<b>Count</b>	<b>Cumulative</b>	<b>Skip to Item</b>
0	Detectable Result	284	284	
1	Below Detectable Limit	10	294	
2	Detectable Result and Exceeds the Calibrated Range of Assay	2	296	
.	Missing	555	851	