



United States Department of the Interior

U. S. GEOLOGICAL SURVEY

Columbia Environmental Research Center
4200 New Haven Road
Columbia, Missouri 65201

July 7, 2000

Anne Secord
US Fish and Wildlife Service
New York Field Office
3817 Luker Road
Cortland, New York 13045

Dear Anne:

Enclosed is the eagle blood congener-specific PCB report that is part of the investigation entitled "Chemical Contamination of Nestling Tree Swallows, Great Blue Herons, and Resident/Nestling Bald Eagles Along the Hudson River, New York". These eagle bloods are also being analyzed for pesticides, PCDDs, PCDFs, and non-ortho-PCBs. We will report the eagle blood *pesticide* results in one week from now, and the non-orthos and PCDD/PCDFs will be reported in a month from now.

The PCB and pesticide results for a large part of the tree swallow investigation (CERC #18759-18799) and for all of the Great Blue Heron brains (#18803-18818) are also being completed. We will send a report this coming week. Analyses of the other Hudson River samples are proceeding well. I will send you an update of our reporting schedule next week.

Please feel free to call if you have questions concerning the enclosed report. My direct number is 573-876-1823.

Sincerely,

Carl E. Orazio, Ph.D.
Leader, Organic Chemistry Section



Columbia Environmental Research Center
U.S. Geological Survey- Biological Resources Division
4200 New Haven Road, Columbia, Missouri 65201

June 30, 2000

REPORT #1
PCBs and OC Pesticides in Bald Eagle Blood
FY-00-31-02
FWS NO: 1448-50181-99-H-007
CERC NO: 3307-70L1D

By

Organic Chemistry Section
John Meadows, Kathy Echols, Robert Gale, Paul Peterman
Carl Orazio- USGS Project Leader

FWS PROJECT TITLE

**Chemical Contamination of Nesting Tree Swallows, Great Blue Herons, and
Resident/Nesting Bald Eagles Along the Hudson River, New York**

Principal Investigator

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Project History:

The Hudson River is highly contaminated with PCBs from industrial sources, primarily two capacitor manufacturing facilities operated by General Electric. The 200 river miles from the New York Harbor upstream to Hudson Falls, New York, are designated a Superfund Site. From 1946 until 1977, it is estimated that between 209,000 and 1.3 million pounds of PCBs were discharged into the waters of the Hudson by these two plants. Downstream movement of the PCBs was retarded by the Ft. Edward Dam until its removal in 1973, at which time the heavily contaminated sediments and detritus began to migrate downstream. In addition to contamination of the river itself, dredging operations have deposited contaminated material at nine known upland sites adjacent to the river. In 1993, it was discovered that one of the facilities was continuing to discharge PCBs into the river.

Contamination of water, sediments, and fish along the Hudson River by PCBs has been examined, but less is known about the concentration and movement of the contaminants among other trophic levels. Many resident and migrating avian species may be affected, including a fairly substantial population of wintering bald eagles (*Haliaeetus leucocephalus*). The samples described in this report are part of a series of studies designed to expand the knowledge of PCB flux in the food chain of bird species and other biota on and around the Hudson River. In 1995-1997, we took part in a study involving tree swallows (*Tachycineta bicolor*) as the indicator species along the river. Eggs, pre-fledgling chicks, odonates (emergent insects which comprise a large percentage of the diet of the swallows), and two species of ducks were assessed for contaminant concentrations. In 1997-1999, the scope of the study expanded to include samples from a bald eagle and a number of bald eagle prey species. Several species of fish, tree swallows, bluebirds, wood ducks, and two species of sparrow were analyzed.

The present segment of the study, 1999-2001, expands the diversity of the sample matrices still further. In response to the growing number of wintering, and in some cases, nesting bald eagles on the Hudson, tissue and eggs from a larger group of bald eagles and prey species have been added. The great blue heron (*Ardea herodias*), another top predator inhabiting the area, was examined. To gain further understanding of the factors influencing the life cycles and reproduction of these animals, more comprehensive organic analyses were conducted. Congener-specific PCBs, non-*ortho*-chlorinated (dioxin-like) PCBs, polychlorinated dibenzo-*p*-dioxins and dibenzofurans (PCDDs, PCDFs), polycyclic aromatic hydrocarbons (PAHs), and a suite of organochlorine pesticides were targeted in this investigation. As the information base on this ecosystem grows, a clearer picture of the remedial efforts required to restore it to its normal function will, hopefully, emerge.

Biota sampled by US Fish & Wildlife Service were analyzed by the Organic Chemistry Section of the Columbia Environmental Research Center. The following analytes were targeted:

- Total PCBs and selected PCB congeners,
- Organochlorine pesticides,
- 2,3,7,8-substituted polychlorinated dibenzo-*p*-dioxins and -dibenzofurans,
- Non-*ortho* PCB congeners,
- Polycyclic aromatic hydrocarbons,

In addition to organic analysis, selected samples will be analyzed by inductively coupled plasma for mercury, arsenic, and selenium. The inorganic analysis will be reported under a separate cover.

A total of 124 samples were investigated. The samples were subdivided into smaller groups and the results of the analysis of the groups will be reported in separate reports. This, the first of those reports, concerns concentrations of organochlorine pesticides and PCB congeners in a set of 19 Bald Eagle blood samples.

Contents:

- I. Summary of Analytical Methods for Sample Preparation
- II. PCB Congener (cPCB) Analysis and Results
- III. Organochlorine Pesticide Analysis and Results

Tables:

1. Concentrations of PCB congeners
2. Quality Control for PCB congeners
3. PCB Recovery data
4. Concentrations of Organochlorine Pesticides
5. Quality Control for Organochlorine Pesticides

Figures:

1. Analytical scheme for organochlorine pesticides, congener-specific PCBs, non-*ortho*-PCBs, PCDFs, and PCDDs.

I. Summary of Analytical Methods for Sample Preparation

The 19 Bald Eagle blood (serum) samples in this set were analyzed for PCB congeners and a suite of organochlorine pesticides (OCs). The samples were received in two groups and were assigned CERC database numbers 19848 - 19860 and 20026 - 20031. Where serum and cells had been separated, serum was analyzed. Whole blood was analyzed as received.

Quality Control:

Matrix QC samples (blanks and spikes) prepared from clean bovine serum were analyzed with each set of samples.

All samples, including QC samples were spiked with method recovery compounds (40 ng each) before extraction to monitor recoveries through the cleanup procedures. The following compounds were used:

- PCB 029 (2,4,6-trichlorobiphenyl)
- PCB155 (2,2',4,4',6,6'-hexachlorobiphenyl)
- PCB 204 (2,2',3,4,4',5,6,6'-octachlorobiphenyl)
- tetra-chloro-meta-xylene
- dibutylchloredate.

Matrix spikes also were spiked with:

- Organochlorine pesticides (24 compounds; 40 ng each)
- PCBs (mixed Aroclors 1242, 1248, 1254, 1260; 1000 ng total Aroclors).

Sample Preparation: The samples were dehydrated by addition of anhydrous sodium sulfate and method recovery compounds were added. Samples were extracted with methylene chloride, and a small portion of the extract (1%) was used to determine percent lipid (1). The remaining extracts were passed through gravity driven gel permeation chromatography (2) and High Performance Gel Permeation Chromatography (HPGPC) (3) before fractionation on a two-layered octadecyl silica/activated silica gel column into two fractions: one fraction containing PCBs and four of the targeted OCs (SODS-1), and a second fraction containing the remainder of the OCs (SODS-2) (4). SODS-2 was analyzed at this point for organochlorine pesticides by GC/ECD. SODS-1 was further fractionated on high performance Porous Graphitic Carbon (PGC) (5) into the following fractions:

- PGC 1 *ortho*-chlorinated PCB congeners and four of the targeted OCs
 - Analysis by gas chromatography (GC)/ electron-capture detection (ECD)
- PGC 2 non-*ortho*-chlorinated PCBs
 - Analysis by GC/ high resolution mass spectrometry (GC/HRMS)

- PGC 3 polychlorinated dibenzo-*p*-dioxins and -furans (PCDD/PCDFs)
- Analysis by GC/ high resolution mass spectrometry (GC/HRMS).

Congener PCBs are reported in this document. OC pesticides, non-ortho PCBs and PCDDs/PCDFs will be reported later.

II. PCB Congener Analysis and Results

The sample extracts were adjusted to a final volume of 2 mL, and 80 ng of the internal standard mix (PCBs 030 and 207) was added. After vortex mixing, a portion of the solution was transferred to a labeled autosampler vial. Individual PCB congeners were measured in PGC1 fractions by GC/ECD. Results of the PCB analysis are presented in Tables 1 - 3.

Instrumentation: Analyses were performed as described in CERC SOP P.195 (6), a dual column method, using Hewlett-Packard 5890 Series II GCs with cool on-column capillary injection systems and Hewlett-Packard model 7673 autosamplers. For all analyses, a 3-m section of 0.53 mm i.d. uncoated and deactivated (Restek Corp., Inc.) capillary retention gap was attached to the front of each analytical column by a "Press-Tight" (Restek Corp., Inc.) union. The analytical columns were a 60-m x 0.25-mm DB-5 (0.25 μ m 5%-phenyl-methylpolysiloxane, J&W Scientific) and a 60-m x 0.25-mm DB-17 (0.25 μ m 50%-phenyl-methylpolysiloxane, J&W Scientific). The H₂-carrier gas was pressure regulated at 25 psi. The temperature program for the PCB analysis was as follows: initial temperature 60°C, immediately ramped to 150°C at 15°C/min, then ramped to 250°C at 1°C/min, and finally ramped to 320°C at 10°C/min, and held for 1 min. The temperature of the ECD was held at 330°C.

General Detection and Quantification Procedure: Capillary GC/ECD data were collected, archived in digital form, and processed using a PE-Nelson chromatography data system which included the model 970 interface and version 4.1 of Turbochrom™ chromatography software on a Pentium microcomputer. Six to nine levels of PCB standards, a combination of Aroclors 1242, 1248, 1254, 1260 in 1:1:1:1 w/w/w/w ratio (designated A1111), were used for PCB congeners calibration, with total PCB concentrations ranging from 10 to 8000 ng/mL. An instrumental internal standard (IIS) method with PCB congener 030 or 207 used to calculate the concentrations of the targeted compounds. Samples were processed and analyzed in two batches. PCB congener results are presented in Table 1, designated by their CERC database number and are cross-referenced to their field identification number, site and description. Concentrations are expressed as nanograms of analyte per gram of sample (wet weight).

Quality Control Procedures and Results: Recovery data for PCBs 030, 155, and 204 are presented in Table 3. All concentrations are reported in nanograms per gram, except for procedural blank samples which are reported as a mass amount (ng). Quality control data for procedural and matrix blanks, spikes, replicates, and positive

controls are presented in Table 2. The method detection limits (MDLs) for individual PCB congeners and for total PCBs are based on procedural blank (PB) results according to the method outlined by Keith *et al.* (7,8). Briefly, an average and standard deviation are determined. The MDL (ng) is calculated using the following formula:

$$\text{MDL} = (\text{PB Avg}) + 3(\text{PB SD}).$$

The MDL is then expressed in units of concentration: mass of analyte per mass of sample. If sample masses are within 10% of each other, an average mass is calculated for the entire set. The lowest MDL for this set of samples was 0.01 ng/g and 3 ng/g for the highest (9) of the individual PCB congeners and the MDL 30 ng/g for total PCB concentrations. The method quantitation limits (MQL) was calculated as well using the formula (7,8):

$$\text{MQL} = (\text{PB Avg}) + 10(\text{PB SD}).$$

The mass corrections are made in the same manner as for the MDLs.

Gas chromatographic analysis, peak measurement decisions, and quantification were monitored with triplicate injection of the same sample. Precision averaged 4% for all the sample sets.

Accuracy of the method is monitored through rigorous quality control. Analytical standards have been verified against certified standards. Recoveries of analytes are monitored by including the following items:

- 1) internal recovery standards in each sample,
- 2) PCB-spiked control bovine serum.

The spiked recovery compounds, PCBs 029, 155, and 204, which elute in the PGC1 fraction, are presented in Table 3. PCB 029, a trichlorobiphenyl, is representative of more volatile early eluting PCBs ($\text{Cl}_1 - \text{Cl}_3$). PCB 155, a hexachlorobiphenyl, is representative of mid-range eluting congeners ($\text{Cl}_4 - \text{Cl}_6$). PCB 204, an octachlorobiphenyl, is less volatile and representative of later eluting PCBs ($\text{Cl}_7 - \text{Cl}_{10}$). Recoveries averaged $33 \pm 11\%$ for PCB 029, $52 \pm 15\%$ for PCB 155, and $61 \pm 17\%$ for PCB 204 (Table 3). Recoveries of spiked A1111 PCB congeners ranged from 20% to 151% and recovery of total PCBs were 69% for the matrix spike.

Summary: The concentrations of the analytes in the eagle bloods are presented in the Tables. The use of surrogate PCBs in each sample allows analytical losses to be accounted for, i.e. the concentrations of analytes in the sample can be accurately determined by accounting for surrogate recoveries. PCB 029 accurately monitors $\text{Cl}_1 - \text{Cl}_3$ congeners; PCB 155 recoveries monitor $\text{Cl}_4 - \text{Cl}_6$ PCB congeners; PCB 204 recoveries monitor $\text{Cl}_7 - \text{Cl}_{10}$ congeners. Table 1 contains the PCB congener

concentrations. Table 2 contains detection limit and QC calculations. Table 3 contains spike recoveries.

Concentrations of total PCBs ranged from 214 to 14240 ng/g in the serum and whole blood samples. The highest sample, 19856-s, contained levels about 10 times higher than the other serum samples. The congener pattern of this serum was similar to that of the other serums.

III. Organochlorine Pesticide Analysis and Results

Organochlorine pesticide fractions (SODS-1/PGC 1 and SODS-2) were adjusted to a final volume of 2 mL and 80 ng internal standard (PCBs 030 and 207) was added. After vortex mixing, a portion of the solution was transferred to a labeled autosampler vial. Individual organochlorine pesticides were measured in both fractions by GC/ECD. Results of the OC pesticide analysis are presented in Table 4.

Instrumentation: Analyses were performed as described in CERC SOP P.459 (10), using Hewlett-Packard 5890 Series II GCs with cool on-column capillary injection systems and Hewlett-Packard model 7673 autosamplers. For all analyses, a 3-m section of 0.53 mm i.d. uncoated and deactivated (Restek Corp., Inc.) capillary retention gap was attached to the front of the analytical column by a "Press-Tight" (Restek Corp., Inc.) union. The analytical column for the SODS-2 fraction was a 30-m x 0.25-mm DB-1 (methylsilicone, J&W Scientific). The SODS-1 fractions were analyzed on the a 60 m DB-5 in order to confirm the identification of OC pesticides. The H₂-carrier gas was pressure regulated at 11 psi. The temperature program for the analysis was as follows: initial temperature 90°C, immediately ramped to 165°C at 15°C/min, held 3 minutes, then ramped to 260°C at 2.5°C/min with a 5 minute hold, and finally ramped to 320°C at 10°C/min, and held for 1 min. The temperature of the ECD was held at 330°C.

General Detection and Quantification Procedure: Capillary GC/ECD data were collected, archived in digital form, and processed using a PE-Nelson chromatography data system which included the model 970 interface and version 4.1 of Turbochrom™ chromatography software on a Pentium microcomputer. Six levels of OC pesticide standards were used for calibration, with each pesticide at concentrations ranging from 1 to 80 ng/mL. An instrumental internal standard (IIS) method with either PCB 030 or 207 was used to calculate the concentrations of the targeted compounds. Samples were analyzed and processed in two batches. Organochlorine pesticide results are presented in Table 4, designated by their CERC database number and are cross-referenced to their field identification number, site, and sample description. Concentrations are expressed as nanograms of analyte per gram of sample (wet weight).

Results for OC pesticides are not included in this report.

Acknowledgments: We thank all the chemists of the Organic Chemistry Section whose expertise in conducting trace organic analysis was integral to this research: Kevin Feltz, George Tegerdine, Mike Tanner, Tim McTague. Their dedication to detailed, high quality research and analysis is greatly appreciated.

References:

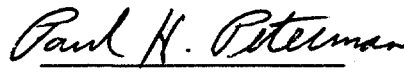
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Investigation of Exposure of Migratory Birds to PCBs, PCDDs, PCDFs, and Organochlorine
Pesticides Along the Hudson River
Final Report: June 30, 2000

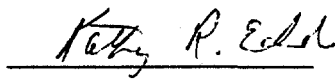
Prepared By:


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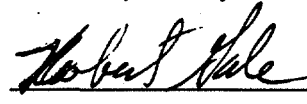
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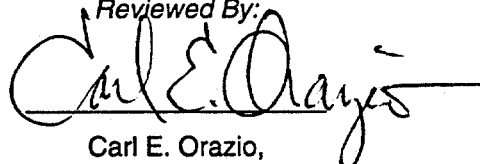
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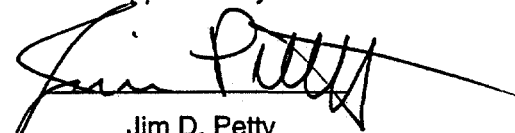
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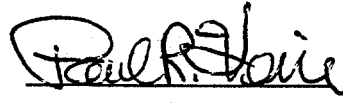
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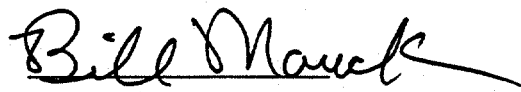

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Figure 1: Analysis for Organochlorine Pesticides, cPCBs, nPCBs, PCDDs, and PCDFs

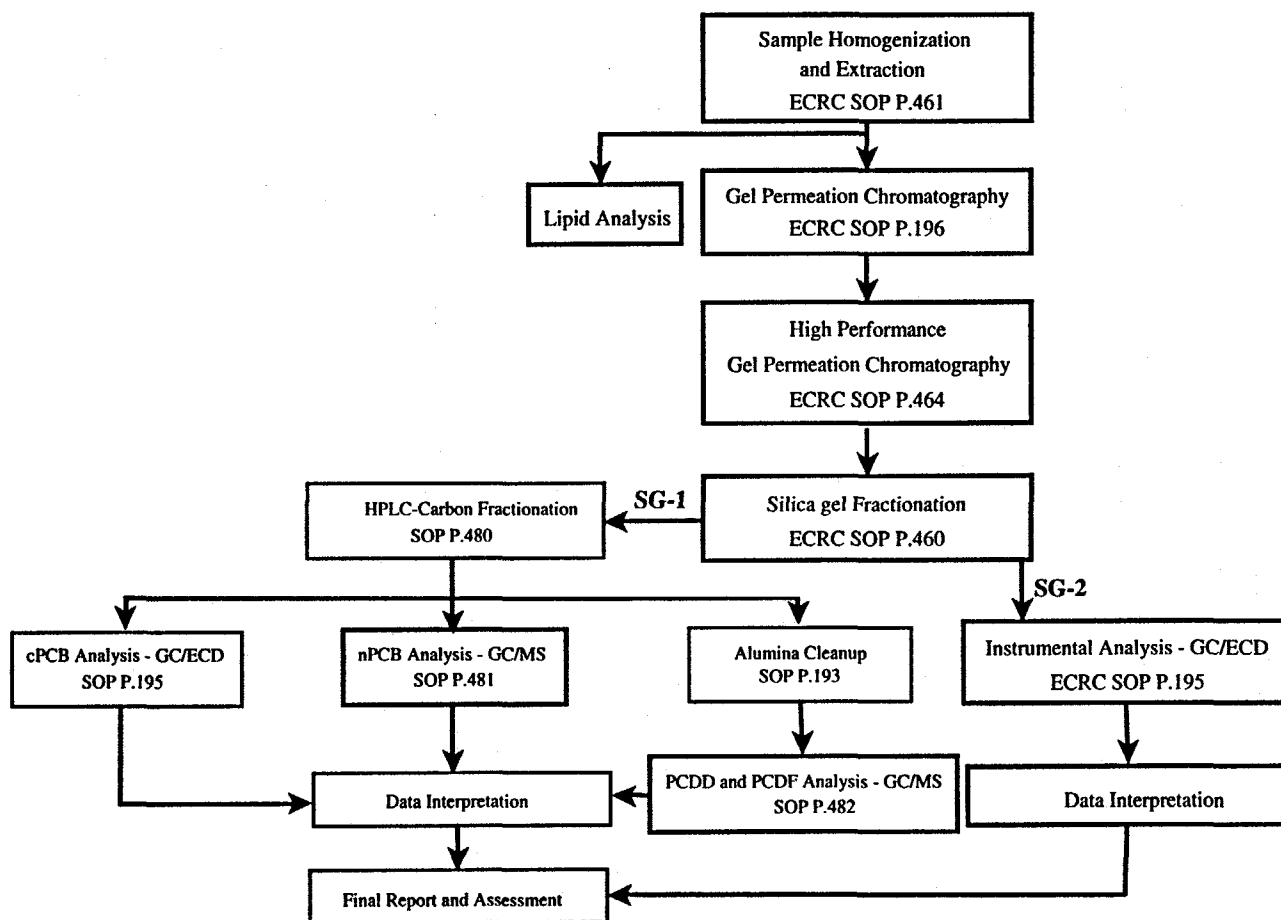


Table 2. Eagle Blood PCBs QC samples and Detection Limit Calculations

Sample ID	Field ID	Sample Type	Gram-equivalents for Analysis (g)	% Lipid	001	003	004	005	006	007	008	009	010
MS #2 PCBs uncorrected % Recovery	Matrix Spike	Bovine Serum	2.96	< 0.17	< 1.05*	< 0.01	5.1 32	< 0.01	1.4 30	0.11 20	3.2 20	0.23 20	< 0.01
MS#2 PCBs corrected	Matrix Spike	Bovine Serum	2.96	< 0.17	1.5	< 0.01	13	< 0.01	3.5	0.27	8.0	0.57	< 0.01
MB 102699 #1	Matrix Blank	Bovine Serum	2.94	< 0.17	< 0.48	< 0.01	1.50	< 0.01	< 0.13	< 0.03	< 0.11	< 0.05	< 0.01
MB 102699 #2	Matrix Blank	Bovine Serum	2.94	< 0.17	< 0.48	< 0.01	< 1.43	< 0.01	< 0.13	< 0.03	< 0.11	< 0.05	< 0.01
PB 102699 GCR1	Procedural Blank	Na ₂ SO ₄	---	---	0.826	0.000	3.988	0.000	0.000	0.038	0.090	0.053	0.000
PB 102699 GCR2	Procedural Blank	Na ₂ SO ₄	---	---	0.795	0.000	3.980	0.000	0.000	0.036	0.099	0.060	0.000
PB 102699 GCR3	Procedural Blank	Na ₂ SO ₄	---	---	1.033	0.000	3.887	0.000	0.000	0.030	0.093	0.049	0.000
PB 102999 GCR1	Procedural Blank	Na ₂ SO ₄	---	---	0.655	0.000	4.022	0.000	0.111	0.053	0.192	0.089	0.000
PB 102999 GCR2	Procedural Blank	Na ₂ SO ₄	---	---	0.432	0.000	4.081	0.000	0.201	0.052	0.205	0.102	0.000
PB 102999 GCR3	Procedural Blank	Na ₂ SO ₄	---	---	0.406	0.000	4.022	0.000	0.197	0.064	0.193	0.099	0.000
Average					0.691	0.000	3.997	0.000	0.085	0.046	0.145	0.075	0.000
Standard Deviation					0.243	0.000	0.064	0.000	0.098	0.013	0.056	0.024	0.000
MDL (ng) ¹	Method Detection Limit = PB Average + 3 (SD)				1.42	0.00	4.19	0.00	0.38	0.08	0.31	0.15	0.00
MQL* (ng) ¹	Method Quantitation Limit = PB Avg + 10 (SD)				3.12	0.00	4.64	0.00	1.07	0.17	0.71	0.32	0.00
¹ Non weight adjusted values in total ng (DLs format in table are < MDL, < MQL*)													

Table 2. Eagle Blood PCBs QC samples and Detection Limit Calculations

Sample ID	Field ID	Sample Type	015	016	017	018	019	020	022	024	025	026	027
MS #2 PCBs uncorrected % Recovery	Matrix Spike	Bovine Serum	1.8 37	< 0.05	5.5 47	11 37	< 1.23*	0.71 58	6.2 64	< 0.01	1.0 64	3.4 72	0.67 51
MS#2 PCBs corrected	Matrix Spike	Bovine Serum	4.5	< 0.05	14	27	< 1.23*	1.8	15	< 0.01	2.5	8.5	1.7
MB 102699 #1	Matrix Blank	Bovine Serum	< 0.01	< 0.05	< 0.05	< 0.33	< 0.50	< 0.01	< 0.11	< 0.01	< 0.02	< 0.11	< 0.01
MB 102699 #2	Matrix Blank	Bovine Serum	< 0.01	< 0.05	< 0.09	< 0.33	< 0.50	< 0.01	< 0.11	< 0.01	< 0.02	< 0.11	< 0.01
PB 102699 GCR1	Procedural Blank	Na ₂ SO ₄	0.000	0.046	0.103	0.285	0.832	0.013	0.091	0.000	0.035	0.102	0.017
PB 102699 GCR2	Procedural Blank	Na ₂ SO ₄	0.000	0.054	0.118	0.317	0.783	0.014	0.090	0.000	0.036	0.084	0.016
PB 102699 GCR3	Procedural Blank	Na ₂ SO ₄	0.000	0.061	0.100	0.309	0.804	0.015	0.093	0.000	0.029	0.105	0.018
PB 102999 GCR1	Procedural Blank	Na ₂ SO ₄	0.000	0.101	0.187	0.624	0.239	0.034	0.184	0.000	0.024	0.201	0.021
PB 102999 GCR2	Procedural Blank	Na ₂ SO ₄	0.000	0.097	0.179	0.625	0.209	0.034	0.202	0.000	0.024	0.206	0.023
PB 102999 GCR3	Procedural Blank	Na ₂ SO ₄	0.039	0.091	0.159	0.606	0.268	0.026	0.198	0.000	0.024	0.215	0.018
Average			0.007	0.075	0.141	0.461	0.523	0.023	0.143	0.000	0.029	0.152	0.019
Standard Deviation			0.016	0.024	0.039	0.173	0.312	0.010	0.057	0.000	0.006	0.061	0.003
MDL (ng) ¹	Method Detection Limit = PB Average		0.05	0.15	0.26	0.98	1.46	0.05	0.31	0.00	0.05	0.34	0.03
MQL* (ng) ¹	Method Quantitation Limit = PB Average		0.17	0.32	0.53	2.19	3.64	0.12	0.71	0.00	0.09	0.76	0.05
¹ Non weight adjusted values in total ng (DLs format in table are < MDL, < MQL*)													

Table 2. Eagle Blood PCBs QC samples and Detection Limit Calculations

Sample ID	Field ID	Sample Type	028	031	032	033	034	035	037,059	040	041	042	043
MS #2 PCBs uncorrected	Matrix Spike	Bovine Serum	16	14	5.5	9.1	0.11	0.03	1.4	1.6	1.1	5.9	0.87
% Recovery			65	69	54	65	151	76	63	28	29	75	116
MS#2 PCBs corrected	Matrix Spike	Bovine Serum	40	36	14	23	0.26	0.08	3.5	2.2	1.5	7.8	1.2
MB 102699 #1	Matrix Blank	Bovine Serum	< 0.27	< 0.20	< 0.10	< 0.13	< 0.02	< 0.01	< 0.01	< 0.03	< 0.02	< 0.13	< 0.01
MB 102699 #2	Matrix Blank	Bovine Serum	< 0.27	< 0.20	< 0.10	< 0.13	< 0.02	< 0.01	< 0.01	< 0.03	< 0.02	< 0.13	< 0.02
PB 102699 GCR1	Procedural Blank	Na ₂ SO ₄	0.284	0.204	0.066	0.121	0.042	0.000	0.000	0.001	0.006	0.312	0.026
PB 102699 GCR2	Procedural Blank	Na ₂ SO ₄	0.286	0.201	0.066	0.122	0.049	0.000	0.000	0.004	0.004	0.315	0.030
PB 102699 GCR3	Procedural Blank	Na ₂ SO ₄	0.291	0.207	0.056	0.125	0.043	0.000	0.000	0.004	0.005	0.262	0.033
PB 102999 GCR1	Procedural Blank	Na ₂ SO ₄	0.516	0.381	0.155	0.246	0.033	0.000	0.000	0.056	0.036	0.244	0.037
PB 102999 GCR2	Procedural Blank	Na ₂ SO ₄	0.519	0.392	0.168	0.245	0.040	0.005	0.000	0.047	0.039	0.214	0.041
PB 102999 GCR3	Procedural Blank	Na ₂ SO ₄	0.524	0.370	0.170	0.247	0.038	0.004	0.000	0.038	0.027	0.213	0.042
Average			0.403	0.293	0.114	0.184	0.041	0.003	0.000	0.025	0.020	0.260	0.035
Standard Deviation			0.127	0.097	0.056	0.068	0.005	0.003	0.000	0.025	0.016	0.045	0.006
MDL (ng) ¹	Method Detection Limit = PB Average		0.78	0.58	0.28	0.39	0.06	0.01	0.00	0.10	0.07	0.40	0.05
MQL* (ng) ¹	Method Quantitation Limit = PB Average		1.68	1.26	0.67	0.86	0.09	0.03	0.00	0.27	0.18	0.71	0.10
¹ Non weight adjusted values in total ng (DLs format in table are < MDL, < MQL*)													

Table 2. Eagle Blood PCBs QC samples and Detection Limit Calculations

Sample ID	Field ID	Sample Type	044	045	046	047	048	049	051	052	053	054	055
MS #2 PCBs uncorrected	Matrix Spike	Bovine Serum	17	1.1	0.41	6.2	NQ	14	0.93	22	3.7	< 0.01	0.20
% Recovery			72	19	19	80		71	73	71	65		66
MS#2 PCBs corrected	Matrix Spike	Bovine Serum	23	1.4	0.54	8.2	NQ	18	1.2	29	4.9	< 0.01	0.26
MB 102699 #1	Matrix Blank	Bovine Serum	< 0.32	< 0.06	< 0.01	0.17	< 0.01	< 0.29	< 0.02	< 0.39	< 0.05	< 0.01	< 0.01
MB 102699 #2	Matrix Blank	Bovine Serum	< 0.32	< 0.06	< 0.02	< 0.16	< 0.01	< 0.29	< 0.02	< 0.39	< 0.05	< 0.01	< 0.01
PB 102699 GCR1	Procedural Blank	Na ₂ SO ₄	0.259	0.020	0.004	0.185	7.854	0.251	0.022	0.363	0.065	0.000	0.000
PB 102699 GCR2	Procedural Blank	Na ₂ SO ₄	0.255	0.025	0.004	0.238	9.013	0.258	0.023	0.361	0.070	0.000	0.000
PB 102699 GCR3	Procedural Blank	Na ₂ SO ₄	0.240	0.024	0.005	0.164	10.453	0.259	0.021	0.367	0.072	0.000	0.000
PB 102999 GCR1	Procedural Blank	Na ₂ SO ₄	0.585	0.096	0.029	0.290	8.582	0.533	0.037	0.738	0.113	0.000	0.000
PB 102999 GCR2	Procedural Blank	Na ₂ SO ₄	0.577	0.080	0.025	0.361	9.576	0.545	0.039	0.732	0.098	0.000	0.000
PB 102999 GCR3	Procedural Blank	Na ₂ SO ₄	0.573	0.098	0.025	0.281	10.390	0.526	0.039	0.712	0.115	0.000	0.000
Average			0.415	0.057	0.015	0.253	9.316	0.395	0.030	0.546	0.089	0.000	0.000
Standard Deviation			0.179	0.038	0.012	0.073	1.026	0.153	0.009	0.199	0.022	0.000	0.000
MDL (ng) ¹	Method Detection Limit = PB Average		0.95	0.17	0.05	0.47	12.39	0.85	0.06	1.14	0.16	0.00	0.00
MQL* (ng) ¹	Method Quantitation Limit = PB Average		2.21	0.44	0.14	0.98	19.73	1.92	0.12	2.54	0.31	0.00	0.00
¹ Non weight adjusted values in total ng (DLs format in table are < MDL, < MQL*)													

Table 2. Eagle Blood PCBs QC samples and Detection Limit Calculations

Sample ID	Field ID	Sample Type	056,060	057	058	063	064	066	067	069	070	071	072
MS #2 PCBs uncorrected % Recovery	Matrix Spike	Bovine Serum	14 77	< 0.01	< 0.01	0.52 87	1.1 29	13 78	0.33 91	< 0.04	22 76	5.3 69	0.02 41
MS#2 PCBs corrected	Matrix Spike	Bovine Serum	19	< 0.01	0.15	0.69	1.5	17	0.43	0.05	30	7.1	0.02
MB 102699 #1	Matrix Blank	Bovine Serum	< 0.26	< 0.01	< 0.01	< 0.03	< 0.02	< 0.23	< 0.02	< 0.01	< 0.50	< 0.09	< 0.01
MB 102699 #2	Matrix Blank	Bovine Serum	< 0.26	< 0.01	< 0.01	0.06	< 0.02	< 0.23	< 0.02	< 0.01	< 0.50	< 0.09	< 0.01
PB 102699 GCR1	Procedural Blank	Na ₂ SO ₄	0.297	0.000	0.000	0.031	0.006	0.230	0.013	0.005	0.684	0.055	0.000
PB 102699 GCR2	Procedural Blank	Na ₂ SO ₄	0.312	0.000	0.000	0.029	0.004	0.237	0.019	0.005	0.659	0.067	0.000
PB 102699 GCR3	Procedural Blank	Na ₂ SO ₄	0.296	0.000	0.000	0.033	0.005	0.230	0.015	0.005	0.640	0.055	0.000
PB 102999 GCR1	Procedural Blank	Na ₂ SO ₄	0.511	0.000	0.000	0.039	0.036	0.469	0.035	0.005	1.055	0.173	0.000
PB 102999 GCR2	Procedural Blank	Na ₂ SO ₄	0.517	0.000	0.000	0.052	0.039	0.433	0.032	0.006	1.015	0.165	0.000
PB 102999 GCR3	Procedural Blank	Na ₂ SO ₄	0.504	0.000	0.000	0.058	0.027	0.414	0.026	0.005	1.061	0.124	0.000
Average			0.406	0.000	0.000	0.040	0.020	0.336	0.023	0.005	0.852	0.107	0.000
Standard Deviation			0.115	0.000	0.000	0.012	0.016	0.114	0.009	0.000	0.211	0.055	0.000
MDL (ng) ¹	Method Detection Limit = PB Avera		0.75	0.00	0.00	0.08	0.07	0.68	0.05	0.01	1.48	0.27	0.00
MQL* (ng) ¹	Method Quantitation Limit = PB Avera		1.55	0.00	0.00	0.16	0.18	1.48	0.11	0.01	2.96	0.65	0.00
¹ Non weight adjusted values in total ng (DLs format in table are < MDL, < MQL*)													

Table 2. Eagle Blood PCBs QC samples and Detection Limit Calculations

Sample ID	Field ID	Sample Type	074	075	082	083	084	085	086	087	089	091	092
MS #2 PCBs uncorrected % Recovery	Matrix Spike	Bovine Serum	10 73	0.22 83	3.0 78	1.1 87	6.5 70	4.5 82	0.06 74	14 82	0.28 73	3.6 78	5.8 89
MS#2 PCBs corrected	Matrix Spike	Bovine Serum	13	0.30	3.9	1.4	8.6	6.0	0.07	18	0.37	4.8	7.8
MB 102699 #1	Matrix Blank	Bovine Serum	< 0.19	< 0.01	< 0.08	< 0.03	< 0.18	< 0.23	< 0.01	< 0.45	< 0.01	< 0.13	< 0.10
MB 102699 #2	Matrix Blank	Bovine Serum	< 0.19	< 0.01	< 0.08	< 0.03	< 0.18	< 0.23	< 0.01	< 0.45	< 0.01	< 0.13	< 0.10
PB 102699 GCR1	Procedural Blank	Na ₂ SO ₄	0.182	0.001	0.112	0.069	0.252	0.489	0.000	0.609	0.009	0.134	0.236
PB 102699 GCR2	Procedural Blank	Na ₂ SO ₄	0.212	0.008	0.108	0.061	0.277	0.499	0.000	0.525	0.012	0.130	0.238
PB 102699 GCR3	Procedural Blank	Na ₂ SO ₄	0.210	0.002	0.106	0.064	0.254	0.498	0.000	0.472	0.012	0.135	0.240
PB 102999 GCR1	Procedural Blank	Na ₂ SO ₄	0.389	0.010	0.173	0.079	0.379	0.581	0.000	0.915	0.013	0.239	0.268
PB 102999 GCR2	Procedural Blank	Na ₂ SO ₄	0.371	0.009	0.157	0.083	0.382	0.575	0.000	0.885	0.012	0.245	0.270
PB 102999 GCR3	Procedural Blank	Na ₂ SO ₄	0.360	0.008	0.171	0.080	0.385	0.595	0.000	0.893	0.013	0.249	0.274
Average			0.287	0.006	0.138	0.073	0.322	0.540	0.000	0.717	0.012	0.189	0.254
Standard Deviation			0.095	0.004	0.032	0.009	0.067	0.049	0.000	0.203	0.001	0.061	0.018
MDL (ng) ¹	Method Detection Limit = PB Avera		0.57	0.02	0.24	0.10	0.52	0.69	0.00	1.33	0.02	0.37	0.31
MQL* (ng) ¹	Method Quantitation Limit = PB Av		1.24	0.04	0.46	0.16	0.99	1.03	0.00	2.75	0.03	0.80	0.43
¹ Non weight adjusted values in total ng (DLs format in table are < MDL, < MQL*)													

Table 2. Eagle Blood PCBs QC samples and Detection Limit Calculations

Sample ID	Field ID	Sample Type	095	096	097	099	101	102	105	109	110	112	113
MS #2 PCBs uncorrected % Recovery	Matrix Spike	Bovine Serum	20 77	0.13 90	7.7 82	7.3 79	20 78	0.38 73	9.4 83	1.6 90	23 78	< 0.54 *	< 0.01
MS#2 PCBs corrected	Matrix Spike	Bovine Serum	27	0.17	10	9.8	26	0.51	13	2.1	31	< 0.54 *	< 0.01
MB 102699 #1	Matrix Blank	Bovine Serum	< 0.49	< 0.01	< 0.24	< 0.24	< 0.55	< 0.01	< 0.45	< 0.07	< 0.81	< 0.26	< 0.01
MB 102699 #2	Matrix Blank	Bovine Serum	< 0.49	< 0.01	< 0.24	< 0.24	< 0.55	< 0.01	< 0.45	< 0.07	< 0.81	< 0.26	< 0.01
PB 102699 GCR1	Procedural Blank	Na ₂ SO ₄	0.702	0.033	0.327	0.434	0.635	0.000	0.955	0.102	1.001	0.400	0.000
PB 102699 GCR2	Procedural Blank	Na ₂ SO ₄	0.684	0.033	0.333	0.451	0.643	0.000	0.973	0.110	1.002	0.544	0.000
PB 102699 GCR3	Procedural Blank	Na ₂ SO ₄	0.678	0.031	0.327	0.313	0.676	0.000	0.921	0.112	1.016	0.545	0.000
PB 102999 GCR1	Procedural Blank	Na ₂ SO ₄	1.041	0.161	0.498	0.517	1.110	0.015	1.084	0.146	1.644	0.322	0.000
PB 102999 GCR2	Procedural Blank	Na ₂ SO ₄	1.024	0.183	0.505	0.519	1.109	0.012	1.125	0.167	1.610	0.250	0.000
PB 102999 GCR3	Procedural Blank	Na ₂ SO ₄	1.037	0.186	0.503	0.515	1.090	0.013	1.130	0.137	1.674	0.359	0.000
Average			0.861	0.105	0.416	0.458	0.877	0.007	1.031	0.129	1.325	0.403	0.000
Standard Deviation			0.190	0.080	0.095	0.080	0.248	0.007	0.092	0.025	0.349	0.120	0.000
MDL (ng) ¹	Method Detection Limit = PB Avera		1.43	0.34	0.70	0.70	1.62	0.03	1.31	0.20	2.37	0.76	0.00
MQL* (ng) ¹	Method Quantitation Limit = PB Ave		2.76	0.90	1.36	1.26	3.35	0.08	1.96	0.38	4.82	1.60	0.00
¹ Non weight adjusted values in total ng (DLs format in table are < MDL, < MQL*)													

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Table 2. Eagle Blood PCBs QC samples and Detection Limit Calculations

Sample ID	Field ID	Sample Type	114	115	117	118	119	122	123	128	129	130	131
MS #2 PCBs uncorrected % Recovery	Matrix Spike	Bovine Serum	0.66 82	1.0 121	0.85 19	16 79	0.35 77	< 0.46 *	0.20 71	4.2 79	1.3 29	1.4 84	0.46 84
MS#2 PCBs corrected	Matrix Spike	Bovine Serum	0.88	1.3	1.1	21	0.46	< 0.46 *	0.27	5.6	1.7	1.8	0.62
MB 102699 #1	Matrix Blank	Bovine Serum	0.08	< 0.02	< 0.01	< 0.87	< 0.11	< 0.18	0.04	< 0.29	< 0.24	< 0.08	< 0.01
MB 102699 #2	Matrix Blank	Bovine Serum	< 0.02	< 0.02	< 0.02	< 0.87	< 0.11	< 0.18	< 0.03	< 0.29	< 0.24	< 0.08	< 0.01
PB 102699 GCR1	Procedural Blank	Na ₂ SO ₄	0.034	0.034	0.025	1.392	0.160	0.199	0.000	0.421	0.456	0.143	0.020
PB 102699 GCR2	Procedural Blank	Na ₂ SO ₄	0.044	0.034	0.025	1.443	0.175	0.275	0.000	0.428	0.478	0.145	0.030
PB 102699 GCR3	Procedural Blank	Na ₂ SO ₄	0.044	0.039	0.025	1.400	0.166	0.332	0.000	0.504	0.340	0.186	0.027
PB 102999 GCR1	Procedural Blank	Na ₂ SO ₄	0.037	0.021	0.039	1.953	0.031	0.073	0.036	0.640	0.199	0.162	0.029
PB 102999 GCR2	Procedural Blank	Na ₂ SO ₄	0.031	0.025	0.043	1.908	0.032	0.050	0.035	0.622	0.195	0.171	0.033
PB 102999 GCR3	Procedural Blank	Na ₂ SO ₄	0.031	0.029	0.042	1.987	0.030	0.067	0.033	0.640	0.190	0.186	0.023
Average			0.037	0.030	0.033	1.681	0.099	0.166	0.017	0.542	0.310	0.166	0.027
Standard Deviation			0.006	0.007	0.009	0.296	0.075	0.120	0.019	0.105	0.134	0.019	0.005
MDL (ng) ¹	Method Detection Limit = PB Avera		0.05	0.05	0.06	2.57	0.32	0.53	0.07	0.86	0.71	0.22	0.04
MQL* (ng) ¹	Method Quantitation Limit = PB Av		0.10	0.10	0.12	4.64	0.85	1.37	0.21	1.59	1.65	0.36	0.07
¹ Non weight adjusted values in total ng (DLs format in table are < MDL, < MQL*)													

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Table 2. Eagle Blood PCBs QC samples and Detection Limit Calculations

Sample ID	Field ID	Sample Type	132	133	134	136	137	138	139	141	144	146	147
MS #2 PCBs uncorrected	Matrix Spike	Bovine Serum	16	0.39	1.8	4.8	1.3	28	0.38	9.4	2.6	3.6	0.18
% Recovery			91	75	82	79	87	85	83	84	82	80	63
MS#2 PCBs corrected	Matrix Spike	Bovine Serum	21	0.52	2.4	6.4	1.7	38	0.50	12	3.5	4.9	0.24
MB 102699 #1	Matrix Blank	Bovine Serum	< 0.74	< 0.04	< 0.06	< 0.13	< 0.45	< 2.37	< 0.06	< 0.81	< 0.08	< 0.34	< 0.06
MB 102699 #2	Matrix Blank	Bovine Serum	< 0.74	< 0.04	< 0.06	< 0.13	< 0.45	< 2.37	< 0.06	< 0.81	< 0.08	< 0.34	< 0.06
PB 102699 GCR1	Procedural Blank	Na ₂ SO ₄	0.000	0.035	0.100	0.156	0.712	1.900	0.095	0.285	0.082	0.344	0.114
PB 102699 GCR2	Procedural Blank	Na ₂ SO ₄	0.000	0.033	0.101	0.167	0.788	2.040	0.115	0.348	0.081	0.342	0.120
PB 102699 GCR3	Procedural Blank	Na ₂ SO ₄	0.000	0.032	0.096	0.178	0.788	2.167	0.114	0.303	0.105	0.326	0.119
PB 102999 GCR1	Procedural Blank	Na ₂ SO ₄	0.977	0.066	0.135	0.267	0.253	4.249	0.064	1.171	0.144	0.637	0.071
PB 102999 GCR2	Procedural Blank	Na ₂ SO ₄	1.058	0.070	0.136	0.262	0.289	4.264	0.051	1.340	0.155	0.635	0.057
PB 102999 GCR3	Procedural Blank	Na ₂ SO ₄	1.019	0.076	0.140	0.277	0.300	4.460	0.054	1.313	0.169	0.683	0.083
Average			0.509	0.052	0.118	0.218	0.522	3.180	0.082	0.793	0.123	0.495	0.094
Standard Deviation			0.558	0.021	0.021	0.056	0.266	1.259	0.029	0.531	0.038	0.173	0.027
MDL (ng) ¹	Method Detection Limit = PB Avera		2.18	0.11	0.18	0.39	1.32	6.96	0.17	2.38	0.24	1.01	0.18
MQL* (ng) ¹	Method Quantitation Limit = PB Av		6.09	0.26	0.33	0.78	3.18	15.77	0.38	6.10	0.51	2.23	0.37
¹ Non weight adjusted values in total ng (DLs format in table are < MDL, < MQL*)													

Table 2. Eagle Blood PCBs QC samples and Detection Limit Calculations

Sample ID	Field ID	Sample Type	149	151	153	156	157	158	163	164	166	167	170
MS #2 PCBs uncorrected % Recovery	Matrix Spike	Bovine Serum	22 80	8.0 79	25 81	1.5 82	0.59 89	3.6 84	5.5 85	2.5 79	0.13 107	0.75 80	10 80
MS#2 PCBs corrected	Matrix Spike	Bovine Serum	30	11	33	2.0	0.79	4.8	7.3	3.4	0.17	1.0	14
MB 102699 #1	Matrix Blank	Bovine Serum	< 1.01	< 0.31	< 2.00	< 0.12	< 0.07	< 0.31	< 0.36	< 0.11	< 0.01	< 0.19	< 0.95
MB 102699 #2	Matrix Blank	Bovine Serum	< 1.01	< 0.31	< 2.00	< 0.12	< 0.07	< 0.31	< 0.36	< 0.11	< 0.01	< 0.19	< 0.95
PB 102699 GCR1	Procedural Blank	Na ₂ SO ₄	0.710	0.176	1.479	0.323	0.170	0.344	0.449	0.206	0.000	0.360	0.601
PB 102699 GCR2	Procedural Blank	Na ₂ SO ₄	0.702	0.151	1.506	0.279	0.174	0.393	0.437	0.257	0.000	0.366	0.626
PB 102699 GCR3	Procedural Blank	Na ₂ SO ₄	0.712	0.168	1.528	0.288	0.165	0.289	0.508	0.210	0.000	0.430	0.611
PB 102999 GCR1	Procedural Blank	Na ₂ SO ₄	1.770	0.517	3.530	0.316	0.171	0.606	0.707	0.240	0.000	0.233	1.714
PB 102999 GCR2	Procedural Blank	Na ₂ SO ₄	1.767	0.487	3.525	0.279	0.169	0.612	0.725	0.227	0.000	0.234	1.680
PB 102999 GCR3	Procedural Blank	Na ₂ SO ₄	1.755	0.531	3.575	0.262	0.191	0.588	0.772	0.293	0.000	0.235	1.486
Average			1.236	0.338	2.524	0.291	0.173	0.472	0.600	0.239	0.000	0.310	1.120
Standard Deviation			0.578	0.191	1.117	0.024	0.009	0.146	0.151	0.033	0.000	0.086	0.561
MDL (ng) ¹	Method Detection Limit = PB Avera		2.97	0.91	5.87	0.36	0.20	0.91	1.05	0.34	0.00	0.57	2.80
MQL* (ng) ¹	Method Quantitation Limit = PB Avera		7.02	2.24	13.69	0.53	0.27	1.94	2.11	0.56	0.00	1.17	6.73
¹ Non weight adjusted values in total ng (DLs format in table are < MDL, < MQL*)													

Table 2. Eagle Blood PCBs QC samples and Detection Limit Calculations

Sample ID	Field ID	Sample Type	171	172	173	174	175	176	177	178	179	180	183
MS #2 PCBs uncorrected % Recovery	Matrix Spike	Bovine Serum	2.8 83	1.7 83	< 1.2*	10 80	0.66 101	0.79 87	5.4 84	2.1 77	4.0 79	21 84	8.4 85
MS#2 PCBs corrected	Matrix Spike	Bovine Serum	3.8	2.2	0.28	13	0.83	0.99	6.7	2.6	5.0	26	11
MB 102699 #1	Matrix Blank	Bovine Serum	< 0.15	< 0.01	< 0.47	< 0.40	< 0.01	< 0.05	< 0.30	< 0.01	< 0.21	< 1.49	< 0.90
MB 102699 #2	Matrix Blank	Bovine Serum	< 0.15	< 0.15	< 0.47	< 0.40	< 0.01	< 0.05	< 0.30	< 0.01	< 0.21	< 1.49	< 0.90
PB 102699 GCR1	Procedural Blank	Na ₂ SO ₄	0.093	0.000	0.773	0.490	0.000	0.093	0.248	0.000	0.043	0.750	0.178
PB 102699 GCR2	Procedural Blank	Na ₂ SO ₄	0.095	0.000	0.759	0.492	0.000	0.089	0.259	0.000	0.046	0.740	0.182
PB 102699 GCR3	Procedural Blank	Na ₂ SO ₄	0.096	0.000	0.741	0.503	0.000	0.067	0.253	0.000	0.045	0.732	0.204
PB 102999 GCR1	Procedural Blank	Na ₂ SO ₄	0.259	0.209	0.200	0.812	0.000	0.040	0.561	0.000	0.300	2.388	1.360
PB 102999 GCR2	Procedural Blank	Na ₂ SO ₄	0.255	0.206	0.200	0.806	0.000	0.037	0.570	0.000	0.324	2.411	1.285
PB 102999 GCR3	Procedural Blank	Na ₂ SO ₄	0.263	0.212	0.200	0.808	0.000	0.040	0.489	0.000	0.322	2.511	1.355
Average			0.177	0.105	0.479	0.652	0.000	0.061	0.397	0.000	0.180	1.589	0.761
Standard Deviation			0.090	0.114	0.306	0.172	0.000	0.026	0.159	0.000	0.148	0.930	0.628
MDL (ng) ¹	Method Detection Limit = PB Avera		0.45	0.45	1.40	1.17	0.00	0.14	0.88	0.00	0.63	4.38	2.64
MQL* (ng) ¹	Method Quantitation Limit = PB Av		1.08	1.25	3.53	2.37	0.00	0.32	1.99	0.00	1.66	10.89	7.04
¹ Non weight adjusted values in total ng (DLs format in table are < MDL, < MQL*)													

Table 2. Eagle Blood PCBs QC samples and Detection Limit Calculations

Sample ID	Field ID	Sample Type	185	187	189	190	191	193	194	195	196	197	198
MS #2 PCBs uncorrected	Matrix Spike	Bovine Serum	1.3	10	0.45	5.2	0.42	1.2	3.7	1.9	2.7	0.45	0.20
% Recovery			86	82	83	89	90	83	83	83	85	74	80
MS#2 PCBs corrected	Matrix Spike	Bovine Serum	1.7	13	0.56	6.6	0.53	1.4	4.6	2.4	3.3	0.57	0.25
MB 102699 #1	Matrix Blank	Bovine Serum	< 0.05	< 0.68	< 0.10	< 0.32	< 0.20	< 0.10	< 0.21	< 0.10	< 0.21	< 0.01	0.03
MB 102699 #2	Matrix Blank	Bovine Serum	< 0.05	< 0.68	< 0.10	< 0.01	< 0.20	< 0.10	< 0.21	< 0.10	< 0.21	< 0.51	< 0.01
PB 102699 GCR1	Procedural Blank	Na ₂ SO ₄	0.048	1.923	0.062	0.063	0.347	0.209	0.589	0.112	0.289	0.000	0.000
PB 102699 GCR2	Procedural Blank	Na ₂ SO ₄	0.039	1.937	0.073	0.055	0.356	0.193	0.571	0.132	0.283	0.000	0.000
PB 102699 GCR3	Procedural Blank	Na ₂ SO ₄	0.038	1.823	0.083	0.055	0.334	0.217	0.596	0.119	0.293	0.000	0.000
PB 102999 GCR1	Procedural Blank	Na ₂ SO ₄	0.095	1.864	0.166	0.504	0.133	0.245	0.573	0.199	0.429	0.729	0.009
PB 102999 GCR2	Procedural Blank	Na ₂ SO ₄	0.082	1.853	0.170	0.445	0.140	0.241	0.559	0.207	0.421	0.686	0.011
PB 102999 GCR3	Procedural Blank	Na ₂ SO ₄	0.106	1.875	0.182	0.453	0.129	0.248	0.566	0.209	0.464	0.700	0.010
Average			0.068	1.879	0.122	0.262	0.240	0.226	0.576	0.163	0.363	0.353	0.005
Standard Deviation			0.030	0.043	0.055	0.225	0.116	0.022	0.014	0.047	0.083	0.386	0.006
MDL (ng) ¹	Method Detection Limit = PB Avera		0.16	2.01	0.29	0.94	0.59	0.29	0.62	0.30	0.61	1.51	0.02
MQL* (ng) ¹	Method Quantitation Limit = PB Av		0.37	2.31	0.68	2.51	1.40	0.45	0.72	0.63	1.20	4.22	0.06
¹ Non weight adjusted values in total ng (DLs format in table are < MDL, < MQL*)													

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Table 2. Eagle Blood PCBs QC samples and Detection Limit Calculations

Sample ID	Field ID	Sample Type	199	200	201	202	203	205	206	208	209	Total PCBs
MS #2 PCBs uncorrected	Matrix Spike	Bovine Serum	3.7	0.83	0.59	0.73	2.8	0.20	1.0	0.36	1.0	629
% Recovery			83	88	84	83	82	90	82	76	50	70
MS#2 PCBs corrected	Matrix Spike	Bovine Serum	4.7	1.0	0.74	0.91	3.5	0.26	1.3	0.45	1.2	931
MB 102699 #1	Matrix Blank	Bovine Serum	< 0.27	< 0.03	< 0.11	< 0.43	< 0.16	< 0.01	< 0.05	< 0.18	< 0.39	11
MB 102699 #2	Matrix Blank	Bovine Serum	< 0.27	< 0.03	< 0.11	< 0.43	< 0.16	< 0.01	< 0.05	< 0.18	< 0.39	7.9
PB 102699 GCR1	Procedural Blank	Na ₂ SO ₄	0.297	0.009	0.139	0.625	0.160	0.000	0.078	0.247	1.027	45.0
PB 102699 GCR2	Procedural Blank	Na ₂ SO ₄	0.301	0.010	0.207	0.665	0.161	0.000	0.103	0.336	1.036	47.2
PB 102699 GCR3	Procedural Blank	Na ₂ SO ₄	0.298	0.009	0.182	0.671	0.140	0.430	0.088	0.299	1.068	48.7
PB 102999 GCR1	Procedural Blank	Na ₂ SO ₄	0.516	0.049	0.046	0.110	0.276	0.000	0.095	0.105	0.960	65.6
PB 102999 GCR2	Procedural Blank	Na ₂ SO ₄	0.517	0.039	0.043	0.113	0.278	0.000	0.099	0.101	0.964	66.4
PB 102999 GCR3	Procedural Blank	Na ₂ SO ₄	0.540	0.044	0.057	0.108	0.322	0.000	0.114	0.093	1.048	67.9
Average			0.412	0.027	0.112	0.382	0.223	0.072	0.096	0.197	1.017	56.8
Standard Deviation			0.124	0.019	0.073	0.298	0.078	0.176	0.012	0.110	0.045	10.9
MDL (ng) ¹	Method Detection Limit = PB Avera		0.78	0.08	0.33	1.28	0.46	0.60	0.13	0.53	1.15	89
MQL* (ng) ¹	Method Quantitation Limit = PB Av		1.65	0.22	0.84	3.36	1.00	1.83	0.22	1.30	1.47	165
¹ Non weight adjusted values in total ng (DLs format in table are < MDL, < MQL*)												

Table 1. PCB congener Concentrations in Eagle Blood (ng/g)

Sample ID	Field ID	Sample Type	Gram-equivalents for Analysis (g)	% Lipid	001	003	004	005	006	007	008	009	010
19848-s	BE-A-BL904-98	Eagle Blood	2.65	0.37	0.98	< 0.01	4.6	< 0.01	0.13	0.06	0.14	0.05	0.09
19849-s	BE-A-BL949-98	Eagle Blood	3.87	0.51	0.69	< 0.01	2.6	< 0.01	0.12	0.05	0.14	< 0.03	0.05
19850-s	BE-IM-BL935-98	Eagle Blood	3.25	0.30	< 0.26	< 0.01	11.6	< 0.01	0.95	< 0.02	1.4	0.17	1.40
19851-s	BE-A-BL913-98	Eagle Blood	2.63	0.37	< 0.32	< 0.01	3.3	< 0.01	0.31	< 0.02	0.44	< 0.05	0.04
19852-s	BE-A-BL956-98	Eagle Blood	2.18	0.90	< 0.38	< 0.01	4.1	< 0.01	0.11	0.03	0.19	0.06	0.06
19853-s	BE-IM-BL914-98	Eagle Blood	0.99	0.99	< 1.4	< 0.01	9.0	< 0.01	0.70	0.13	0.70	0.42	0.19
19854-s	BE-BL921-98	Eagle Blood	2.92	0.67	< 0.29	< 0.01	2.8	< 0.01	0.73	0.07	0.88	0.36	0.04
19855-s	BE-A-BL898-97	Eagle Blood	3.14	0.31	0.33	< 0.01	2.6	< 0.01	0.06	< 0.03	0.20	< 0.05	0.05
19856-s	BE-A-BL968-99	Eagle Blood	1.52	0.97	1.1	< 0.01	5.2	< 0.01	1.1	0.10	3.4	0.28	0.06
19857-s	BE-NE-BL950-98	Eagle Blood	3.93	0.87	< 0.21	< 0.01	2.3	< 0.01	0.27	0.02	0.38	0.07	0.05
19858-s	BE-NE-BL911A-98	Eagle Blood	3.27	0.60	0.39	0.11	2.5	< 0.01	0.45	< 0.02	0.46	< 0.04	0.03
19859-s	BE-NE-BL911B-98	Eagle Blood	3.43	0.43	0.82	< 0.01	3.9	< 0.01	0.29	0.03	0.34	0.13	0.19
19860-s	BE-NE-BL911C-98	Eagle Blood	3.17	0.15	1.5	< 0.01	3.0	< 0.01	0.32	0.18	0.33	0.04	0.04
20026-s	BE-IM-BL976-99	Eagle Blood	2.87	0.34	< 0.49	< 0.01	1.7	< 0.01	< 0.13	< 0.03	< 0.11	< 0.05	< 0.01
20027-w	BE-NE-BL972A-99	Eagle Blood	3.05	0.48	< 0.47	< 0.01	3.2	< 0.01	0.19	< 0.03	0.32	0.05	< 0.01
20028-w	BE-NE-BL972B-99	Eagle Blood	3.16	0.31	< 0.45	< 0.01	1.4	< 0.01	< 0.12	< 0.03	< 0.10	< 0.05	< 0.01
20029-w	BE-NE-BL971-99	Eagle Blood	3.08	0.16	< 0.46	< 0.01	1.5	< 0.01	< 0.12	< 0.03	0.15	< 0.05	< 0.01
20030-w	BE-NE-BL974-99	Eagle Blood	3.05	0.16	< 0.47	< 0.01	< 1.4	< 0.01	< 0.12	< 0.03	< 0.10	< 0.05	< 0.01
20031-w	BE-IM-BL981-99	Eagle Blood	3.50	0.28	< 0.41	< 0.01	< 1.2	< 0.01	< 0.11	< 0.02	0.13	< 0.04	< 0.01
Notes: s = serum, w = whole blood.													
NQ* = not quantifiable, interference.													

Table 1. PCB congener Concentrations in Eagle Blood (ng/g)

Sample ID	015	016	017	018	019	020	022	024	025	026	027	028	031	032	033
19848-s	0.04	0.38	3.9	3.8	0.76	0.10	0.93	< 0.01	0.82	5.4	1.4	6.8	5.2	5.7	0.34
19849-s	< 0.01	0.33	3.4	2.4	< 0.38	0.11	0.80	0.01	0.84	5.7	0.94	6.0	6.3	4.8	0.26
19850-s	0.04	1.9	8.1	9.7	5.9	0.36	2.0	0.21	1.4	18	4.2	21	23	11	0.37
19851-s	< 0.01	0.22	1.9	1.9	1.1	0.04	0.63	< 0.01	0.15	5.8	0.78	9.2	5.5	2.9	< 0.15
19852-s	0.04	0.14	0.79	1.4	< 0.67	0.38	0.67	0.04	0.20	1.8	0.75	3.7	2.0	1.7	0.15
19853-s	< 0.01	0.79	5.6	11	1.85	0.20	1.5	< 0.01	1.2	12	5.4	7.8	6.4	8.8	0.46
19854-s	< 0.01	0.87	6.4	9.4	< 0.50	0.32	1.7	0.03	1.2	15	3.9	8.1	8.4	9.2	0.56
19855-s	< 0.01	0.84	5.3	0.57	< 0.46	0.07	2.9	0.06	0.51	4.0	< 0.01	18	12	8.6	0.27
19856-s	< 0.01	8.3	42	20	1.3	1.3	15	0.26	10	52	4.8	158	112	55	2.43
19857-s	0.03	0.80	4.9	7.3	1.3	0.27	1.4	0.11	0.82	13	3.0	11	8.0	7.9	0.33
19858-s	0.03	0.50	6.4	9.5	< 0.45	0.30	1.3	0.09	0.94	14	4.8	8.4	7.3	9.6	0.36
19859-s	0.03	0.57	4.1	5.6	2.0	0.17	0.73	0.16	0.5	9.4	2.2	4.9	4.7	6.6	0.24
19860-s	0.06	0.19	3.5	6.2	< 0.46	0.16	6.66	0.04	0.44	8.4	2.5	4.2	4.1	5.6	0.21
20026-s	< 0.01	< 0.05	0.37	0.58	< 0.51	0.02	0.18	< 0.01	0.33	1.3	0.22	1.3	0.97	0.62	0.17
20027-w	< 0.01	0.43	6.1	4.9	< 0.48	0.27	1.2	0.03	1.2	13	2.1	11	12	9.1	0.51
20028-w	< 0.01	0.08	1.6	1.1	< 0.46	0.09	0.37	< 0.01	0.43	4.1	0.43	3.6	3.8	2.6	0.18
20029-w	< 0.01	0.10	1.7	1.2	< 0.47	0.07	0.29	< 0.01	0.31	3.5	0.37	2.8	3.1	2.3	0.13
20030-w	< 0.01	0.10	0.88	0.75	< 0.48	0.03	0.22	< 0.01	0.25	3.2	0.28	2.7	2.7	1.5	< 0.13
20031-w	< 0.01	0.25	2.6	1.0	< 0.42	0.16	1.3	< 0.01	1.1	7.9	0.64	12	11	4.5	0.28
Notes: s = serum, w = whole blood.															
NQ* = not quantifiable, interference.															

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Table 1. PCB congener Concentrations in Eagle Blood (ng/g)

Sample ID	034	035	037,059	040	041	042	043	044	045	046	047	048	049	051	052
19848-s	0.25	< 0.01	1.0	0.45	0.07	5.0	0.49	8.6	0.25	0.09	16	NQ*	20	0.93	13
19849-s	0.21	< 0.01	0.54	0.27	0.11	4.0	0.35	4.1	0.21	0.06	14	NQ*	16	0.57	5.2
19850-s	0.54	< 0.01	1.8	3.6	0.67	13	2.1	17	2.9	0.88	56	NQ*	64	1.6	27
19851-s	0.18	0.11	0.62	0.65	0.15	6.5	0.58	6.0	0.41	0.07	39	NQ*	41	0.43	11
19852-s	< 0.03	0.01	0.24	0.57	0.15	4.9	0.48	2.8	0.48	0.09	17	NQ*	15	0.38	4.6
19853-s	0.57	0.14	2.1	1.7	0.26	6.6	1.7	19	1.7	0.67	19	NQ*	25	1.4	22
19854-s	0.43	0.05	1.4	1.9	0.50	5.2	1.3	15	1.6	0.49	12	NQ*	20	0.99	17
19855-s	0.32	0.02	1.2	3.8	1.8	22	1.1	11	1.3	0.04	73	NQ*	95	1.6	26
19856-s	2.96	0.12	10	17	5.0	79	8.5	90	12	1.81	352	NQ*	527	12	169
19857-s	0.50	0.04	3.1	2.2	0.36	6.9	1.1	22	2.0	0.62	27	NQ*	32	1.1	33
19858-s	0.53	< 0.01	2.4	1.0	0.32	7.0	1.5	24	1.3	0.44	27	NQ*	34	1.90	37
19859-s	0.36	0.03	1.4	1.6	0.25	4.0	0.83	14	1.8	0.59	16	NQ*	20	0.96	20
19860-s	0.32	0.01	1.2	0.77	0.16	3.4	0.77	14	1.2	0.40	14	NQ*	18	0.89	20
20026-s	0.05	< 0.01	0.28	0.07	0.03	1.7	0.09	3.6	< 0.06	0.02	4.4	NQ*	5.1	0.31	4.8
20027-w	0.66	< 0.01	2.3	0.72	0.19	5.4	0.36	14	0.75	0.31	22	NQ*	27	1.7	20
20028-w	0.22	< 0.01	0.61	0.37	0.07	2.7	0.13	7.4	0.27	0.11	9.8	NQ*	13	0.69	9.7
20029-w	0.19	< 0.01	0.49	0.50	0.11	1.8	0.16	5.2	0.47	0.17	8.2	NQ*	9.4	0.49	7.3
20030-w	0.19	< 0.01	0.55	0.19	0.04	2.0	0.21	5.9	0.1*	0.06	10	NQ*	11	0.48	9.3
20031-w	0.50	< 0.01	1.3	0.29	0.19	8.5	1.1	8.5	0.28	0.06	31	NQ*	39	1.5	21
Notes: s = serum, w = whole blood.															
NQ* = not quantifiable, interference.															

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Table 1. PCB congener Concentrations in Eagle Blood (ng/g)

Sample ID	053	054	055	056,060	057	058	063	064	066	067	069	070	071	072	074
19848-s	2.1	< 0.01	< 0.01	3.9	< 0.01	0.02	1.9	0.07	9.6	0.12	0.22	5.0	5.2	1.0	9.4
19849-s	0.72	< 0.01	0.02	3.9	< 0.01	0.02	1.9	0.11	9.5	0.11	0.25	5.8	3.0	1.1	9.2
19850-s	3.6	0.04	0.03	14	0.08	0.39	6.8	0.67	40	0.17	0.67	14	8.4	5.9	33
19851-s	0.72	< 0.01	< 0.01	9.9	< 0.01	0.05	5.9	0.15	35	< 0.02	0.45	6.4	3.8	4.1	29
19852-s	0.90	< 0.01	< 0.01	7.8	< 0.01	0.02	2.6	0.15	17	0.09	0.33	5.9	2.1	1.6	16
19853-s	4.7	0.02	< 0.01	6.3	< 0.24	0.18	1.4	0.26	9.7	0.27	0.14	9.8	10	1.8	10
19854-s	2.7	< 0.01	0.02	6.5	< 0.01	0.15	1.1	0.50	9.8	0.17	0.10	11	5.8	0.95	8.3
19855-s	0.17	< 0.01	< 0.01	21	< 0.01	0.01	11	1.8	65	0.05	1.6	17	6.8	6.0	52
19856-s	12	0.05	0.21	102	< 0.01	1.0	52	5.0	322	0.14	5.2	111	48	28	236
19857-s	3.7	0.02	0.02	7.3	< 0.01	0.22	2.7	0.36	16	0.17	0.27	8.4	8.0	3.2	14
19858-s	5.3	< 0.01	0.02	5.9	< 0.01	0.21	2.0	0.32	12	0.16	0.29	6.7	10	3.1	11
19859-s	2.3	0.02	< 0.01	3.6	0.11	0.14	1.2	0.25	6.9	0.14	0.17	4.5	4.6	1.4	6.8
19860-s	2.9	0.01	< 0.01	2.9	< 0.01	0.13	0.94	0.16	5.6	0.15	0.12	4.0	5.2	1.2	5.7
20026-s	0.66	< 0.01	< 0.01	1.3	< 0.01	0.03	0.22	0.03	3.3	0.07	0.04	3.4	1.7	0.39	2.6
20027-w	3.0	< 0.01	0.02	4.6	< 0.01	0.19	1.7	0.19	7.9	0.14	0.27	7.0	7.8	1.4	8.2
20028-w	1.2	< 0.01	< 0.01	2.7	< 0.01	0.09	0.85	0.07	5.0	0.08	0.11	3.9	3.5	0.71	4.6
20029-w	0.62	< 0.01	< 0.01	1.8	< 0.01	0.09	0.64	0.11	3.2	0.06	0.08	2.6	2.1	0.64	3.3
20030-w	0.82	< 0.01	< 0.01	2.1	< 0.01	0.09	0.77	0.04	3.7	0.07	0.08	2.8	2.7	0.74	4.0
20031-w	1.4	< 0.01	0.05	9.6	< 0.01	0.28	3.3	0.19	20	0.14	0.49	11	4.5	2.7	16
Notes: s = serum, w = whole blood.															
NQ* = not quantifiable, interference.															

Table 1. PCB congener Concentrations in Eagle Blood (ng/g)

Sample ID	075	082	083	084	085	086	087	089	091	092	095	096	097	099	101
19848-s	0.73	1.5	1.2	2.6	NQ*	0.29	8.7	0.10	4.7	7.8	9.6	< 0.13	5.5	22	16
19849-s	0.53	1.3	0.71	1.5	NQ*	0.20	8.9	0.12	4.2	5.6	6.3	< 0.09	2.8	23	12
19850-s	3.2	4.5	4.6	7.0	NQ*	0.51	30	0.56	14	26	28	< 0.10	13	68	48
19851-s	1.6	2.0	1.9	2.3	NQ*	0.59	23	0.08	7.4	16	13	< 0.13	6.8	64	32
19852-s	0.79	2.6	1.1	1.9	NQ*	0.12	13	0.17	5.5	8.3	9.1	< 0.16	5.4	24	17
19853-s	0.70	3.2	2.3	6.6	NQ*	0.81	15	0.50	5.8	13	20	< 0.34	11	19	24
19854-s	0.51	2.7	1.9	4.4	NQ*	0.43	13	0.23	5.7	8.7	16	< 0.12	9.1	16	22
19855-s	6.0	8.3	6.8	4.9	NQ*	0.77	47	0.47	22	48	36	< 0.11	28	134	109
19856-s	24	31	36	34	NQ*	5.5	184	2.43	123	197	157	0.28	102	554	403
19857-s	1.0	1.8	2.9	5.6	NQ*	0.85	14	0.30	7.6	14	20	< 0.09	9.3	28	24
19858-s	0.80	1.5	2.4	5.3	NQ*	0.68	13	0.28	7.8	13	23	< 0.10	8.1	24	26
19859-s	0.51	0.98	1.3	3.5	NQ*	0.41	7.9	0.19	4.3	7.2	11	< 0.10	4.7	13	13
19860-s	0.56	0.82	1.0	2.9	NQ*	0.41	7.1	0.16	3.7	6.1	11	< 0.11	4.1	11	12
20026-s	0.22	0.72	0.41	1.3	NQ*	0.18	6.4	0.06	2.2	3.6	6.6	< 0.12	2.5	11	11
20027-w	0.85	1.2	1.9	4.1	NQ*	0.27	8.1	0.13	6.0	8.2	14	< 0.11	5.3	16	17
20028-w	0.42	0.87	1.0	2.1	NQ*	0.20	4.3	0.08	2.8	3.5	6.0	< 0.11	3.1	7.4	6.9
20029-w	0.34	0.51	0.62	1.6	NQ*	0.16	3.4	0.07	2.1	2.9	4.8	< 0.11	2.0	5.4	5.0
20030-w	0.44	0.63	0.92	1.8	NQ*	0.22	3.9	0.07	2.4	3.6	5.7	< 0.11	2.5	7.9	6.2
20031-w	1.8	2.5	2.7	3.4	NQ*	0.35	13	0.15	8.3	13	14	< 0.10	8.5	24	27
Notes: s = serum, w = whole blood.															
NQ* = not quantifiable, interference.															

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Table 1. PCB congener Concentrations in Eagle Blood (ng/g)

Sample ID	102	105	109	110	112	113	114	115	117	118	119	122	123	128	129
19848-s	0.23	16	6.6	15	< 0.29	0.29	1.1	0.54	4.8	47	3.1	< 0.20	1.1	15	1.2
19849-s	0.18	17	8.1	7.1	< 0.20	0.09	1.9	0.70	4.6	57	4.1	< 0.14	1.4	18	0.85
19850-s	0.98	40	13	40	1.2	1.3	4.5	2.3	12	108	7.4	< 0.16	2.8	29	2.9
19851-s	0.13	41	12	20	0.37	0.68	5.1	2.3	14	120	9.6	< 0.20	3.6	33	1.8
19852-s	0.30	23	6.5	12	0.38	0.10	1.8	1.1	5.2	60	2.9	< 0.24	1.5	16	1.8
19853-s	0.72	13	4.7	32	< 0.76	0.31	0.87	0.36	3.0	32	2.3	< 0.54	0.5	9.1	1.6
19854-s	0.77	10	3.6	27	< 0.26	0.32	0.88	0.58	2.4	26	1.6	< 0.35	0.6	8.4	1.5
19855-s	1.6	69	31	67	0.89	2.0	7.8	4.5	30	212	18	< 0.17	5.6	66	5.2
19856-s	9.9	260	109	301	6.3	7.5	29	17	126	892	59	< 0.35	20	233	20
19857-s	0.73	15	5.7	40	0.66	0.81	1.3	0.68	5.3	43	3.3	< 0.13	1.0	11	1.3
19858-s	0.69	11	5.3	34	0.54	0.72	0.91	0.53	4.0	29	2.7	< 0.16	0.7	7.7	1.2
19859-s	0.79	6.7	2.5	18	0.35	0.43	0.62	0.36	2.8	17	1.5	< 0.15	0.4	4.3	0.74
19860-s	0.16	5.4	2.0	17	0.22	0.36	0.48	0.29	2.2	13	1.3	< 0.17	0.3	3.7	0.60
20026-s	0.08	6.2	2.0	7.8	< 0.27	0.11	0.47	0.27	1.0	19	0.2	< 0.18	0.3	6.4	0.61
20027-w	0.31	7.1	3.8	22	0.36	0.43	0.69	0.47	3.1	19	0.7	< 0.17	0.5	5.5	0.72
20028-w	< 0.01	3.9	1.3	10	< 0.24	0.21	0.42	0.28	1.5	10	0.4	< 0.17	0.2	2.3	0.36
20029-w	0.06	2.8	1.4	7.5	< 0.25	0.18	0.28	0.13	1.2	6.4	0.6	< 0.17	0.1	1.8	0.31
20030-w	0.15	3.9	1.7	9.9	< 0.25	0.21	0.37	0.24	1.6	9.7	0.4	< 0.17	0.2	2.8	0.35
20031-w	< 0.01	12	3.8	27	0.69	0.56	1.2	0.38	4.9	32	2.3	< 0.15	0.7	7.3	1.3
Notes: s = serum, w = whole blood.															
NQ* = not quantifiable, interference.															

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Table 1. PCB congener Concentrations in Eagle Blood (ng/g)

Sample ID	130	131	132	133	134	136	137	138	139	141	144	146	147	149	151
19848-s	4.1	< 0.02	6.2	4.1	0.63	1.0	4.4	79	1.2	9.6	1.5	23	0.7	17	3.5
19849-s	6.2	0.21	6.7	7.4	0.39	0.60	5.1	104	1.6	14	3.2	37	1.0	20	4.2
19850-s	9.9	0.64	22	8.5	2.8	3.1	7.3	142	2.6	21	4.3	45	3.9	51	19
19851-s	11	0.37	8.6	12	0.84	1.2	9.9	170	3.1	21	4.4	56	4.7	34	7.6
19852-s	4.6	0.39	13	3.9	1.1	0.84	5.2	83	1.4	11	2.2	21	1.2	20	6.8
19853-s	3.0	0.34	22	2.5	2.0	3.5	2.7	62	0.77	11	2.5	13	1.1	31	13
19854-s	3.1	0.44	16	1.6	1.3	2.2	2.7	48	0.77	10	2.7	13	1.2	30	11
19855-s	18	1.1	13	18	1.8	1.7	19	273	5.3	43	9.6	95	8.1	110	22
19856-s	79	4.5	47	67	14	14	68	876	18	152	30	326	59	410	94
19857-s	3.7	0.20	12	3.1	1.7	2.0	3.5	56	1.0	9.7	1.5	16	1.7	26	7.9
19858-s	2.9	0.21	12	2.5	1.7	2.9	2.6	49	0.69	12	2.4	14	1.1	33	12
19859-s	1.5	0.12	7.0	1.5	0.85	1.3	1.5	26	0.49	5.4	0.98	7.3	0.5	13	4.9
19860-s	1.3	0.10	7.4	1.2	0.85	1.5	1.3	25	0.41	6.1	1.2	6.8	0.5	15	5.8
20026-s	2.4	0.21	7.2	1.0	0.72	1.9	1.6	46	0.51	7.9	2.4	13	0.8	21	7.8
20027-w	2.3	0.19	8.9	1.5	1.5	2.5	1.8	37	0.52	9.1	2.1	11	0.8	27	11
20028-w	0.96	0.09	4.3	0.75	0.65	0.86	0.79	15	0.24	3.1	0.60	4.2	0.5	8.3	2.9
20029-w	0.74	0.06	2.7	0.47	0.43	0.64	0.59	12	0.17	2.4	0.46	3.2	0.2	6.5	2.2
20030-w	1.1	0.08	3.9	0.65	0.60	0.77	0.89	17	0.29	2.9	0.51	4.7	0.3	8.0	2.6
20031-w	3.0	0.27	7.2	1.9	1.5	1.6	2.3	38	0.77	7.6	1.7	10	1.4	25	8.6
Notes: s = serum, w = whole blood.															
NQ* = not quantifiable, interference.															

Table 1. PCB congener Concentrations in Eagle Blood (ng/g)

Sample ID	153	156	157	158	163	164	166	167	170	171	172	173	174	175	176
19848-s	128	6.4	1.7	9.0	18	7.7	0.47	3.6	39	7.5	6.7	< 0.54	4.7	2.6	0.36
19849-s	195	10	1.7	14	29	12	0.43	7.0	76	14	11	< 0.37	8.2	2.2	0.32
19850-s	222	13	3.2	15	45	12	0.77	6.6	82	12	8.0	0.53	18	2.0	0.54
19851-s	266	15	3.4	20	44	25	0.64	8.1	84	15	12	< 0.54	14	2.6	0.99
19852-s	120	6.4	1.9	9.9	20	6.0	0.49	3.8	34	6.9	5.9	< 0.65	7.8	1.91	0.81
19853-s	67	2.4	1.0	5.3	18	3.2	0.14	1.9	18	4.4	2.8	< 1.44	8.4	0.89	0.79
19854-s	64	2.2	0.9	5.2	14	3.7	0.10	1.9	16	4.3	3.1	0.51	11	0.87	0.60
19855-s	448	34	5.3	34	71	47	1.8	15	142	27	19	0.96	27	4.0	1.7
19856-s	1393	122	19	127	344	95	8.1	45	455	89	61	3.2	117	16	5.5
19857-s	77	3.5	1.0	6.3	18	4.4	0.31	1.9	15	3.8	2.6	< 0.36	5.9	0.93	0.30
19858-s	73	2.5	0.8	5.3	15	5.3	0.20	1.5	17	4.2	3.0	< 0.44	9.9	1.26	0.62
19859-s	33	1.2	0.5	2.6	8.6	2.5	0.16	0.84	7.9	1.8	1.5	< 0.42	4.0	0.55	0.38
19860-s	33	1.1	0.41	2.6	8.5	2.0	0.14	0.76	8.0	2.0	1.5	< 0.45	5.4	0.62	0.37
20026-s	78	2.6	0.94	4.1	10	3.6	0.19	1.9	26	5.0	3.9	< 0.49	13	1.1	1.1
20027-w	56	1.5	0.55	3.8	11	4.2	0.15	1.1	11	3.2	2.2	< 0.46	7.3	0.63	0.43
20028-w	19	0.61	0.28	1.5	5.0	1.1	0.07	0.51	4.6	1.1	1.1	< 0.44	2.9	0.27	0.21
20029-w	15	0.41	0.25	1.1	3.2	1.7	0.06	0.37	3.2	0.81	0.71	< 0.45	2.3	0.18	0.14
20030-w	21	0.76	0.33	1.6	5.0	1.8	0.09	0.53	4.2	1.1	0.91	< 0.46	2.5	0.24	0.17
20031-w	51	2.6	0.75	4.2	12	4.6	0.20	1.3	13	2.9	2.4	< 0.40	7.4	0.61	0.43
Notes: s = serum, w = whole blood.															
NQ* = not quantifiable, interference.															

Table 1. PCB congener Concentrations in Eagle Blood (ng/g)

Sample ID	177	178	179	180	183	185	187	189	190	191	193	194	195	196	197
19848-s	9.2	5.5	0.58	86	28	0.61	46	1.1	9.1	1.3	4.4	16	4.2	7.7	1.0
19849-s	16	9.9	0.21	137	40	1.3	83	1.4	11	2.0	8.4	22	5.8	12	1.1
19850-s	17	11	1.8	120	39	2.0	74	1.7	14	1.6	7.6	19	7.3	8.7	1.2
19851-s	23	17	0.76	152	55	1.9	119	2.0	4.5	2.5	13	35	9.4	15	2.4
19852-s	10	7.0	0.54	67	25	1.0	46	1.3	9.5	1.2	4.4	15	4.6	7.5	1.1
19853-s	6.2	4.1	3.1	33	14	1.2	23	0.66	9.0	0.59	2.6	6.9	2.8	4.5	1.3
19854-s	7.1	4.4	1.7	32	14	1.4	27	0.56	4.9	0.62	2.7	7.0	2.7	3.8	0.58
19855-s	31	24	0.49	217	73	4.2	169	3.2	8.8	3.2	13	41	15	18	2.9
19856-s	126	92	6.1	604	204	16	560	10	18	12	46	111	48	55	7.0
19857-s	5.8	4.4	1.6	27	11	0.65	23	0.48	4.4	0.57	2.3	5.4	1.9	3.0	0.50
19858-s	6.9	4.5	2.7	33	13	1.2	27	0.54	5.5	0.66	2.5	5.5	2.4	3.0	0.53
19859-s	3.0	2.4	1.3	16	6.8	0.50	13	0.31	3.7	0.33	1.4	3.3	1.3	1.7	0.47
19860-s	3.6	2.4	1.7	18	7.2	0.66	14	0.31	3.8	0.37	1.5	3.1	1.3	1.8	0.46
20026-s	8.3	4.8	1.7	53	20	1.4	32	0.75	8.9	0.84	3.6	11	3.9	5.0	1.2
20027-w	5.4	3.6	2.2	23	9.8	0.97	22	0.34	3.9	0.42	1.7	3.6	1.5	2.2	< 0.50
20028-w	2.3	1.5	0.96	11	4.4	0.41	9.2	0.22	2.3	0.23	0.88	2.0	0.87	1.3	< 0.48
20029-w	1.6	1.1	0.59	7.7	3.1	0.27	6.6	0.15	1.8	< 0.19	0.67	1.2	0.54	0.9	< 0.49
20030-w	2.1	1.6	0.75	10	4.3	0.32	8.9	0.18	2.3	0.20	0.83	1.8	0.71	1.2	< 0.50
20031-w	5.3	3.3	1.2	25	9.8	0.82	20	0.44	4.2	0.43	1.9	4.5	1.8	2.2	< 0.43
Notes: s = serum, w = whole blood.															
NQ* = not quantifiable, interference.															

Table 1. PCB congener Concentrations in Eagle Blood (ng/g)

Sample ID	198	199	200	201	202	203	205	206	208	209	Total PCBs
19848-s	0.52	16	0.17	1.1	1.7	11	0.80	8.5	2.6	4.6	995
19849-s	0.68	26	0.13	1.4	1.7	13	0.71	6.7	1.9	2.8	1305
19850-s	1.1	25	0.50	2.4	6.5	20	1.2	16	5.2	7.1	2145
19851-s	1.7	59	0.28	3.9	7.0	39	1.4	44	10	13	2157
19852-s	0.77	19	0.42	1.6	3.2	12	1.4	13	4.5	7.9	1009
19853-s	0.37	9.3	0.73	1.2	2.4	6.9	0.54	7.9	3.9	6.6	923
19854-s	0.49	10	0.41	1.1	2.4	6.6	0.79	7.2	2.9	5.5	799
19855-s	2.3	58	0.58	5.1	8.6	43	3.4	29	8.3	10	3759
19856-s	7.2	180	6.8	16	31	132	15	82	23	27	14240
19857-s	0.34	8.3	0.24	0.83	2.3	5.7	0.55	6.4	2.3	3.7	928
19858-s	0.34	7.5	0.30	0.86	1.9	5.8	0.46	4.3	1.7	2.9	911
19859-s	0.17	4.7	0.19	0.53	1.3	3.7	0.30	3.6	1.4	2.5	499
19860-s	0.16	4.4	0.24	0.54	1.2	3.3	0.24	3.0	1.3	2.3	471
20026-s	0.67	13	0.61	2.0	4.3	10	0.60	16	5.1	8.8	615
20027-w	0.25	5.5	0.37	0.66	1.4	4.0	0.30	3.4	1.4	2.2	672
20028-w	0.12	3.0	0.19	0.32	0.71	2.1	0.21	2.0	0.8	1.5	288
20029-w	0.07	1.9	0.10	0.22	0.51	1.3	< 0.19	1.4	0.7	1.3	214
20030-w	0.13	2.8	0.16	0.35	0.88	2.2	< 0.20	2.5	1.0	2.0	270
20031-w	0.31	6.4	0.33	0.69	1.8	4.8	0.35	3.7	1.3	1.6	755
Notes: s = serum, w = whole blood.											
NQ* = not quantifiable, interference.											

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Table 3. Procedural PCB Spike Recoveries (%)

Sample ID	Field ID	Sample Type	Gram-equivalents for Analysis (g)	% Lipid	029		155		204	
					ng/g	% Recovery	ng/g	% Recovery	ng/g	% Recovery
PB 102699*	Procedural Blank	Na ₂ SO ₄	---	---	12.69	21	23.62	40	28.48	48
PB 102999*	Procedural Blank	Na ₂ SO ₄	---	---	18.90	32	26.46	44	31.55	53
MS #2 PCBs*	Matrix Spike	Bovine serum	2.96	< 0.17	17.50	29	31.87	53	32.62	55
MB 102699 #1	Matrix Blank	Bovine serum	2.94	< 0.17	6.00	10	9.84	17	10.81	18
MB 102699 #2	Matrix Blank	Bovine serum	2.94	< 0.17	4.59	8	9.78	16	11.40	19
19848-s	BE-A-BL904-98	Eagle Blood	2.65	0.37	6.31	28	10.90	48	11.93	53
19849-s	BE-A-BL949-98	Eagle Blood	3.87	0.51	4.06	26	6.97	45	8.42	55
19850-s	BE-IM-BL935-98	Eagle Blood	3.25	0.30	7.05	38	8.96	49	10.16	55
19851-s	BE-A-BL913-98	Eagle Blood	2.63	0.37	9.99	44	12.04	53	13.08	58
19852-s	BE-A-BL956-98	Eagle Blood	2.18	0.90	10.13	37	12.09	44	13.15	48
19853-s	BE-IM-BL914-98	Eagle Blood	0.99	0.99	13.93	23	22.67	38	30.10	50
19854-s	BE-BL921-98	Eagle Blood	2.92	0.67	7.17	35	10.71	52	12.34	60
19855-s	BE-A-BL898-97	Eagle Blood	3.14	0.31	6.78	36	9.12	48	10.52	55
19856-s	BE-A-BL968-99	Eagle Blood	1.52	0.97	13.12	33	18.20	46	20.50	52
19857-s	BE-NE-BL950-98	Eagle Blood	3.93	0.87	3.86	25	6.22	41	7.89	52
19858-s	BE-NE-BL911A-98	Eagle Blood	3.27	0.60	7.77	43	9.39	52	10.25	56
19859-s	BE-NE-BL911B-98	Eagle Blood	3.43	0.43	6.44	37	8.21	47	8.84	51
19860-s	BE-NE-BL911C-98	Eagle Blood	3.17	0.15	7.96	42	9.56	51	10.27	55
PB 102699*	Procedural Blank	Na ₂ SO ₄	---	---	10.91	27	17.66	46	28.78	70
PB 102999*	Procedural Blank	Na ₂ SO ₄	---	---	18.86	46	21.33	56	31.24	76
MS #2 PCBs*	Matrix Spike	Bovine Serum	2.96	< 0.17	16.56	40	28.87	75	32.88	80
MB 102699 #1	Matrix Blank	Bovine Serum	2.94	< 0.17	5.59	40	8.40	64	10.76	77
MB 102699 #2	Matrix Blank	Bovine Serum	2.94	< 0.17	3.84	28	8.04	62	11.51	82
20026-s	BE-IM-BL976-99	Eagle Blood	2.87	0.34	5.85	41	10.08	75	11.96	83
20027-w*	BE-NE-BL972A-99	Eagle Blood	3.05	0.48	5.36	40	8.16	65	10.50	78
20028-w	BE-NE-BL972B-99	Eagle Blood	3.16	0.31	4.84	37	8.30	68	10.25	78
20029-w	BE-NE-BL971-99	Eagle Blood	3.08	0.16	7.86	59	9.33	75	11.23	84
20030-w	BE-NE-BL974-99	Eagle Blood	3.05	0.16	3.61	27	9.47	75	11.61	86
20031-w	BE-IM-BL981-99	Eagle Blood	3.50	0.28	3.59	31	7.55	69	9.37	79
Average % Recovery						33		52		61
RSD						11		15		17
w-whole blood, s-serum										
Notes: *average of GC replicate.										