

National Health and Nutrition Examination Survey 2003-2004

Documentation, Codebook, and Frequencies

Laboratory Component:

Dioxins, Furans, and Coplanar PCBs

Survey Years:
2003 to 2004

SAS Export File:
L28DFP_C.XPT



First Release: April 2008
Last Revised: N/A

NHANES 2003–2004 Data Documentation

Topic: Laboratory 28- Polychlorinated Dibenzo-p-dioxins (PCDDs),
Dibenzofurans (PCDFs), and Non-ortho Substituted or Coplanar Polychlorinated
Biphenyls (cPCBs)

I28DFP_C

First Published: April 2008

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Component Description	Organochlorines are diverse, synthetic chemicals that are persistent in the environment and tend to bioaccumulate. Most of these chemicals are banned in the U.S. Assessment of exposure to persistent organochlorines in a representative sample of the U.S. population is needed to determine current prevalence and level of exposure and the potential for human health threat from exposure to these chemicals.
Eligible Sample	Participants aged 12 years and older who met the subsample requirements.
Description of Laboratory Methodology	<p>Seven polychlorinated dibenzo-p-dioxins (PCDDs), 10 dibenzofurans (PCDFs), 4 non-ortho substituted or coplanar polychlorinated biphenyls (cPCBs), are measured in serum by high-resolution gas chromatography/isotope-dilution high-resolution mass spectrometry (HRGC/ID-HRMS).</p> <p>Serum specimens (5–10 mL) to be analyzed for PCDDs/PCDFs/cPCBs are spiked with ^{13}C-labeled ($^{13}\text{C}_{12}$) internal standards and the analytes of interest are isolated in hexane using a C18 solid phase extraction (SPE) procedure followed by a Power-Prep/6 (Fluid Management Systems) automated cleanup and enrichment procedure using multi-layered silica gel (acidic, basic, and neutral silica) and alumina columns coupled to an AX-21 carbon column. PCDDs/PCDFs/cPCBs are isolated in the reverse direction from carbon with toluene. For PCDD/PCDD/cPCBs, each analytical run consists of eight unknown specimens, two method blanks, and two quality control samples. Following sample cleanup, excess solvent is evaporated to 350 μL using a TurboVap II (Caliper Life Sciences) and the remaining solvent is transferred to silanized auto sampler vials containing 1 μL of dodecane “keeper” and allowed to evaporate to “dryness”. Before quantification, each vial is reconstituted with 5 μL $^{13}\text{C}_{12}$-labeled external standard. Sample extracts are then analyzed for PCDDs/PCDFs/cPCBs by HRGC/ID-HRMS where 2μL are injected, using a GC Pal (Leap</p>

Technology) auto sampler, into an Agilent Technologies 6890 Gas Chromatograph operated in the splitless injection mode with a flow of 1 mL/minute helium through a DB-5ms capillary column (30 m × 0.25 mm × 0.25 µm film thickness) where analytes are separated prior to entering a Thermo Finnigan MAT95 XP (5 kV) magnetic sector mass spectrometer operated in EI mode at 40 eV, using selected ion monitoring (SIM) at 10,000 resolving power (10% valley).

Calibration of mass spectrometer response factor vs. concentration is performed using calibration standards containing known concentrations of each native ($^{12}\text{C}_{12}$) compound and its corresponding $^{13}\text{C}_{12}$ internal standard. The concentration of each analyte is derived by interpolation from individual linear calibration curves and is adjusted for sample weight. The validity of all mass spectrometry data are evaluated using a variety of established criteria, such as signal-to-noise ratio ≥ 3 for the smallest native ion mass, instrument resolving power $\geq 10,000$, chromatographic isomer specificity index with 95% limits, relative retention time ratio of native to isotopically labeled analyte within 3 parts per thousand compared to a standard, response ratios of the two $^{12}\text{C}_{12}$ and $^{13}\text{C}_{12}$ ions must be within $\pm 20\%$ of their theoretical values and analyte recovery $\geq 10\%$ and $\leq 120\%$. In addition, the calculated mean and range of each analyte in the quality control sample must be within their respective confidence intervals. The method detection limit (MDL) for each analyte is calculated correcting for sample weight and recovery. The total lipid content of each specimen is estimated from its total cholesterol and triglycerides values using a "summation" method. Analytical results for PCDDs/PCDFs/cPCBs are reported on both a whole-weight [fg/g or parts-per-quadrillion (ppq)] and lipid-adjusted basis [pg/g or parts-per-trillion (ppt)]. International toxicity equivalents (I-TEQs) are also reported for PCDDs, PCDFs, cPCBs and other "dioxin-like" PCBs, based on the WHO-TEF system. Prior to reporting results, all quality control (QC) data undergo a final review by a Division of Laboratory Science quality control officer.

Laboratory Quality Control and Monitoring

Serum specimens are processed, stored, and shipped to the Division of Laboratory Sciences, National Center for Environmental Health, Centers for Disease Control and Prevention for analysis.

Detailed specimen collection and processing instructions are discussed in the NHANES Laboratory/Medical Technologists Procedures Manual (LPM). Vials are stored under appropriate frozen (-20°C) conditions

until they are shipped to National Center for Environmental Health for testing.

Mobile Examination Centers (MECs)

Laboratory team performance is monitored using several techniques. 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 laboratories. In the MEC, these methods include performing blind split samples collected on “dry run” sessions. In addition, contract laboratories randomly perform repeat testing on 2.0% of all specimens.

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

All QC procedures recommended by the manufacturers were followed. Reported results for all assays meet the Division of Laboratory Sciences' quality control and quality assurance performance criteria for accuracy and precision (similar to specifications outlined by Westgard (1981)).

Analytic Notes

Measures of polychlorinated dibenzo-p-dioxins (PCDDs), dibenzofurans (PCDFs), non-ortho substituted or coplanar

polychlorinated biphenyls (cPCBs) are assessed in participants aged 12 years and older on a one-third subsample.

Use the special weights included in this data file when analyzing data. Read the “Special Sample Weights for this Dataset” information provided before beginning analysis.

Subsample weights

Measures of polychlorinated dibenzo-p-dioxins (PCDDs), dibenzofurans (PCDFs), non-ortho substituted or coplanar polychlorinated biphenyls (cPCBs) were measured in a one third subsample of persons 12 years and over. Special sample weights are required to analyze these data properly. Specific sample weights for this subsample are included in this data file and should be used when analyzing these data.

Variance estimation

The analysis of NHANES 2003-2004 laboratory data must be conducted with the key survey design and basic demographic variables. The NHANES 2003-2004 Demographic Data File contains demographic and sample design variables. The recommended procedure for variance estimation requires use of stratum and PSU variables (SDMVSTRA and SDMVPSU, respectively) in the demographic data file.

Links to NHANES Data Files

This laboratory data file can be linked to the other NHANES 2003-2004 data files using the unique survey participant identifier SEQN.

Detection Limits

The detection limits were variable for all of the analytes except for PCB 052(LBX052), PCB099(LBX099), PCB138(LBX138), and PCB153(LBX153), . The variable named LBD__LC indicates whether the result was below the limit of detection. There are two values: “0” and “1”. “0” means that the result was at or above the limit of detection. “1” indicates that the result was below the limit of detection.

The other variable named LBX__ provides the analytic result for that analyte.

The detection limit divided by the square root of 2 is the value that is provided for results that are below the limit of detection.

Please refer to the Analytic Guidelines for further details on the use of

sample weights and other analytic issues.

References

Cleanup and Mass Spectrometry

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of Specific Polychlorinated Dibenzo-p-dioxins and Dibenzofurans in Blood and Adipose Tissue by Isotope-Dilution High Resolution Mass Spectrometry, Method 5 in "Environmental Carcinogens - Methods of Analysis and Exposure Measurement. Volume 11 - Polychlorinated Dibenzo-p-dioxins, Dibenzofurans, and Biphenyls," C. Rappe and H.R. Buser, Eds., WHO, International Association for Research on Cancer, Lyon, France.

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Quality Control and Limit of Detection

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Locator Fields

Title: Lab 28 Polychlorinated Dibenzo-p-dioxins (PCDDs), Dibenzofurans (PCDFs), and Non-ortho Substituted or Coplanar Polychlorinated Biphenyls (cPCBs)

Contact Number: 1-866-441-NCHS

Years of Content: 2003–2004

First Published: April 2008

Revised: N/A

Access Constraints: None

Use Constraints: None

Geographic Coverage: National

Subject: Polychlorinated Dibenzo-p-dioxins (PCDDs), Dibenzofurans (PCDFs), and Non-ortho Substituted or Coplanar Polychlorinated Biphenyls (cPCBs)

Record Source: NHANES 2003–2004

Survey Methodology: NHANES 2003–2004 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 (2003-2004)**

**Dibenzo-p-dioxins and Dibenzofurans, Coplanar and Mono-Ortho-
PCBs (L28DFP_C)
Person Level Data**

First Published: April 2008

Last Revised: N/A



SEQN	Target
	B(12 Yrs. to 150 Yrs.)
Hard Edits	SAS Label
	Respondent sequence number
English Text: Respondent sequence number.	
English Instructions:	

WTSC2YR	Target
	B(12 Yrs. to 150 Yrs.)
Hard Edits	SAS Label
	Two-year MEC weights of subsample C
English Text: Two-year MEC weights of subsample C	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0 to 456851.11941	Range of Values	2285	2285	
.	Missing	0	2285	

LBX028	Target
	B(12 Yrs. to 150 Yrs.)
Hard Edits	SAS Label
	PCB28 (ng/g)
English Text: PCB28 (ng/g)	
English Instructions:	

Code or Value	Description	Count	Cumulative	Skip to Item
0.0076 to 1.4459	Range of Values	1866	1866	
.	Missing	419	2285	

LBX028LA	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	PCB28 Lipid Adj (ng/g)			
English Text: PCB28 Lipid Adjusted (ng/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.8 to 237	Range of Values	1866	1866	
.	Missing	419	2285	

LBD028LC	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	PCB28 Comment Code			
English Text: PCB28 Comment Code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0	detectable result	1866	1866	
1	below detectable limit	0	1866	
.	Missing	419	2285	

LBX066	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	PCB66 (ng/g)			
English Text: PCB66 (ng/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.001 to 0.7217	Range of Values	1898	1898	
.	Missing	387	2285	

LBX066LA	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	PCB66 Lipid Adj (ng/g)			
English Text: PCB66 Lipid Adjusted (ng/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.15 to 118	Range of Values	1898	1898	
.	Missing	387	2285	

LBD066LC	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	PCB66 Comment Code			
English Text: PCB66 Comment Code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0	detectable result	1881	1881	
1	below detectable limit	17	1898	
.	Missing	387	2285	

LBX074	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	PCB74 (ng/g)			
English Text: PCB74 (ng/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.003 to 1.3697	Range of Values	1898	1898	
.	Missing	387	2285	

LBX074LA	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	PCB74 Lipid Adj (ng/g)			
English Text: PCB74 Lipid Adjusted (ng/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.55 to 180	Range of Values	1898	1898	
.	Missing	387	2285	

LBD074LC	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	PCB74 Comment Code			
English Text: PCB74 Comment Code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0	detectable result	1898	1898	
1	below detectable limit	0	1898	
.	Missing	387	2285	

LBX105	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	PCB105 (ng/g)			
English Text: PCB105 (ng/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.0004 to 0.5858	Range of Values	1879	1879	
.	Missing	406	2285	

LBX105LA	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	PCB105 Lipid Adj (ng/g)			
English Text: PCB105 Lipid Adjusted (ng/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.04 to 76.82	Range of Values	1879	1879	
.	Missing	406	2285	

LBD105LC	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	PCB105 Comment Code			
English Text: PCB105 Comment Code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0	detectable result	1830	1830	
1	below detectable limit	49	1879	
.	Missing	406	2285	

LBX118	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	PCB118 (ng/g)			
English Text: PCB118 (ng/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.0039 to 2.6984	Range of Values	1887	1887	
.	Missing	398	2285	

LBX118LA	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	PCB118 Lipid Adj (ng/g)			
English Text: PCB118 Lipid Adjusted (ng/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.7 to 354	Range of Values	1887	1887	
.	Missing	398	2285	

LBD118LC	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	PCB118 Comment Code			
English Text: PCB118 Comment Code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0	detectable result	1887	1887	
1	below detectable limit	0	1887	
.	Missing	398	2285	

LBX156	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	PCB156 (ng/g)			
English Text: PCB156 (ng/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.0004 to 2.421	Range of Values	1880	1880	
.	Missing	405	2285	

LBX156LA	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	PCB156 Lipid Adj (ng/g)			
English Text: PCB156 Lipid Adjusted (ng/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.04 to 367	Range of Values	1880	1880	
.	Missing	405	2285	

LBD156LC	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	PCB156 Comment Code			
English Text: PCB156 Comment Code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0	detectable result	1558	1558	
1	below detectable limit	322	1880	
.	Missing	405	2285	

LBX157	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	PCB157 (ng/g)			
English Text: PCB157 (ng/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.0004 to 0.5544	Range of Values	1858	1858	
.	Missing	427	2285	

LBX157LA	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	PCB157 Lipid Adj (ng/g)			
English Text: PCB157 Lipid Adjusted (ng/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.04 to 84	Range of Values	1858	1858	
.	Missing	427	2285	

LBD157LC	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	PCB157 Comment Code			
English Text: PCB157 Comment Code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0	detectable result	1177	1177	
1	below detectable limit	681	1858	
.	Missing	427	2285	

LBX167	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	PCB167 (ng/g)			
English Text: PCB167 (ng/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.0004 to 0.3363	Range of Values	1864	1864	
.	Missing	421	2285	

LBX167LA	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	PCB167 Lipid Adj (ng/g)			
English Text: PCB167 Lipid Adjusted (ng/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.03 to 50.9	Range of Values	1864	1864	
.	Missing	421	2285	

LBD167LC	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	PCB167 Comment Code			
English Text: PCB167 Comment Code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0	detectable result	1073	1073	
1	below detectable limit	791	1864	
.	Missing	421	2285	

LBX189	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	PCB189 (ng/g)			
English Text: PCB189 (ng/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.0004 to 0.0594	Range of Values	1817	1817	
.	Missing	468	2285	

LBX189LA	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	PCB189 Lipid Adj (ng/g)			
English Text: PCB189 Lipid Adjusted (ng/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.02 to 12	Range of Values	1817	1817	
.	Missing	468	2285	

LBD189LC	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	PCB189 Comment Code			
English Text: PCB189 Comment Code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0	detectable result	434	434	
1	below detectable limit	1383	1817	
.	Missing	468	2285	

LBXD01	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,7,8-pncdd (fg/g)			
English Text: 1,2,3,7,8-Pentachlorodibenzo-p-dioxin (pncdd) (fg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
2.76 to 212.2	Range of Values	1878	1878	
.	Missing	407	2285	

LBXD01LA	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,7,8-pncdd Lipid Adj (pg/g)			
English Text: 1,2,3,7,8-Pentachlorodibenzo-p-dioxin (pncdd) Lipid Adjusted (pg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.4 to 36.3	Range of Values	1878	1878	
.	Missing	407	2285	

LBDD01LC	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,7,8-pncdd Comment Code			
English Text: 1,2,3,7,8-Pentachlorodibenzo-p-dioxin (pncdd) specimen code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0	detectable result	995	995	
1	below detectable limit	883	1878	
.	Missing	407	2285	

LBXD02	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,4,7,8-hxcdd (fg/g)			
English Text: 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (hxcdd)(fg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
8.06 to 253.3	Range of Values	1861	1861	
.	Missing	424	2285	

LBXD02LA	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,4,7,8-hxcdd Lipid Adj (pg/g)			
English Text: 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (hxcdd) Lipid Adjusted (pg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1 to 33	Range of Values	1861	1861	
.	Missing	424	2285	

LBDD02LC	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,4,7,8-hxcdd Comment Code			
English Text: 1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (hxcdd) specimen code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0	detectable result	459	459	
1	below detectable limit	1402	1861	
.	Missing	424	2285	

LBXD03	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,6,7,8-hxcdd (fg/g)			
English Text: 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (hxcdd)(fg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
8.34 to 1316.8	Range of Values	1871	1871	
.	Missing	414	2285	

LBXD03LA	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,6,7,8-hxcdd Lipid Adj (pg/g)			
English Text: 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (hxcdd) Lipid Adjusted (pg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1.1 to 206	Range of Values	1871	1871	
.	Missing	414	2285	

LBDD03LC	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,6,7,8-hxcdd Comment Code			
English Text: 1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (hxcdd) specimen comment code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0	detectable result	1507	1507	
1	below detectable limit	364	1871	
.	Missing	414	2285	

LBXD04	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,7,8,9-hxcdd (fg/g)			
English Text: 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (hxcdd) (fg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
8.06 to 209.5	Range of Values	1869	1869	
.	Missing	416	2285	

LBXD04LA	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,7,8,9-hxcdd Lipid Adj (pg/g)			
English Text: 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (hxcdd) Lipid Adjusted (pg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.7 to 33.7	Range of Values	1869	1869	
.	Missing	416	2285	

LBDD04LC	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,7,8,9-hxcdd Comment Code			
English Text: 1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (hxcdd) specimen comment code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0	detectable result	511	511	
1	below detectable limit	1358	1869	
.	Missing	416	2285	

LBXD05	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,4,6,7,8-hpcdd (fg/g)			
English Text: 1,2,3,4,6,7,8-Heptachlororodibenzo-p-dioxin (hpcdd) (fg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
9.33 to 2799.4	Range of Values	1874	1874	
.	Missing	411	2285	

LBXD05LA	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,4,6,7,8-hpcdd Lipid Adj (pg/g)			
English Text: 1,2,3,4,6,7,8-Heptachlororodibenzo-p-dioxin (hpcdd) Lipid Adjusted (pg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1.3 to 456	Range of Values	1874	1874	
.	Missing	411	2285	

LBDD05LC		Target		
		B(12 Yrs. to 150 Yrs.)		
Hard Edits		SAS Label		
		1,2,3,4,6,7,8-hpcdd Comment Code		
English Text: 1,2,3,4,6,7,8-Heptachlororodibenzo-p-dioxin (hpcdd) specimen code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0	detectable result	1820	1820	
1	below detectable limit	54	1874	
.	Missing	411	2285	

LBXD07		Target		
		B(12 Yrs. to 150 Yrs.)		
Hard Edits		SAS Label		
		1,2,3,4,6,7,8,9-ocdd (fg/g)		
English Text: 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (ocdd) (fg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
162.35 to 21125.4	Range of Values	1851	1851	
.	Missing	434	2285	

LBXD07LA	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,4,6,7,8,9-ocdd Lipid Adj (pg/g)			
English Text: 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (ocdd) Lipid Adjusted (pg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
25.7 to 3280	Range of Values	1851	1851	
.	Missing	434	2285	

LBDD07LC	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,4,6,7,8,9-ocdd Comment Code			
English Text: 1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (ocdd) specimen code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0	detectable result	1562	1562	
1	below detectable limit	289	1851	
.	Missing	434	2285	

LBXF01	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	2,3,7,8-tcdf (fg/g)			
English Text: 2,3,7,8,-Tetrachlorodibenzofuran (tcdf) (fg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
5.52 to 184.1	Range of Values	1868	1868	
.	Missing	417	2285	

LBXF01LA	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	2,3,7,8-tcdf Lipid Adj (pg/g)			
English Text: 2,3,7,8,-Tetrachlorodibenzofuran (tcdf) Lipid Adjusted (pg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.4 to 12.3	Range of Values	1868	1868	
.	Missing	417	2285	

LBDF01LC	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	2,3,7,8-tcdf Comment Code			
English Text: 2,3,7,8,-Tetrachlorodibenzofuran (tcdf) specimen code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0	detectable result	55	55	
1	below detectable limit	1813	1868	
.	Missing	417	2285	

LBXF02	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,7,8-pncdf (fg/g)			
English Text: 1,2,3,7,8-Pentachlorodibenzofuran (pncdf) (fg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
5.37 to 132.7	Range of Values	1867	1867	
.	Missing	418	2285	

LBXF02LA	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,7,8-pncdf Lipid Adj (pg/g)			
English Text: 1,2,3,7,8-Pentachlorodibenzofuran (pncdf) Lipid Adjusted (pg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.5 to 19.6	Range of Values	1867	1867	
.	Missing	418	2285	

LBDF02LC	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,7,8-pncdf Comment Code			
English Text: 1,2,3,7,8-Pentachlorodibenzofuran (pncdf) specimen code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0	detectable result	31	31	
1	below detectable limit	1836	1867	
.	Missing	418	2285	

LBXF03	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	2,3,4,7,8-pncdf (fg/g)			
English Text: 2,3,4,7,8-Pentachlorodibenzofuran (pncdf) (fg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
5.37 to 442.5	Range of Values	1871	1871	
.	Missing	414	2285	

LBXF03LA	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	2,3,4,7,8-pncdf Lipid Adj (pg/g)			
English Text: 2,3,4,7,8-Pentachlorodibenzofuran (pncdf) Lipid Adjusted (pg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.7 to 65.4	Range of Values	1871	1871	
.	Missing	414	2285	

LBDF03LC	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	2,3,4,7,8-pncdf Comment Code			
English Text: 2,3,4,7,8-Pentachlorodibenzofuran (pncdf) specimen code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0	detectable result	1212	1212	
1	below detectable limit	659	1871	
.	Missing	414	2285	

LBXF04	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,4,7,8-hxcdf (fg/g)			
English Text: 1,2,3,4,7,8-Hexachlorodibenzofuran (hxcdf) (fg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
5.44 to 228.1	Range of Values	1866	1866	
.	Missing	419	2285	

LBXF04LA	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,4,7,8-hxcdf Lipid Adj (pg/g)			
English Text: 1,2,3,4,7,8-Hexachlorodibenzofuran (hxcdf) Lipid Adjusted (pg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.6 to 32.1	Range of Values	1866	1866	
.	Missing	419	2285	

LBDF04LC	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,4,7,8-hxcdf Comment Code			
English Text: 1,2,3,4,7,8-Hexachlorodibenzofuran (hxcdf) specimen code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0	detectable result	1119	1119	
1	below detectable limit	747	1866	
.	Missing	419	2285	

LBXF05	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,6,7,8-hxcdf (fg/g)			
English Text: 1,2,3,6,7,8-Hexachlorodibenzofuran (hxcdf) (fg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
5.44 to 242.8	Range of Values	1868	1868	
.	Missing	417	2285	

LBXF05LA	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,6,7,8-hxcdf Lipid Adj (pg/g)			
English Text: 1,2,3,6,7,8-Hexachlorodibenzofuran (hxcdf) Lipid Adjusted (pg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.5 to 35.9	Range of Values	1868	1868	
.	Missing	417	2285	

LBDF05LC	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,6,7,8-hxcdf Comment Code			
English Text: 1,2,3,6,7,8-Hexachlorodibenzofuran (hxcdf) specimen code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0	detectable result	915	915	
1	below detectable limit	953	1868	
.	Missing	417	2285	

LBXF06	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,7,8,9-hxcdf (fg/g)			
English Text: 1,2,3,7,8,9-Hexachlorodibenzofuran (hxcdf) (fg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
5.37 to 162.7	Range of Values	1864	1864	
.	Missing	421	2285	

LBXF06LA	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,7,8,9-hxcdf Lipid Adj (pg/g)			
English Text: 1,2,3,7,8,9-Hexachlorodibenzofuran (hxcdf) Lipid Adjusted (pg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.4 to 26.9	Range of Values	1864	1864	
.	Missing	421	2285	

LBDF06LC	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,7,8,9-hxcdf Comment Code			
English Text: 1,2,3,7,8,9-Hexachlorodibenzofuran (hxcdf) specimen code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0	detectable result	5	5	
1	below detectable limit	1859	1864	
.	Missing	421	2285	

LBXF07	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	2,3,4,6,7,8-hxcdf (fg/g)			
English Text: 2,3,4,6,7,8-Hexchlorodibenzofuran (hxcdf) (fg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
5.37 to 115.4	Range of Values	1866	1866	
.	Missing	419	2285	

LBXF07LA	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	2,3,4,6,7,8-hxcdf Lipid Adj (pg/g)			
English Text: 2,3,4,6,7,8-Hexchlorodibenzofuran (hxcdf) Lipid Adjusted (pg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.5 to 11.6	Range of Values	1866	1866	
.	Missing	419	2285	

LBDF07LC	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	2,3,4,6,7,8-hxcdf Comment Code			
English Text: 2,3,4,6,7,8-Hexchlorodibenzofuran (hxcdf) specimen code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0	detectable result	92	92	
1	below detectable limit	1774	1866	
.	Missing	419	2285	

LBXF08	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,4,6,7,8-hpcdf (fg/g)			
English Text: 1,2,3,4,6,7,8-Heptachlorodibenzofuran (hpcdf) (fg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
6.29 to 2036.8	Range of Values	1858	1858	
.	Missing	427	2285	

LBXF08LA	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,4,6,7,8-hpcdf Lipid Adj (pg/g)			
English Text: 1,2,3,4,6,7,8-Heptachlorodibenzofuran (hpcdf) Lipid Adjusted (pg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.8 to 367	Range of Values	1858	1858	
.	Missing	427	2285	

LBDF08LC	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,4,6,7,8-hpcdf Comment Code			
English Text: 1,2,3,4,6,7,8-Heptachlorodibenzofuran (hpcdf) specimen code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0	detectable result	1660	1660	
1	below detectable limit	198	1858	
.	Missing	427	2285	

LBXF09	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,4,7,8,9-hpcdf (fg/g)			
English Text: 1,2,3,4,7,8,9-Heptachlorodibenzofuran (Hpcdf) (fg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
5.52 to 324.8	Range of Values	1852	1852	
.	Missing	433	2285	

LBXF09LA	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,4,7,8,9-hpcdf Lipid Adj (pg/g)			
English Text: 1,2,3,4,7,8,9-Heptachlorodibenzofuran (Hpcdf) Lipid Adjusted (pg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.5 to 53.7	Range of Values	1852	1852	
.	Missing	433	2285	

LBDF09LC	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,4,7,8,9-hpcdf Comment Code			
English Text: 1,2,3,4,7,8,9-Heptachlorodibenzofuran (Hpcdf) specimen code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0	detectable result	103	103	
1	below detectable limit	1749	1852	
.	Missing	433	2285	

LBXF10	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,4,6,7,8,9-ocdf (fg/g)			
English Text: 1,2,3,4,6,7,8,9-Octachlorodibenzofuran (ocdf) (fg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
5.52 to 1949	Range of Values	1849	1849	
.	Missing	436	2285	

LBXF10LA	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,4,6,7,8,9-ocdf Lipid Adj (pg/g)			
English Text: 1,2,3,4,6,7,8,9-Octachlorodibenzofuran (ocdf) Lipid Adjusted (pg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.6 to 434	Range of Values	1849	1849	
.	Missing	436	2285	

LBDF10LC	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	1,2,3,4,6,7,8,9-ocdf Comment Code			
English Text: 1,2,3,4,6,7,8,9-Octachlorodibenzofuran (ocdf) specimen code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0	detectable result	507	507	
1	below detectable limit	1342	1849	
.	Missing	436	2285	

LBXPCB	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	3,3',4,4',5-pncb (fg/g)			
English Text: 3,3',4,4',5-Pentachlorobiphenyl (pncb) (fg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
11.67 to 3367.7	Range of Values	1860	1860	
.	Missing	425	2285	

LBXPCBLA	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	3,3',4,4',5-pncb Lipid Adj (pg/g)			
English Text: 3,3',4,4',5-Pentachlorobiphenyl (pncb) Lipid Adjusted (pg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1.9 to 721	Range of Values	1860	1860	
.	Missing	425	2285	

LBDFCBLC	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	3,3',4,4',5-pncb Comment Code			
English Text: 3,3',4,4',5-Pentachlorobiphenyl (pncb) specimen code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0	detectable result	1730	1730	
1	below detectable limit	130	1860	
.	Missing	425	2285	

LBXTC2	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	3,4,4',5-tcb (fg/g)			
English Text: 3,4,4',5-Tetrachlorobiphenyl (tcb) (fg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
11.88 to 4366.8	Range of Values	1860	1860	
.	Missing	425	2285	

LBXTC2LA	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	3,4,4',5-tcb Lipid Adj (pg/g)			
English Text: 3,4,4',5-Tetrachlorobiphenyl (tcb) Lipid Adjusted (pg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1.3 to 717	Range of Values	1860	1860	
.	Missing	425	2285	

LBDTC2LC	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	3,4,4',5-tcb Comment Code			
English Text: 3,4,4',5-Tetrachlorobiphenyl (tcb) specimen code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0	detectable result	685	685	
1	below detectable limit	1175	1860	
.	Missing	425	2285	

LBXHXC	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	3,3',4,4',5,5'-hxcb (fg/g)			
English Text: 3,3',4,4',5,5'-hexachlorobiphenyl (hxcb) (fg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
10.96 to 1296.2	Range of Values	1866	1866	
.	Missing	419	2285	

LBXHXCLA	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	3,3',4,4',5,5'-hxcb Lipid Adj (pg/g)			
English Text: 3,3',4,4',5,5'-hexachlorobiphenyl (hxcb) Lipid Adjusted (pg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
1.4 to 196	Range of Values	1866	1866	
.	Missing	419	2285	

LBDHXCLC	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	3,3',4,4',5,5'-hxcb Comment Code			
English Text: 3,3',4,4',5,5'-hexachlorobiphenyl (hxcb) specimen code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0	detectable result	1077	1077	
1	below detectable limit	789	1866	
.	Missing	419	2285	

LBXTCD	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	2,3,7,8-tcdd (fg/g)			
English Text: 2,3,7,8-Tetrachlorodienzo-p-dioxin (tcdd) (fg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
2.76 to 235.8	Range of Values	1876	1876	
.	Missing	409	2285	

LBXTCDLA	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	2,3,7,8-tcdd Lipid Adj (pg/g)			
English Text: 2,3,7,8-Tetrachlorodienzo-p-dioxin (tcdd) Lipid Adjusted (pg/g)				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0.3 to 28.6	Range of Values	1876	1876	
.	Missing	409	2285	

LBDTC DLC	Target			
	B(12 Yrs. to 150 Yrs.)			
Hard Edits	SAS Label			
	2,3,7,8-tcdd Comment Code			
English Text: 2,3,7,8-Tetrachlorodienzo-p-dioxin (tcdd) specimen code				
English Instructions:				
Code or Value	Description	Count	Cumulative	Skip to Item
0	detectable result	691	691	
1	below detectable limit	1185	1876	
.	Missing	409	2285	