

Attachment 8

Laboratory Component

**Attachment 8 – NHANES Laboratory Component
Attachment 8a - Laboratory Analytes by Age Group**

Test Name	Sample	Matrix
Ages 1-2		
Complete Blood Count	Full	whole blood
Cytomegalovirus	Full	serum
Erythrocyte Folate	Full	whole blood
Hepatitis B Surface Antibody (Anti-HBs) 2 years and older	Full	serum
Serum Folate	Full	serum
Vitamin D	Full	serum
Ages 3-5		
Complete Blood Count	Full	whole blood
Cytomegalovirus	Full	Serum
Erythrocyte Folate	Full	whole blood
Hepatitis Profile**	Full	Serum
Polyunsaturated Fatty Acids	Full	Serum
Serum Folate	Full	Serum
Vitamin D	Full	Serum
Ages 6-11		
Albumin/Creatinine (second measure also obtained from home)	Full	Urine
Caffeine	One-third	Urine
Cholesterol (Total)/ High Density Lipoprotein Cholesterol (HDL)	Full	Serum
Complete Blood Count	Full	whole blood
Erythrocyte Folate	Full	whole blood
QuantiFeron In-Tube TB	Full	Whole blood
Hepatitis Profile**	Full	Serum
Measles/Mumps/Rubella/Varicella	Full	Serum
Polyunsaturated Fatty Acids	Full	Serum
Serum Folate	Full	Serum
Testosterone	Full	Serum
Tissue transglutaminase (TTG)/Edomysial antibody (EMA)	Full	Serum
Urine osmolality and flow rate	Full	Urine
Vitamin D	Full	Serum
Ages 12-19		
Albumin/Creatinine (second measure also obtained from home)	Full	Urine
Biochemistry Profile*	Full	Serum
Caffeine	One-third	Urine
<i>Chlamydia trachomatis</i> (14-19 years)	Full	Urine
Cholesterol (Total)/ High Density Lipoprotein Cholesterol (HDL)	Full	Serum
Complete Blood Count	Full	whole blood
Erythrocyte Folate	Full	whole blood
Glucose (Oral Glucose Tolerance Test)	One-half	plasma Na2F
Glucose, fasting	One-half	plasma Na2F
Glycohemoglobin	Full	whole blood
QuantiFeron In-Tube TB	Full	Whole blood
Hepatitis Profile**	Full	Serum
<i>Herpes Simplex Virus</i> (HSV) (14-19 years)	Full	Serum
Human Immunodeficiency Virus Antibody (18-19 years)	Full	Serum

Test Name	Sample	Matrix
Human Papilloma Virus (14-19 years)	Full	Serum
Human Papilloma Virus (Females 14-19 years)	Full	Swab
Human Papilloma Virus (14-19 years)	Full	Rinse
Insulin	One-half	Serum
Measles/Mumps/Rubella/Varicella	Full	Serum
Polyunsaturated Fatty Acids	One-half	Serum
Serum Folate	Full	Serum
Testosterone	Full	Serum
Thyroid function profile***	One-third	Serum
Tissue transglutaminase (TTG)/Edomysial antibody (EMA)	Full	Serum
Triglycerides/Low Density Lipoprotein Cholesterol/Apolipoprotein B	One-half	Serum
Urine osmolality and flow rate	Full	Urine
Vitamin D	Full	Serum

Test Name	Sample	Matrix
Ages 20 and older		
Albumin/Creatinine (second measure also obtained from home)	Full	urine
Biochemistry Profile*	Full	serum
Caffeine	One-third	urine
<i>Chlamydia trachomatis</i> (20-39 years)	Full	urine
Cholesterol (Total)/ High Density Lipoprotein Cholesterol (HDL)	Full	serum
Complete Blood Count	Full	whole blood
Erythrocyte Folate	Full	whole blood
Genetics	Full	plasma
Glucose (Oral Glucose Tolerance Test)	One-half	plasma Na2F
Glucose, fasting	One-half	plasma Na2F
Glycohemoglobin	Full	whole blood
QuantiFeron In-Tube TB	Full	Whole blood
Hepatitis Profile **	Full	serum
<i>Herpes Simplex Virus</i> (HSV) (20-49 years)	Full	serum
Human Immunodeficiency Virus antibody (20-59 years)	Full	serum
Human Papilloma Virus (20-59 years)	Full	serum
Human Papilloma Virus (Females 20-59 years)	Full	swab
Human Papilloma Virus (20-69 years)	Full	Rinse
Insulin	One-half	Serum
Measles/Mumps/Rubella/Varicella(20-49 years)	Full	Serum
Polyunsaturated Fatty Acids	One-half	Serum
Serum Folate	Full	Serum
Testosterone	Full	Serum
Thyroid function profile***	One-third	serum
Tissue transglutaminase (TTG)/Edomysial antibody (EMA)	Full	serum
Triglycerides/Low Density Lipoprotein Cholesterol/Apolipoprotein B	One-half	serum
Urine osmolality and flow rate	Full	urine
Vitamin D	Full	serum
*Biochemistry Profile		
Albumin		

Test Name	Sample	Matrix
Alkaline phosphatase		
Aspartate aminotransferase (AST)		
Alanine aminotransferase (ALT)		
Blood urea nitrogen (BUN)		
Bicarbonate (HCO ₃)		
Total calcium		
Total cholesterol		
Chloride		
CPK		
Creatinine		
Globulin		
Glucose		
v-glutamyltransferase (GGT)		
Iron		
Potassium		
Lactate dehydrogenase (LDH)		
Sodium		
Osmolality		
Phosphorus		
Total Bilirubin		
Total protein		
Triglycerides		
Uric acid 7		
**Hepatitis Profile		
Hepatitis A antibody (Anti-HAV)		
Hepatitis B Core antibody (Anti-HBc)		
Hepatitis B Surface Antibody (Anti-HBs)		
Hepatitis B Surface Antigen (HbsAg)		
Hepatitis C Antibody (Anti-HCV)		
Hepatitis C HCV genotype		
Hepatitis C Ribonucleic Acid (HCV-RNA)		
Hepatitis C supplement		
Hepatitis D antibody (anti-HDV)		
Hepatitis E antibody (anti-HEV)		
**Thyroid function profile		
Free Thyroxine (T4)		
Total Thyroxine (T4)		
Thyroid Stimulating Hormone (TSH)		
Thyroid peroxidase antibody		
Free Triiodothyronine (T3)		
Total Triiodothyronine (T3)		
Thyroglobulin		
Antibody to Thyroglobulin		

Attachment 8 – NHANES Laboratory Component

Attachment 8b - Laboratory Analytes by Survey Year

All urine based analyses are done on a 1/3 sample of participants ages 6 and older unless otherwise noted. All blood based (whole blood, serum, plasma) analyses are done on a 1/3 sample of participants ages 12 and older unless otherwise noted.

Chemical / Metabolite Name	Matrix	07-08	09-10	11-12
Tobacco Smoke				
Cotinine ⁰	serum	•	•	•
4-(Methylnitrosamino)-1-(3-pyridyl)-1-Butanol (NNAL)	urine	•	•	•
Metals				
Lead ¹	whole blood	•	•	•
Lead	urine	•	•	•
Cadmium ¹	whole blood	•	•	•
Cadmium	urine	•	•	•
Manganese ¹	whole blood			•
Selenium ¹	whole blood			•
Mercury (total) ¹	whole blood	•	•	•
Mercury (total)/Iodine	urine	•	•	•
Inorganic Mercury ¹	whole blood	•	•	•
Ethyl Mercury ¹	whole blood			•
Methyl Mercury ¹	whole blood			•
Arsenic (total)	urine	•	•	•
Arsenous (III) acid	urine	•	•	•
Arsenic (V) acid	urine	•	•	•
Monomethylarsonic acid	urine	•	•	•
Dimethylarsinic acid	urine	•	•	•
Arsenobetaine	urine	•	•	•
Arsenocholine	urine	•	•	•
Trimethylarsine oxide	urine	•	•	•
Antimony	urine	•	•	•
Barium	urine	•	•	•
Beryllium	urine	•	•	h
Cesium	urine	•	•	•
Cobalt	urine	•	•	•
Manganese	urine			•
Molybdenum	urine	•	•	•
Platinum	urine	•	•	h
Strontium	urine			•
Tin	urine			•
Thallium	urine	•	•	•
Tungsten	urine	•	•	•
Uranium	urine	•	•	•
Copper ²	serum			•
Selenium ²	serum			•
Zinc ²	serum			•
Phytoestrogens				
Daidzein	urine	•	•	h
Enterodiol	urine	•	•	h
Enterolactone	urine	•	•	h

Equol	urine	•	•	h
Genistein	urine	•	•	h
O-Desmethylangolensin	urine	•	•	h
Phthalates				
Mono-methyl phthalate	urine	•	h	h
Mono-ethyl phthalate	urine	•	•	•
Mono-n-butyl phthalate	urine	•	•	•
Mono-iso-butyl phthalate	urine	•	•	•
Mono-benzyl phthalate	urine	•	•	•
Mono-cyclohexyl phthalate	urine	•	h	h
Mono-2-ethylhexyl phthalate	urine	•	•	•
Mono-(2-ethyl-5-oxohexyl) phthalate	urine	•	•	•
Mono-(2-ethyl-5-hydroxyhexyl) phthalate	urine	•	•	•
Mono-(3-carboxypropyl) phthalate	urine	•	•	•
Mono-n-octyl phthalate	urine	•	h	h
Mono-isononyl phthalate	urine	•	h	h
Mono-(2-ethyl-5-carboxypentyl) phthalate	urine	•	•	•
Mono-(2,6-dimethyl-6-carboxyhexyl) phthalate	urine	•	•	•
Mono-(2,7-dimethyl-7-carboxyheptyl) phthalate	urine	•	•	•
Polycyclic Aromatic Hydrocarbons				
2-Hydroxyfluorene	urine	•	•	•
3-Hydroxyfluorene	urine	•	•	•
9-Hydroxyfluorene	urine	•	•	•
1-Hydroxyphenanthrene	urine	•	•	•
2-Hydroxyphenanthrene	urine	•	•	•
3-Hydroxyphenanthrene	urine	•	•	•
4-Hydroxyphenanthrene	urine	•	•	•
1-Hydroxypyrene	urine	•	•	•
1-Hydroxynaphthalene (1-Naphthol)	urine	•	•	•
2-Hydroxynaphthalene (2-Naphthol)	urine	•	•	•
Organophosphate Insecticides: Dialkyl Phosphate Metabolites				
Dimethylphosphate	urine	•	•	•
Dimethylthiophosphate	urine	•	•	•
Dimethyldithiophosphate	urine	•	•	•
Diethylphosphate	urine	•	•	•
Diethylthiophosphate	urine	•	•	•
Diethyldithiophosphate	urine	•	•	•
Organophosphate Insecticides: Specific Pesticides and Metabolites				
Malathion dicarboxylic acid	urine	•	•	•
Chlorpyrifos	plasma	•	•	•
3,5,6-Trichloro-2-pyridinol	urine	•	•	•
Diazinon	plasma	•	•	•
2-Isopropyl-4-methyl-6-hydroxypyrimidine	urine	•	•	•
Methyl parathion	plasma	•	•	•
Parathion	plasma	•	•	•
<i>para</i> -Nitrophenol	urine	•	•	•
Dimethoate	urine	•	•	•
O-methoate	urine	•	•	•

2-(diethylamino)-6-methylpyrimidin-4-ol/one	urine	•	•	•
3-Chloro-7-hydroxy-4-methyl-2H-chromen-2-one/ol	urine	•	•	•
5-Chloro-1,2-dihydro-1-isopropyl-[3H]-1,2,4-triazol-3-one	urine	•	•	•
Dichlorovos	plasma	•	•	•
Fonophos	plasma	•	•	•
Phorate	plasma	•	•	•
Terbufos	plasma	•	•	•
Acephate	urine	•	•	•
Methamidaphos	urine	•	•	•
Pyrethroid Pesticides				
<i>trans</i> -Permethrin	plasma	•	•	h
<i>cis</i> -Permethrin	plasma	•	•	h
<i>cis</i> -3-(2,2-Dichlorovinyl)-2,2-dimethylcyclopropane carboxylic acid	urine	•	•	•
<i>trans</i> -3-(2,2-Dichlorovinyl)-2,2-dimethylcyclopropane carboxylic acid	urine	•	•	•
3-Phenoxybenzoic acid	urine	•	•	•
4-Fluoro-3-phenoxybenzoic acid	urine	•	•	•
<i>cis/trans</i> -Dimethylvinylcyclopropane carboxylic diacid	urine	•	•	•
<i>cis</i> -3-(2,2-Dibromovinyl)-2,2-dimethylcyclopropane carboxylic acid	urine	•	•	•
Cyfluthrin	plasma	•	•	h
Cyhalothrin	plasma	•	•	h
Cypermethrin	plasma	•	•	h
Deltamethrin	plasma	•	•	h
Resmethrin	plasma	•	•	h
Tetramethrin	plasma	•	•	h
Organochlorine Pesticides				
Hexachlorobenzene	serum	•	•	•
<i>beta</i> -Hexachlorocyclohexane	serum	•	•	•
<i>gamma</i> -Hexachlorocyclohexane	serum	•	•	•
<i>p,p'</i> -DDT	serum	•	•	•
<i>p,p'</i> -DDE	serum	•	•	•
Oxychlordane	serum	•	•	•
<i>trans</i> -Nonachlor	serum	•	•	•
Mirex	serum	•	•	•
alpha-Hexachlorocyclohexane (HCCH)	serum	•	•	•
<i>cis</i> -Chlordane (or alpha)	serum	•	•	•
<i>trans</i> -Chlordane (or gamma)	serum	•	•	•
<i>cis</i> -Nonachlor	serum	•	•	•
<i>o,p'</i> -DDE	serum	•	•	•
Octachlorosytrene	serum	•	•	•
Pentachloroanisole	serum	•	•	•
Monohydroxy methoxychlor	urine	•	•	•
Dihydroxy methoxychlor	urine	•	•	•
Endosulfan-ether	urine	•	•	•
Endosulfan-lactone	urine	•	•	•
Endosulfan-sulfate	urine	•	•	•
Other Pesticides				
Propoxur	plasma	•	•	•
2-Isopropoxyphenol	urine	•	•	•

Carbofuranphenol	urine	•	•	•
N,N-diethyl-3-methylbenzamide (DEET)	plasma	•	•	•
N,N-diethyl-3-methylbenzamide (DEET)	urine	•	•	•
3-(diethylcarbamoyl) benzoic acid (DEET acid)	urine	•	•	•
N-ethyl-3-methylbenzamide (Desethyl DEET)	urine	•	•	•
N,N-diethyl-3-hydroxymethylbenzamide (Desethyl hydroxy DEET)	urine	•	•	•
2,5-Dichlorophenol	urine	•	•	•
Aldicarb-SO	urine	•	•	•
Aldicarb-SO2	urine	•	•	•
Bendiocarb	plasma	•	•	•
Piperonyl butoxide	plasma	•	•	•
Fungicides				
<i>ortho</i> -Phenylphenol	urine	•	h	h
Chlorothalonil	serum	•	•	h
Metalaxyl	serum	•	•	h
Dichloran	serum	•	•	h
Ethylenethio urea (ETU)	urine	•	•	•
Propylenethio urea (PTU)	urine	•	•	•
Phthalimide	serum	•	•	h
Tetrahydrophthalimide	serum	•	•	h
Herbicides: Substituted Ureas				
Diuron	urine	•	•	h
Linuron	urine	•	•	h
Dimethoxy pyrimidine	urine	•	•	h
Dimethyl pyrimidine	urine	•	•	h
Dichlorophenyl methyl urea	urine	•	•	h
Dichlorophenyl urea	urine	•	•	h
Methyl methoxytriazine	urine	•	•	h
Bensulfuron-methyl	urine	•	•	h
Foramsulfuron	urine	•	•	h
Halosulfuron	urine	•	•	h
Nicosulfuron	urine	•	•	h
Primisulfuron-methyl	urine	•	•	h
Rimsulfuron	urine	•	•	h
Sulfometuron-methyl	urine	•	•	h
Sulfosulfuron	urine	•	•	h
Chlorsulfuron	urine	•	•	h
Oxasulfuron	urine	•	•	h
Ethametsulfuron-methyl	urine	•	•	h
Mesosulfuron-methyl	urine	•	•	h
Metsulfuron-methyl	urine	•	•	h
Prosulfuron	urine	•	•	h
Thifensulfuron-methyl	urine	•	•	h
Triasulfuron	urine	•	•	h
Triflusulfuron-methyl	urine	•	•	h
Other Herbicides				
2,4,5-Trichlorophenoxyacetic acid	urine	•	•	•
2,4-Dichlorophenoxyacetic acid	urine	•	•	•

2,4-Dichlorophenol	urine	•	•	•
Acetochlor	serum	•	•	h
Acetochlor mercapturate	urine	•	•	•
Alachlor	serum	•	•	h
Alachlor mercapturate	urine	•	•	•
Atrazine	serum	•	•	•
Atrazine	urine	•	•	•
Atrazine mercapturate	urine	•	•	•
Diaminochlorotriazine	urine	•	•	•
Desethylatrazine	urine	•	•	•
Desethylatrazine mercapturate	urine	•	•	•
Desisopropylatrazine	urine	•	•	•
Hydroxyatrazine	urine	•	•	•
Metolachlor	serum	•	•	h
Metolachlor mercapturate	urine	•	•	•
Glyphosate	urine	•	•	•
Dacthal	serum	•	•	h
Trifluralin	serum	•	•	h
Aminomethyl phosphonic acid	urine	•	•	•
Halogenated Phenolic Compounds				
2,4,5-Trichlorophenol	urine	•	h	h
2,4,6-Trichlorophenol	urine	•	h	h
Pentachlorophenol	serum	•	•	•
Pentachlorophenol	urine	•	•	•
5-Chloro-2-(2,4-dichlorophenoxy)-phenol (Triclosan)	serum	•	•	•
Pentabromphenol	serum	•	•	•
Perfluorinated Compounds				
Perfluorooctanoic acid	serum	•	•	•
Perfluorooctane sulfonic acid	serum	•	•	•
Perfluorohexane sulfonic acid	serum	•	•	•
2-(N-Ethyl- Perfluorooctane sulfonamido) acetic acid	serum	•	h	h
2-(N-Methyl-perfluorooctane sulfonamido) acetic acid	serum	•	•	•
Pefluorodecanoic acid	serum	•	•	•
Perfluorobutane sulfonic acid	serum	•	•	•
Perfluoroheptanoic acid	serum	•	h	h
Perfluorononanoic acid	serum	•	•	•
Perfluorooctane sulfonamide	serum	•	h	h
Perfluoroundecanoic acid	serum	•	•	•
Perfluorododecanoic acid	serum	•	h	h
Environmental Phenols				
Bisphenol A	urine	•	•	•
2-Hydroxy-4-methoxybenzophenone (Benzophenone-3)	urine	•	•	•
4-tert-Octyl phenol	urine	•	h	h
2,4,4'-Trichloro-2'-hydroxyphenyl ether (Triclosan)	urine	•	•	•
Methyl paraben	urine	•	•	•
Ethyl paraben	urine	•	•	•
Propyl paraben	urine	•	•	•
Butyl paraben	urine	•	•	•

Polychlorinated Dibenzo-<i>p</i>-dioxins and Dibenzofurans				
1,2,3,4,6,7,8,9-Octachlorodibenzo- <i>p</i> -dioxin (OCDD)	serum	•	p	•
1,2,3,4,6,7,8-Heptachlorodibenzo- <i>p</i> -dioxin (HpCDD)	serum	•	p	•
1,2,3,4,7,8-Hexachlorodibenzo- <i>p</i> -dioxin (HxCDD)	serum	•	p	•
1,2,3,6,7,8-Hexachlorodibenzo- <i>p</i> -dioxin (HxCDD)	serum	•	p	•
1,2,3,7,8,9-Hexachlorodibenzo- <i>p</i> -dioxin (HxCDD)	serum	•	p	•
1,2,3,7,8-Pentachlorodibenzo- <i>p</i> -dioxin (PeCDD)	serum	•	p	•
2,3,7,8-Tetrachlorodibenzo- <i>p</i> -dioxin (TCDD)	serum	•	p	•
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	serum	•	p	•
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	serum	•	p	•
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	serum	•	p	•
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	serum	•	p	•
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	serum	•	p	•
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	serum	•	p	•
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	serum	•	p	•
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	serum	•	p	•
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	serum	•	p	•
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	serum	•	p	•
Polybrominated Dibenzo-<i>p</i>-dioxins and Dibenzofurans				
2,3,7,8-Tetrabromodibenzo- <i>p</i> -dioxin (TBDD)	serum	•	p	•
1,2,3,7,8-Pentabromodibenzo- <i>p</i> -dioxin (PeBDD)	serum	•	p	•
1,2,3,4,7,8-Hexabromodibenzo- <i>p</i> -dioxin (HxBDD)	serum	•	p	•
1,2,3,6,7,8-Hexabromodibenzo- <i>p</i> -dioxin (HxBDD)	serum	•	p	•
1,2,3,7,8,9-Hexabromodibenzo- <i>p</i> -dioxin (HxBDD)	serum	•	p	•
1,2,3,4,6,7,8,9-Octabromodibenzo- <i>p</i> -dioxin (OBDD)	serum	•	p	•
2,3,7,8-Tetrabromodibenzofuran (TBDF)	serum	•	p	•
1,2,3,7,8-Pentabromodibenzofuran (PeBDF)	serum	•	p	•
2,3,4,7,8-Pentabromodibenzofuran (PeBDF)	serum	•	p	•
1,2,3,4,7,8-Hexabromodibenzofuran (HxBDF)	serum	•	p	•
1,2,3,4,6,7,8-Heptabromodibenzofuran (HpBDF)	serum	•	p	•
1,2,3,4,6,7,8,9-Octabromodibenzofuran (OBDF)	serum	•	p	•
Dioxin-like Polychlorinated Biphenyls - cPCBs				
3,3',4,4'-Tetrachlorobiphenyl (PCB 77)	serum	•	p	•
3,4,4',5-Tetrachlorobiphenyl (PCB 81)	serum	•	p	•
3,3',4,4',5-Pentachlorobiphenyl (PCB 126)	serum	•	p	•
3,3',4,4',5,5'-Hexachlorobiphenyl (PCB 169)	serum	•	p	•
Dioxin-like Polychlorinated Biphenyls - mPCBs				
2,4,4'-Trichlorobiphenyl (PCB 28)	serum	•	•	•
2,3',4,4'-Tetrachlorobiphenyl (PCB 66)	serum	•	•	•
2,4,4',5-Tetrachlorobiphenyl (PCB 74)	serum	•	•	•
2,3,3',4,4'-Pentachlorobiphenyl (PCB 105)	serum	•	• / p	•
2,3,3',4,4'-Pentachlorobiphenyl (PCB 114)	serum	•	• / p	•
2,3',4,4',5-Pentachlorobiphenyl (PCB 118)	serum	•	• / p	•
2',3,4,4',5-Pentachlorobiphenyl (PCB 123)	serum	•	• / p	•
2,3,3',4,4',5-Hexachlorobiphenyl (PCB 156)	serum	•	• / p	•
2,3,3',4,4',5'-Hexachlorobiphenyl (PCB 157)	serum	•	• / p	•
2,3',4,4',5,5'-Hexachlorobiphenyl (PCB 167)	serum	•	• / p	•
2,3,3',4,4',5,5'-Heptachlorobiphenyl (PCB 189)	serum	•	• / p	•

Non-dioxin-like Polychlorinated Biphenyls				
2,2',5'-Trichloro biphenyl (PCB 18)	serum	•	•	•
2,2',3,5'-Tetrachloro biphenyl (PCB 44)	serum	•	•	•
2,2',4,5'-Tetrachloro biphenyl (PCB 49)	serum	•	•	•
2,2',5,5'-Tetrachlorobiphenyl (PCB 52)	serum	•	•	•
2,2',3,4,5'-Pentachlorobiphenyl (PCB 87)	serum	•	•	•
2,2',4,4',5'-Pentachlorobiphenyl (PCB 99)	serum	•	•	•
2,2',4,5,5'-Pentachlorobiphenyl (PCB 101)	serum	•	•	•
2,3,3',4',6'-Pentachlorobiphenyl (PCB 110)	serum	•	•	•
2,2',3,3',4,4'-Hexachlorobiphenyl (PCB 128)	serum	•	•	•
2,2',3,4,4',5' and 2,3,3',4,4',6'-Hexachlorobiphenyl (PCB 138 & 158)	serum	•	•	•
2,2',3,4',5,5'-Hexachlorobiphenyl (PCB 146)	serum	•	•	•
2,2',3,4',5',6'-Hexachlorobiphenyl (PCB 149)	serum	•	•	•
2,2',3,5,5',6'-Hexachlorobiphenyl (PCB 151)	serum	•	•	•
2,2',4,4',5,5'-Hexachlorobiphenyl (PCB 153)	serum	•	•	•
2,2',3,3',4,4',5'-Heptachlorobiphenyl (PCB 170)	serum	•	•	•
2,2',3,3',4,5,5'-Heptachlorobiphenyl (PCB 172)	serum	•	•	•
2,2',3,3',4,5',6'-Heptachlorobiphenyl (PCB 177)	serum	•	•	•
2,2',3,3',5,5',6'-Heptachlorobiphenyl (PCB 178)	serum	•	•	•
2,2',3,4,4',5,5'-Heptachlorobiphenyl (PCB 180)	serum	•	•	•
2,2',3,4,4',5',6'-Heptachlorobiphenyl (PCB 183)	serum	•	•	•
2,2',3,4',5,5',6'-Heptachlorobiphenyl (PCB 187)	serum	•	•	•
2,2',3,3',4,4',5,5'-Octachlorobiphenyl (PCB 194)	serum	•	•	•
2,2',3,3',4,4',5,6'-Octachlorobiphenyl (PCB 195)	serum	•	•	•
2,2',3,3',4,4',5,6' and 2,2',3,4,4',5,5',6'-Octachlorobiphenyl (PCB 196 & 203)	serum	•	•	•
2,2',3,3',4,5,5',6'-Octachlorobiphenyl (PCB 199) (change in nomenclature; previously referred to as PCB 201)	serum	•	•	•
2,2',3,3',4,4',5,5',6'-Nonachlorobiphenyl (PCB 206)	serum	•	•	•
2,2',3,3',4,4',5,5',6,6'-Decachloro biphenyl (PCB 209)	serum	•	•	•
Hydroxylated Polychlorinated Biphenyls				
2,3,3',4',5-pentachloro-4-biphenylol (4-HO-CB107)	serum	•	•	p
2,2',3,4',5,5'-hexachloro-4-biphenylol (4-HO-CB146)	serum	•	•	p
2,2',3,4',5,5',6'-heptachloro-4-biphenylol (4-HO-CB187)	serum	•	•	p
Polybrominated Diphenyl Ethers				
2,2',4'-Tribromodiphenyl ether (BDE 17)	serum	•	•	•
2,4,4'-Tribromodiphenyl ether (BDE 28)	serum	•	•	•
2,2',4,4'-Tetrabromodiphenyl ether (BDE 47)	serum	•	•	•
2,3',4,4'-Tetrabromodiphenyl ether (BDE 66)	serum	•	•	•
2,2',3,4,4'-Pentabromodiphenyl ether (BDE 85)	serum	•	•	•
2,2',4,4',5'-Pentabromodiphenyl ether (BDE 99)	serum	•	•	•
2,2',4,4',6'-Pentabromodiphenyl ether (BDE 100)	serum	•	•	•
2,2',4,4',5,5'-Hexabromobiphenyl (BB 153)	serum	•	•	•
2,2',4,4',5,6'-Hexabromodiphenyl ether (BDE 154)	serum	•	•	•
2,2',4,4',5,5'-Hexabromodiphenyl ether (BDE 153)	serum	•	•	•
2,2',3,4,4',5',6'-Heptabromodiphenyl ether (BDE 183)	serum	•	•	•
2,2',3,3',4,4',5,6'-Octabromodiphenyl ether (BDE 196)	serum	•	•	•
2,2',3,3',4,4',6'-Octabromodiphenyl ether (BDE 197)	serum	•	•	•
2,2',3,4,4',5,5',6'-Octabromodiphenyl ether (BDE 203)	serum	•	•	•

2,2',3,3',4,4',5,5',6-Nonabromodiphenyl ether (BDE 206)	serum	•	•	•
2,2',3,3',4,4',5,6,6'-Nonabromodiphenyl ether (BDE 207)	serum	•	•	•
2,2',3,3',4,5,5',6,6'-Nonabromodiphenyl ether (BDE 208)	serum	•	•	•
2,2',3,3',4,4',5,5',6,6'-Decabromodiphenyl ether (BDE 209)	serum	•	•	•
Hexabromobenzene (HBB)	serum	•	•	•
Polychlorinated Naphthalenes				
1,2,3,4-Tetrachlorinated naphthalene (PCN 27)	serum	•	•	•
1,2,3,5,7- and 1,2,4,6,7-Pentachlorinated naphthalene (PNC 52 & 60)	serum	•	•	•
1,2,3,4,5,7- and 1,2,3,5,6,8-Hexachlorinated naphthalene (PNC 64 & 68)	serum	•	•	•
1,2,3,4,6,7- and 1,2,3,5,6,7-Hexachlorinated naphthalene (PNC 66 & 67)	serum	•	•	•
1,2,3,5,7,8-Hexachlorinated naphthalene (PCN 69)	serum	•	•	•
1,2,3,4,5,6,7-Heptachlorinated naphthalene (PCN 73)	serum	•	•	•
Toxaphenes				
Parlar 26 2-Endo,3-exo,5-endo,6-exo,8b,8c,10a,10c-octachlorobornane	serum	•	•	P
Parlar 50 2-Endo,3-exo,5-endo,6-exo,8b,8c,9c,10a,10c-nonachlorobornane	serum	•	•	P
Parlar 62 2,2,5,5,8c,9b,9c,10a,10b-nonachlorobornane	serum	•	•	P
Volatile Organic Compounds (VOCs)				
1,1,1-Trichloroethane ³	whole blood	•	•	•
1,1,1,2-Tetrachloroethane ³	whole blood	•	•	•
1,1,2-Trichloroethane ³	whole blood	•	•	•
1,1-Dichloroethane ³	whole blood	•	•	•
1,1-Dichloroethene ³	whole blood	•	•	•
1,2-dibromo-3-chloropropane ³	whole blood	•	•	•
1,2-Dichlorobenzene ³	whole blood	•	•	•
1,2-Dichloroethane ³	whole blood	•	•	•
1,2-Dichloropropane ³	whole blood	•	•	•
1,3-Dichlorobenzene ³	whole blood	•	•	•
1,4-Dichlorobenzene ³	whole blood	•	•	•
2,5-Dimethylfuran ³	whole blood	•	•	•
Benzene ³	whole blood	•	•	•
Bromodichloromethane ³	whole blood	•	•	•
Bromodichloromethane ⁴	water	•	•	
Bromoform ³	whole blood	•	•	•
Bromoform ⁴	water	•	•	
Carbon Tetrachloride ³	whole blood	•	•	•
Chlorobenzene ³	whole blood	•	•	•
Chloroform ³	whole blood	•	•	•
Chloroform ⁴	water	•	•	•
cis-1,2-Dichloroethene ³	whole blood	•	•	•
Dibromochloromethane ³	whole blood	•	•	•
Dibromochloromethane ⁴	water	•	•	
Dibromomethane ³	whole blood	•	•	•
Ethylbenzene ³	whole blood	•	•	•
Furan ³	whole blood	•	•	•

Hexachloroethane ³	whole blood	•	•	•
m-/p-Xylene ³	whole blood	•	•	•
Methylene Chloride ³	whole blood	•	•	•
Methyl-tert-Butyl Ether (MTBE) ³	whole blood	•	•	•
Methyl-tert-Butyl Ether (MTBE) ⁴	water	•	•	
Nitrobenzene ³	whole blood	•	•	•
o-Xylene ³	whole blood	•	•	•
Styrene ³	whole blood	•	•	•
Tetrachloroethene ³	whole blood	•	•	•
Toluene ³	whole blood	•	•	•
trans-1,2-Dichloroethene ³	whole blood	•	•	•
Trichloroethene ³	whole blood	•	•	•
1,4-Dioxane ³	whole blood	•	•	•
1,2-Dibromoethane ³	whole blood	•	•	•
n-Hexane ³	whole blood	•	•	•
Nitromethane ³	whole blood	•	•	•
1,1,1,2-Tetrachloroethane ³	whole blood	•	•	•
Cumene ³	whole blood	•	•	•
1,2,3-Trichloropropane ³	whole blood	•	•	•
trans Fatty Acids				
trans-9-Hexadecenoic acid	plasma	•	•	
trans-9-Octadecenoic acid	plasma	•	•	
trans,trans-9,12-Octadecadienoic acid	plasma	•	•	
trans-11-Octadecanoic acid	plasma	•	•	
Other				
Perchlorate ⁵	urine	•	•	•
Perchlorate ⁴	water	•	h	h
Thiocyanate ⁵	urine	•	•	•
Nitrate ⁵	urine	•	•	•
Nitrate ⁴	water	•	•	
Iodide ⁴	water	•	•	
Ethylene Oxide	packed cells		•	
Acrylamide	packed cells	•	•	h
Glycidamide	packed cells	•	•	h

⁰All participants ages 3 and older

¹All participants ages 1 year and older

²One-third sample ages 6 and older

³One-half sample ages 12 and older

⁴One-half sample of households

⁵All participants ages 6 and older in 2007-8 and 1/3 sample 2009-12

d = discontinued due to method limitations

h = on hold for survey period inclusion planned in 2013 or beyond

• = measurement planned

p = pooled; •/p = measured individually and pooled