

# Health Consultation

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A DATA REVIEW OF THE CALCASIEU ESTUARY BIOLOGICAL  
MONITORING PROGRAM, 2005 ANNUAL REPORT

PPG INDUSTRIES, INC.

CALCASIEU PARISH, LOUISIANA

EPA FACILITY ID: LAD008086506

AUGUST 21, 2007

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
Public Health Service  
Agency for Toxic Substances and Disease Registry  
Division of Health Assessment and Consultation  
Atlanta, Georgia 30333

## **Health Consultation: A Note of Explanation**

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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HEALTH CONSULTATION

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Prepared By:

Louisiana Department of Health and Hospitals  
Office of Public Health  
Section of Environmental Epidemiology and  
Toxicology  
Under Cooperative Agreement with the  
U.S. Department of Health and Human Services  
Agency for Toxic Substances and Disease Registry

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## List of Acronyms

ATSDR	Agency for Toxic Substances and Disease Registry
EPA	U.S. Environmental Protection Agency
LDEQ	Louisiana Department of Environmental Quality
LDHH	Louisiana Department of Health and Hospitals
LDWF	Louisiana Department of Wildlife and Fisheries
OPH	Office of Public Health
PCB	polychlorinated biphenyl
pg/g	picograms per gram
SEET	Section of Environmental Epidemiology and Toxicology
TEF	toxicity equivalency factors
TEQ	toxicity equivalency quotient

## Summary and Statement of Issues

The Lake Charles Complex of PPG Industries, Inc. (PPG) monitors the effects of historical contaminant releases on environmental quality in the Calcasieu Estuary through the Calcasieu Estuary Biological Monitoring Program. The Agency for Toxic Substances and Disease Registry (ATSDR) requested that a data review be performed on the data collected by PPG for the Calcasieu Estuary Biological Monitoring Program 2005 Annual Report. Therefore, through a cooperative agreement with the ATSDR, the Louisiana Department of Health and Hospitals/Office of Public Health/Section of Environmental Epidemiology and Toxicology (LDHH/OPH/SEET) has performed a data review on the Fall 2005 PPG sampling event. The primary goal of this document is to ensure that the data in the Calcasieu Estuary Biological Monitoring Program 2005 Annual Report accurately represents the data collected from the Calcasieu Estuary during the November 2005 sampling period.

## Background

### Site Description and History

PPG is a chemical manufacturing facility on the west bank of the Calcasieu River. The site is bounded by I-10 to the north, undeveloped land and Bayou D'Inde to the west, the Coon Island Loop to the east, and Lockport Marsh to the south. In the early 1940s, the facility was a federal magnesium plant. The plant was acquired by Matheson Alkali Works and then sold to the Southern Alkali Corporation in 1947. As a chlor-alkali plant, the site was used to produce chlorine and caustic soda. The Pittsburgh Plate Glass Company (which provided the origin of the PPG acronym) obtained the plant in 1968. On-site production by PPG has included chlorinated hydrocarbons, sodium hydroxide, and silica products (1).

Under an NPDES permit, PPG is authorized to discharge process wastewater through several designated outfalls into the Calcasieu River and Bayou d'Inde. PPG experienced a number of significant releases between 1979 (when compliance records became available) and 1997. These releases have included chlorinated hydrocarbons, lead, copper, and mercury (1).

In June 1989, PPG established a Calcasieu Estuary Biological Monitoring Program to monitor any effects of historical contaminant releases on environmental quality in the estuary. Data from this program is shared with the Louisiana Department of Environmental Quality (LDEQ) and the Louisiana Department of Health and Hospitals (LDHH). Currently, the Calcasieu Estuary Biological Monitoring Program is designed to meet the following objectives:

- to monitor concentrations of selected polychlorinated biphenyl (PCB) congeners and seven Arochlor PCB mixtures (seven mixtures which have been components of the monitoring program since 1991) in edible tissues of target seafood species collected from the Calcasieu Estuary
- to monitor concentrations of dioxins and furans in edible tissues of target seafood species collected from the Calcasieu Estuary
- to provide data to allow the identification of spatial and temporal trends of contaminant levels in tissues (2).

The program's Fall 2005 sampling schedule was impacted by Hurricane Rita, which made landfall near the mouth of the Calcasieu Estuary on September 24, 2005. Storm impacts included fish kills, vegetation die-offs, and floating debris. Sampling was conducted from Nov 1-12, 2005. Monitoring stations located throughout the Calcasieu Estuary were chosen to provide a basis for evaluating the extent of contaminants of concern in seafood species and for identifying temporal and spatial trends in contaminant concentration. A map of the station locations is presented in Figure A-1. The monitoring station locations are listed in Table A-1 (2).

Fish and invertebrate samples were collected with hook-and-line sampling, trawl, gill net, crab trap, and oyster tongs. Sample organisms retained for analysis were specimens that met legal size criteria of the commercial fishing industry or recreational fishery. Samples retained for tissue analysis were packed and stored on dry ice until the sampling period was completed. Following sample collection, all samples were recorded in a manifest from which representative specimens of the species found at each station were selected for analysis. When present in sufficient abundance, several similarly sized specimens of a given species were composited into a single sample. The fish and invertebrate species sampled are listed in Table A-2 (2).

SEET performed a data review on the program's Fall 2005 data to determine if the data provided in the program's 2005 annual report accurately reflects the data analysis reports provided by the laboratory. SEET compared the validated lab data to the data reported in the annual report. Toxicity equivalency quotients (TEQs) were recalculated from the lab data and checked against the TEQs reported in the 2005 annual report. The target compounds and their corresponding toxicity equivalency factors (TEFs) are listed in Table A-3. The TEFs that were used are those instituted by the World Health Organization in 1997 (2).

## **Discussion**

### **Exposure Pathways**

The organisms sampled through the Calcasieu Estuary Biological Monitoring Program are edible fish and shellfish that are commonly consumed by area residents. Individuals consuming these organisms could be exposed to any contaminants historically released into the estuary and absorbed or ingested by these fish and shellfish. If contaminants are present in these organisms at levels that might pose a public health hazard, advisories describing how much of these fish and shellfish can be safely consumed are established through an interagency process which includes LDHH, LDEQ, and the Louisiana Department of Wildlife and Fisheries (LDWF).

### **Evaluation Process**

The data review was performed using raw data that had been validated through Quality Assurance/Quality Control (QA/QC) procedures including duplicate field sampling, standard matrix spikes, analyses of method blanks, and project personnel review of all sampling and analysis protocols (2). The samples were prepared by Gulf Coast Analytical Laboratories and analyzed for PCB congeners and dioxins by Vista Analytical Laboratory, Inc.

Fifty-eight validated samples had been analyzed for dioxins, and 58 other validated samples had been analyzed for PCB congeners. Each sample analysis was recorded by Vista Analytical Laboratory, Inc. on a separate data sheet. SEET sorted these data sheets by analysis type (dioxin or PCB congener) and station, combining Bayou D'Inde stations 4L & 4M into a single station. Because no samples were acquired from Station 1, a total of nine stations were represented. Sample reports were sorted face down into nine piles for each of the two analyses.

During the initial stages of a data review, 10%-15% of a data set is reviewed to determine if further assessment is required. Since 15% of 58 equals 8.7, nine samples were reviewed for each of the analyses. To begin the review, one facedown sample was randomly chosen from each of the eighteen station piles.

Concentrations of dioxins and PCB congeners measured in these 18 samples were compared to those recorded in the 2005 annual report to verify that the data had been entered correctly. During this comparison, it was determined that samples for which field replicates had been taken were averaged together with those field replicates.

SEET calculated dioxin and PCB TEQs from the randomly sampled data to test the accuracy of the TEQs recorded in the annual report. These calculations were performed using half the detection limit for contaminants that were not detected with the chosen analytical method.

A concentration detected for 2,3,7,8-TCDD at station 4L (Table B-2) was found to be significantly higher than the other contaminant concentrations detected. The value of 63.7 pg/g reported in the Annual Report could not be confirmed against hardcopies of the data provided by the laboratory that analyzed the data. Because of this irregularity, the entire data set for Fall 2005 was reviewed for further inconsistencies. The high value was reported to Richard A. Dobbins, the CH2MHILL project manager for the Calcasieu Estuary Biomonitoring Program. Mr. Dobbins alerted the lab that performed the analysis and consequently received a revised report page that recorded the correct detection limit for 2,3,7,8-TCDD. The revised report page lists this contaminant as a nondetect, with a reporting limit of 0.180 pg/g. A revised table and TEQ for this sampling station are listed in Table B-19.

Upon review of the full data set, it was found that four samples analyzed for dioxin congeners were marked as nondetects in the Biomonitoring Program's final document but were not initially marked as such in the hard copies of the raw data. One other sample analyzed for dioxin congeners was reported as a nondetect in the raw data hard copies but was identified with a concentration in the Biomonitoring Program's final document. In all five cases of these changes, notations were hand-written beside the original contaminants identified in the raw data hard copies, and each of these altered pages were initialized. Representatives from CH2MHILL state that the hand-written notations come from a data validation process carried out by the CH2MHILL project chemist on the analytical data set. The validation process can lead to changes to a result's detection status. The results listed in the final Biomonitoring Program report are therefore valid reportings of the data.

The red drum field sample and duplicate at Station 2 displayed largely different concentrations for a number of the reported dioxin congeners. These differences are outlined in Table B-20. The dioxin concentrations in these samples may merit further consideration.

## **Conclusions**

The initial review of a fraction of the Calcasieu Estuary Biological Monitoring Program's Fall 2005 data set revealed an inconsistent 2,3,7,8-TCDD concentration at station 4L. Because of this finding, the entire raw data set was reviewed. Once alerted to the inconsistency, CH2MHILL issued a revised report page that lists this contaminant as a nondetect, with a reporting limit of 0.180 pg/g.

Review of the full data set revealed five samples listed with different concentrations in the final report than those listed in the raw data. These changes have been identified as occurring during the data validation process carried out by the CH2M HILL project chemist. The results listed in the final Biomonitoring Program report are valid reportings of the data.

The red drum field sample and field duplicate at Station 2 displayed largely different concentrations for a number of the reported dioxin congeners and may therefore merit further consideration.

## **Recommendations**

SEET will perform future data reviews as requested.

## **Public Health Action Plan**

If requested, the information produced within this data review can be disseminated to interested community members and stakeholders within Calcasieu Parish, Louisiana.

## **Preparers of this Report**

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## References

1. US Environmental Protection Agency. Calcasieu Estuary remedial investigation: Lake Charles, Louisiana. Draft remedial investigation report. Prepared by CDM; Cambridge, Massachusetts. US EPA Contract No. 68-W5-0022, Work Assignment No. 941-RICO-06ZZ. 2002 Nov.
2. CH2MHILL. Calcasieu Estuary Biological Monitoring Program, 2005 Annual Report. Prepared for PPG Industries, Inc; Louisiana Department of Health and Hospitals; Louisiana Department of Environmental Quality. 2006 Mar.
3. Agency for Toxic Substances and Disease Registry. Toxicological profile for chlorinated dibenzo-*p*-dioxins. Atlanta: US Department of Health and Human Services; 1998 Dec.
4. Agency for Toxic Substances and Disease Registry. ToxFAQs™ for Chlorinated Dibenzo-*p*-dioxins (CDDs). Accessed 5 Apr 2007 at URL: <http://www.atsdr.cdc.gov/tfacts104.html#bookmark05>
5. Agency for Toxic Substances and Disease Registry. Toxicological profile for polychlorinated biphenyls. Atlanta: US Department of Health and Human Services; 2000 Nov.
6. U.S. Environmental Protection Agency. Integrated risk information system (for polychlorinated biphenyls). Accessed 4 Apr 2007 at URL: <http://www.epa.gov/iris/subst/0294.htm>

## Certification

This Data Review of the Calcasieu Estuary Biological Monitoring Program, 2005 Annual Report, was prepared by the Louisiana Department of Health and Hospitals under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures at the time the data review was begun. An editorial review was conducted by the Cooperative Agreement Partner.

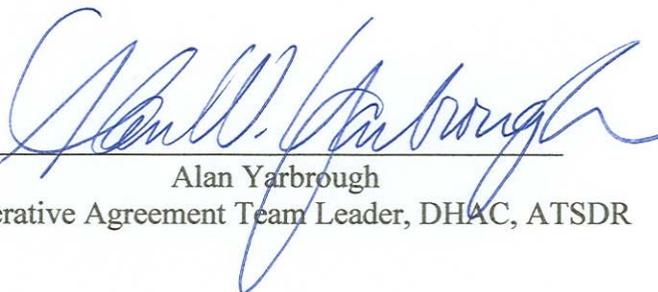


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Jeffrey Kellam

Technical Project Officer, Division of Health Assessment and Consultation (DHAC)

The Division of Health Assessment and Consultation, ATSDR, has reviewed this public health consultation and concurs with the findings.



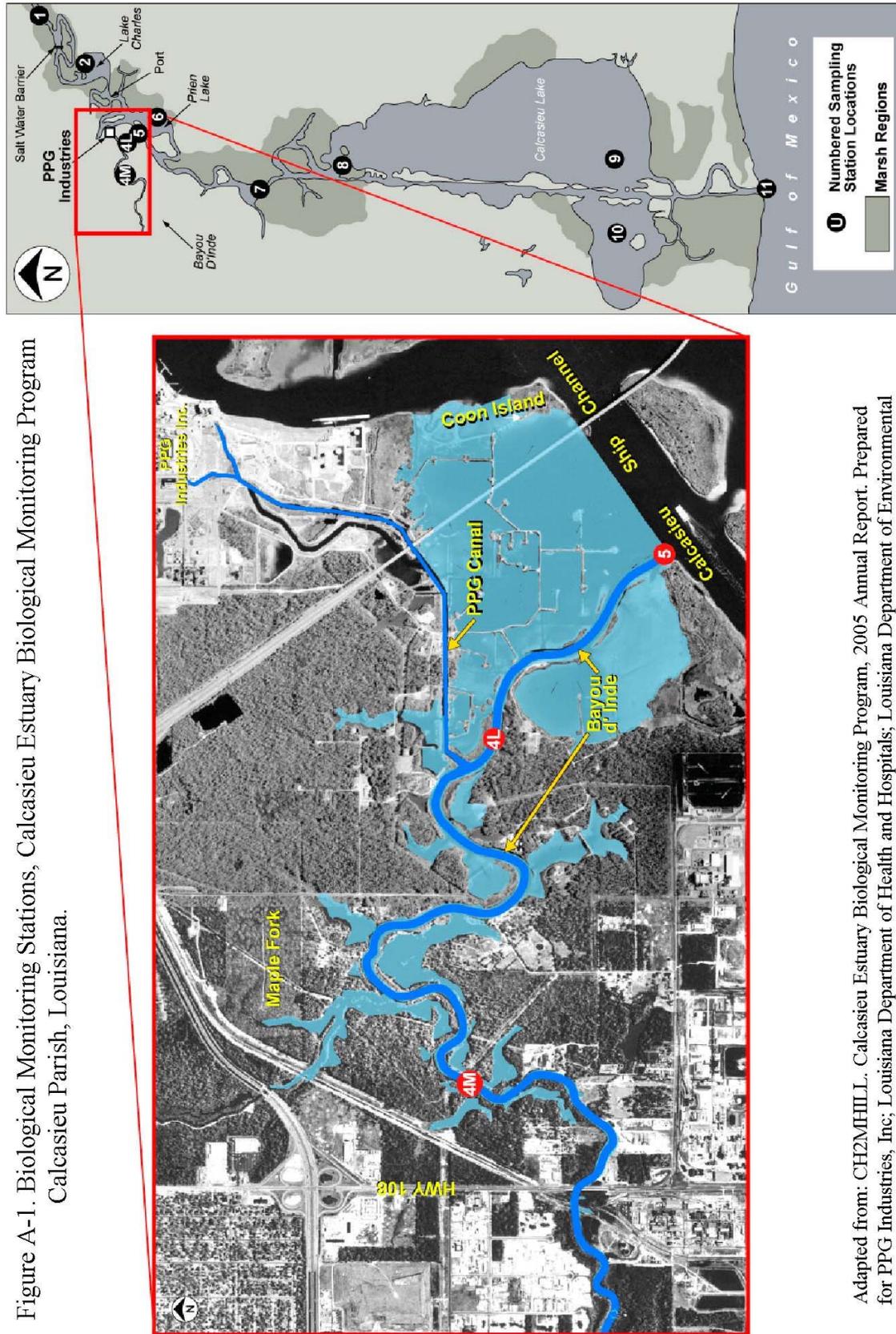
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Alan Yarbrough

Cooperative Agreement Team Leader, DHAC, ATSDR

**Appendix A**  
**Figures and Tables**

Figure A-1. Biological Monitoring Stations, Calcasieu Estuary Biological Monitoring Program  
Calcasieu Parish, Louisiana.



Adapted from: CH2MHILL. Calcasieu Estuary Biological Monitoring Program, 2005 Annual Report. Prepared for PPG Industries, Inc; Louisiana Department of Health and Hospitals; Louisiana Department of Environmental Quality. 2006 Mar.

**CH2MHILL**

**Table A-1. Biological Sampling Stations in the Calcasieu Estuary**

Station	Location/Description
1	Calcasieu River, above the saltwater barrier
2	Lake Charles
4M	Middle Bayou d'Inde, between Maple Fork and Highway 108
4L	Lower Bayou d'Inde, between the mouth of the PPG Canal and the Calcasieu River
5	Calcasieu River in the Bayou d'Inde vicinity
6	Prien Lake
7	Calcasieu River in the Moss Lake vicinity
8	Calcasieu Lake near West Pass, North Turner's Bay
9	Lower Calcasieu Lake, south of Commissary Point
10	Calcasieu Lake, West Cove
11	Near-shore Gulf of Mexico, near the mouth of Calcasieu River

Adapted from: CH2MHILL. Calcasieu Estuary Biological Monitoring Program, 2005 Annual Report. Prepared for PPG Industries, Inc; Louisiana Department of Health and Hospitals; Louisiana Department of Environmental Quality. 2006 Mar.

**Table A-2. Target Species for Tissue Analysis**

Common Name	Scientific Name
Spotted seatrout	<i>Cynoscion nebulosus</i>
Sand seatrout	<i>Cynoscion arenarius</i>
Southern flounder	<i>Parlichthys lethostigma</i>
Red drum	<i>Sciaenops ocellata</i>
Black drum	<i>Pogonias cromis</i>
Blue catfish	<i>Ictalurus furcatus</i>
Channel catfish	<i>Ictalurus punctatus</i>
Shrimp	<i>Penaeus spp.</i>
Blue crab	<i>Callinectes sapidus</i>
Oyster	<i>Crassostrea virginica</i>

Adapted from: CH2MHILL. Calcasieu Estuary Biological Monitoring Program, 2005 Annual Report. Prepared for PPG Industries, Inc; Louisiana Department of Health and Hospitals; Louisiana Department of Environmental Quality. 2006 Mar.

**Table A-3. Target Compounds Analyzed in Target Species Tissues and Associated TEFs**

<b>PCB Congeners</b>	<b>Compound TEF</b>
77 - 3,3',4,4' - Tetrachlorobiphenyl	0.0001
81 - 3,4,4',5 - Tetrachlorobiphenyl	0.0001
105 - 2,3,3',4,4' - Pentachlorobiphenyl	0.0001
114 - 2,3,4,4',5 - Pentachlorobiphenyl	0.0005
118 - 2,3',4,4',5 - Pentachlorobiphenyl	0.0001
123 - 2',3,4,4',5 - Pentachlorobiphenyl	0.0001
126 - 3,3',4,4',5 - Pentachlorobiphenyl	0.1
156 - 2,3,3',4,4',5 - Hexachlorobiphenyl	0.0005
157 - 2,3,3',4,4',5' - Hexachlorobiphenyl	0.0005
167 - 2,3',4,4',5,5' - Hexachlorobiphenyl	0.00001
169 - 3,3',4,4',5,5' - Hexachlorobiphenyl	0.01
189 - 2,3,3',4,4',5,5' - Heptachlorobiphenyl	0.0001
<b>Dioxins</b>	<b>Compound TEF</b>
2,3,7,8- Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	1
1,2,3,7,8- Pentachloro dibenzo-p-dioxin (1,2,3,7,8-PeCDD)	1
1,2,3,4,7,8- Hexachloro dibenzo-p-dioxin (1,2,3,4,7,8-HxCDD)	0.1
1,2,3,7,8,9- Hexachloro dibenzo-p-dioxin (1,2,3,7,8,9- HxCDD)	0.1
1,2,3,6,7,8- Hexachloro dibenzo-p-dioxin (1,2,3,6,7,8- HxCDD)	0.1
1,2,3,4,6,7,8- Heptachloro dibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	0.01
1,2,3,4,6,7,8,9- Octachloro dibenzo-p-dioxin (1,2,3,4,6,7,8,9-OCDD)	0.0001
2,3,7,8- Tetrachlorodibenzofuran (2,3,7,8-TCDF)	0.1
1,2,3,7,8- Pentachlorodibenzofuran (1,2,3,7,8-PeCDF)	0.05
2,3,4,7,8- Pentachlorodibenzofuran (2,3,4,7,8-PeCDF)	0.5
1,2,3,4,7,8- Hexachlorodibenzofuran (1,2,3,4,7,8-HxCDF)	0.1
1,2,3,7,8,9- Hexachlorodibenzofuran (1,2,3,7,8,9-HxCDF)	0.1
1,2,3,6,7,8- Hexachlorodibenzofuran (1,2,3,6,7,8-HxCDF)	0.1
2,3,4,6,7,8- Hexachlorodibenzofuran (2,3,4,6,7,8-HxCDF)	0.1
1,2,3,4,6,7,8- Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	0.01
1,2,3,4,7,8,9- Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	0.01
1,2,3,4,6,7,8,9- Octachlorodibenzofuran (1,2,3,4,6,7,8,9-OCDF)	0.0001

PCB - polychlorinated biphenyl

TEF - toxicity equivalency factor

Adapted from: CH2MHILL. Calcasieu Estuary Biological Monitoring Program, 2005 Annual Report. Prepared for PPG Industries, Inc; Louisiana Department of Health and Hospitals; Louisiana Department of Environmental Quality. 2006 Mar.

**Appendix B**  
**Data Review**

**Table B-1: Calcasieu Estuary Station 2, Blue Crab Meat, Dioxins and Furans**

<b>Compound</b>	<b>Conc.*</b>	<b>1/2 DL<sup>†</sup></b>	<b>TEF<sup>‡</sup></b>	<b>TEQ<sup>§</sup></b>
2,3,7,8-TCDD	0.404	0.404	1	0.404
1,2,3,7,8-PeCDD	0.652	0.652	1	0.652
1,2,3,4,7,8-HxCDD	0.31	0.31	0.1	0.031
1,2,3,6,7,8-HxCDD	0.685	0.685	0.1	0.0685
1,2,3,7,8,9-HxCDD	0.493	0.493	0.1	0.0493
1,2,3,4,6,7,8-HpCDD	3.28	3.28	0.01	0.0328
1,2,3,4,6,7,8,9-OCDD	40.5	40.5	0.0001	0.00405
2,3,7,8-TCDF	2.48	2.48	0.1	0.248
1,2,3,7,8-PeCDF	4.83	4.83	0.05	0.2415
2,3,4,7,8-PeCDF	1.17	1.17	0.5	0.585
1,2,3,4,7,8-HxCDF	0.926	0.926	0.1	0.0926
1,2,3,6,7,8-HxCDF	10.5	10.5	0.1	1.05
2,3,4,6,7,8-HxCDF	0.193	0.0965	0.1	0.00965
1,2,3,7,8,9-HxCDF	0.125	0.0625	0.1	0.00625
1,2,3,4,6,7,8-HpCDF	3.11	3.11	0.01	0.0311
1,2,3,4,7,8,9-HpCDF	0.141	0.0705	0.01	0.000705
1,2,3,4,6,7,8,9-OCDF	1.45	1.45	0.0001	0.000145
			<b>Total TEQ</b>	3.5066
			<b>Reported TEQ</b>	3.51

\*Conc. = concentration of contaminant detected, expressed in picograms per gram (pg/g)

<sup>†</sup>DL = detection limit; the lowest concentration of a chemical that can reliably be distinguished from a zero concentration. In this column, contaminants that were not detected are shaded in gray. These non-detects were expressed as half the detection limit. All concentrations were reported in picograms per gram (pg/g)

<sup>‡</sup>TEF = toxicity equivalency factor

<sup>§</sup>TEQ = toxicity equivalency quotient

**Table B-2: Calcasieu Estuary Station 4L, Black Drum Meat, Dioxins and Furans**

<b>Compound</b>	<b>Conc.*</b>	<b>1/2 DL<sup>†</sup></b>	<b>TEF<sup>‡</sup></b>	<b>TEQ<sup>§</sup></b>
2,3,7,8-TCDD	63.7**	31.85	1	31.85
1,2,3,7,8-PeCDD	0.279	0.1395	1	0.1395
1,2,3,4,7,8-HxCDD	0.453	0.2265	0.1	0.02265
1,2,3,6,7,8-HxCDD	0.81	0.81	0.1	0.081
1,2,3,7,8,9-HxCDD	0.427	0.2135	0.1	0.02135
1,2,3,4,6,7,8-HpCDD	0.813	0.813	0.01	0.00813
1,2,3,4,6,7,8,9-OCDD	2.44	2.44	0.0001	0.000244
2,3,7,8-TCDF	3.97	3.97	0.1	0.397
1,2,3,7,8-PeCDF	7.9	7.9	0.05	0.395
2,3,4,7,8-PeCDF	2.32	2.32	0.5	1.16
1,2,3,4,7,8-HxCDF	2.87	2.87	0.1	0.287
1,2,3,6,7,8-HxCDF	16.3	16.3	0.1	1.63
2,3,4,6,7,8-HxCDF	0.18	0.09	0.1	0.009
1,2,3,7,8,9-HxCDF	0.31	0.155	0.1	0.0155
1,2,3,4,6,7,8-HpCDF	31.4	31.4	0.01	0.314
1,2,3,4,7,8,9-HpCDF	0.248	0.124	0.01	0.00124
1,2,3,4,6,7,8,9-OCDF	0.682	0.341	0.0001	3.41E-05
<b>Total TEQ</b>				36.33165
<b>Reported TEQ</b>				36.3

\*Conc. = concentration of contaminant detected, expressed in picograms per gram (pg/g)

<sup>†</sup>DL = detection limit; the lowest concentration of a chemical that can reliably be distinguished from a zero concentration. In this column, contaminants that were not detected are shaded in gray. These non-detects were expressed as half the detection limit. All concentrations were reported in picograms per gram (pg/g)

<sup>‡</sup>TEF = toxicity equivalency factor

<sup>§</sup>TEQ = toxicity equivalency quotient

\*\*This concentration was identified as erroneously reported.

**Table B-3: Calcasieu Estuary Station 5, Sand Seatrout Meat, Dioxins and Furans**

<b>Compound</b>	<b>Conc.*</b>	<b>1/2 DL<sup>†</sup></b>	<b>TEF<sup>‡</sup></b>	<b>TEQ<sup>§</sup></b>
2,3,7,8-TCDD	0.124	0.062	1	0.062
1,2,3,7,8-PeCDD	0.131	0.0655	1	0.0655
1,2,3,4,7,8-HxCDD	0.373	0.1865	0.1	0.01865
1,2,3,6,7,8-HxCDD	0.271	0.271	0.1	0.0271
1,2,3,7,8,9-HxCDD	0.362	0.181	0.1	0.0181
1,2,3,4,6,7,8-HpCDD	0.576	0.576	0.01	0.00576
1,2,3,4,6,7,8,9-OCDD	2.67	2.67	0.0001	0.000267
2,3,7,8-TCDF	0.401	0.401	0.1	0.0401
1,2,3,7,8-PeCDF	5.55	5.55	0.05	0.2775
2,3,4,7,8-PeCDF	0.302	0.151	0.5	0.0755
1,2,3,4,7,8-HxCDF	0.628	0.314	0.1	0.0314
1,2,3,6,7,8-HxCDF	11.6	11.6	0.1	1.16
2,3,4,6,7,8-HxCDF	0.126	0.063	0.1	0.0063
1,2,3,7,8,9-HxCDF	0.189	0.0945	0.1	0.00945
1,2,3,4,6,7,8-HpCDF	4.08	4.08	0.01	0.0408
1,2,3,4,7,8,9-HpCDF	0.14	0.07	0.01	0.0007
1,2,3,4,6,7,8,9-OCDF	0.34	0.17	0.0001	0.000017
			<b>Total TEQ</b>	1.839144
			<b>Reported TEQ</b>	1.84

\*Conc. = concentration of contaminant detected, expressed in picograms per gram (pg/g)

<sup>†</sup>DL = detection limit; the lowest concentration of a chemical that can reliably be distinguished from a zero concentration. In this column, contaminants that were not detected are shaded in gray. These non-detects were expressed as half the detection limit. All concentrations were reported in picograms per gram (pg/g)

<sup>‡</sup>TEF = toxicity equivalency factor

<sup>§</sup>TEQ = toxicity equivalency quotient

**Table B-4: Calcasieu Estuary Station 6, Blue Crab Meat & Fat, Dioxins and Furans**

<b>Compound</b>	<b>Conc.*</b>	<b>1/2 DL<sup>†</sup></b>	<b>TEF<sup>‡</sup></b>	<b>TEQ<sup>§</sup></b>
2,3,7,8-TCDD	0.291	0.291	1	0.291
1,2,3,7,8-PeCDD	0.359	0.359	1	0.359
1,2,3,4,7,8-HxCDD	0.181	0.181	0.1	0.0181
1,2,3,6,7,8-HxCDD	0.298	0.298	0.1	0.0298
1,2,3,7,8,9-HxCDD	0.203	0.1015	0.1	0.01015
1,2,3,4,6,7,8-HpCDD	0.488	0.488	0.01	0.00488
1,2,3,4,6,7,8,9-OCDD	1.96	1.96	0.0001	0.000196
2,3,7,8-TCDF	3.41	3.41	0.1	0.341
1,2,3,7,8-PeCDF	3.79	3.79	0.05	0.1895
2,3,4,7,8-PeCDF	1.7	1.7	0.5	0.85
1,2,3,4,7,8-HxCDF	1.3	1.3	0.1	0.13
1,2,3,6,7,8-HxCDF	12.9	12.9	0.1	1.29
2,3,4,6,7,8-HxCDF	0.101	0.101	0.1	0.0101
1,2,3,7,8,9-HxCDF	0.0756	0.0378	0.1	0.00378
1,2,3,4,6,7,8-HpCDF	3.93	3.93	0.01	0.0393
1,2,3,4,7,8,9-HpCDF	0.0491	0.02455	0.01	0.000246
1,2,3,4,6,7,8,9-OCDF	0.248	0.124	0.0001	1.24E-05
<b>Total TEQ</b>				3.567064
<b>Reported TEQ</b>				3.57

\*Conc. = concentration of contaminant detected, expressed in picograms per gram (pg/g)

<sup>†</sup>DL = detection limit; the lowest concentration of a chemical that can reliably be distinguished from a zero concentration. In this column, contaminants that were not detected are shaded in gray. These non-detects were expressed as half the detection limit. All concentrations were reported in picograms per gram (pg/g)

<sup>‡</sup>TEF = toxicity equivalency factor

<sup>§</sup>TEQ = toxicity equivalency quotient

**Table B-5: Calcasieu Estuary Station 7, Red Drum Meat, Dioxins and Furans**

<b>Compound</b>	<b>Conc.*</b>	<b>1/2 DL<sup>†</sup></b>	<b>TEF<sup>‡</sup></b>	<b>TEQ<sup>§</sup></b>
2,3,7,8-TCDD	0.0385	0.01925	1	0.01925
1,2,3,7,8-PeCDD	0.0332	0.0166	1	0.0166
1,2,3,4,7,8-HxCDD	0.046	0.023	0.1	0.0023
1,2,3,6,7,8-HxCDD	0.0914	0.0457	0.1	0.00457
1,2,3,7,8,9-HxCDD	0.046	0.023	0.1	0.0023
1,2,3,4,6,7,8-HpCDD	0.0621	0.0621	0.01	0.000621
1,2,3,4,6,7,8,9-OCDD	0.482	0.482	0.0001	4.82E-05
2,3,7,8-TCDF	0.136	0.068	0.1	0.0068
1,2,3,7,8-PeCDF	1.01	1.01	0.05	0.0505
2,3,4,7,8-PeCDF	0.0395	0.0395	0.5	0.01975
1,2,3,4,7,8-HxCDF	0.149	0.149	0.1	0.0149
1,2,3,6,7,8-HxCDF	2.35	2.35	0.1	0.235
2,3,4,6,7,8-HxCDF	0.0201	0.01005	0.1	0.001005
1,2,3,7,8,9-HxCDF	0.0283	0.01415	0.1	0.001415
1,2,3,4,6,7,8-HpCDF	1.23	1.23	0.01	0.0123
1,2,3,4,7,8,9-HpCDF	0.0223	0.01115	0.01	0.000112
1,2,3,4,6,7,8,9-OCDF	0.151	0.0755	0.0001	7.55E-06
			<b>Total TEQ</b>	0.387478
			<b>Reported TEQ</b>	0.387

\*Conc. = concentration of contaminant detected, expressed in picograms per gram (pg/g)

<sup>†</sup>DL = detection limit; the lowest concentration of a chemical that can reliably be distinguished from a zero concentration. In this column, contaminants that were not detected are shaded in gray. These non-detects were expressed as half the detection limit. All concentrations were reported in picograms per gram (pg/g)

<sup>‡</sup>TEF = toxicity equivalency factor

<sup>§</sup>TEQ = toxicity equivalency quotient

**Table B-6: Calcasieu Estuary Station 8, Southern Flounder Meat, Dioxins and Furans**

<b>Compound</b>	<b>Conc.*</b>	<b>1/2 DL<sup>†</sup></b>	<b>TEF<sup>‡</sup></b>	<b>TEQ<sup>§</sup></b>
2,3,7,8-TCDD	0.0659	0.03295	1	0.03295
1,2,3,7,8-PeCDD	0.0527	0.02635	1	0.02635
1,2,3,4,7,8-HxCDD	0.0488	0.0244	0.1	0.00244
1,2,3,6,7,8-HxCDD	0.0909	0.04545	0.1	0.004545
1,2,3,7,8,9-HxCDD	0.086	0.043	0.1	0.0043
1,2,3,4,6,7,8-HpCDD	0.234	0.117	0.01	0.00117
1,2,3,4,6,7,8,9-OCDD	0.587	0.587	0.0001	0.0000587
2,3,7,8-TCDF	0.0663	0.0663	0.1	0.00663
1,2,3,7,8-PeCDF	0.315	0.315	0.05	0.01575
2,3,4,7,8-PeCDF	0.0537	0.0537	0.5	0.02685
1,2,3,4,7,8-HxCDF	0.0707	0.0707	0.1	0.00707
1,2,3,6,7,8-HxCDF	0.398	0.398	0.1	0.0398
2,3,4,6,7,8-HxCDF	0.014	0.007	0.1	0.0007
1,2,3,7,8,9-HxCDF	0.0194	0.0097	0.1	0.00097
1,2,3,4,6,7,8-HpCDF	0.156	0.156	0.01	0.00156
1,2,3,4,7,8,9-HpCDF	0.0188	0.0094	0.01	0.000094
1,2,3,4,6,7,8,9-OCDF	0.121	0.0605	0.0001	0.00000605
<b>Total TEQ</b>				0.17124375
<b>Reported TEQ</b>				0.171

\*Conc. = concentration of contaminant detected, expressed in picograms per gram (pg/g)

<sup>†</sup>DL = detection limit; the lowest concentration of a chemical that can reliably be distinguished from a zero concentration. In this column, contaminants that were not detected are shaded in gray. These non-detects were expressed as half the detection limit. All concentrations were reported in picograms per gram (pg/g)

<sup>‡</sup>TEF = toxicity equivalency factor

<sup>§</sup>TEQ = toxicity equivalency quotient

**Table B-7: Calcasieu Estuary Station 9, Black Drum Meat, Dioxins and Furans**

<b>Compound</b>	<b>Conc.*</b>	<b>1/2 DL<sup>†</sup></b>	<b>TEF<sup>‡</sup></b>	<b>TEQ<sup>§</sup></b>
2,3,7,8-TCDD	0.0562	0.0281	1	0.0281
1,2,3,7,8-PeCDD	0.0386	0.0193	1	0.0193
1,2,3,4,7,8-HxCDD	0.0525	0.02625	0.1	0.002625
1,2,3,6,7,8-HxCDD	0.0531	0.02655	0.1	0.002655
1,2,3,7,8,9-HxCDD	0.0348	0.0174	0.1	0.00174
1,2,3,4,6,7,8-HpCDD	0.0598	0.0299	0.01	0.000299
1,2,3,4,6,7,8,9-OCDD	0.33	0.165	0.0001	1.65E-05
2,3,7,8-TCDF	0.0813	0.04065	0.1	0.004065
1,2,3,7,8-PeCDF	0.258	0.258	0.05	0.0129
2,3,4,7,8-PeCDF	0.0477	0.02385	0.5	0.011925
1,2,3,4,7,8-HxCDF	0.0137	0.00685	0.1	0.000685
1,2,3,6,7,8-HxCDF	0.0467	0.02335	0.1	0.002335
2,3,4,6,7,8-HxCDF	0.015	0.0075	0.1	0.00075
1,2,3,7,8,9-HxCDF	0.0206	0.0103	0.1	0.00103
1,2,3,4,6,7,8-HpCDF	0.0343	0.01715	0.01	0.000172
1,2,3,4,7,8,9-HpCDF	0.0313	0.01565	0.01	0.000157
1,2,3,4,6,7,8,9-OCDF	0.144	0.072	0.0001	7.2E-06
<b>Total TEQ</b>				0.088761
<b>Reported TEQ</b>				0.0888

\*Conc. = concentration of contaminant detected, expressed in picograms per gram (pg/g)

<sup>†</sup>DL = detection limit; the lowest concentration of a chemical that can reliably be distinguished from a zero concentration. In this column, contaminants that were not detected are shaded in gray. These non-detects were expressed as half the detection limit. All concentrations were reported in picograms per gram (pg/g)

<sup>‡</sup>TEF = toxicity equivalency factor

<sup>§</sup>TEQ = toxicity equivalency quotient

**Table B-8: Calcasieu Estuary Station 10, Oyster Meat, Dioxins and Furans**

Compound	Conc.*	1/2 DL <sup>†</sup>	TEF <sup>‡</sup>	TEQ <sup>§</sup>
2,3,7,8-TCDD	0.0316	0.0158	1	0.0158
1,2,3,7,8-PeCDD	0.0575	0.02875	1	0.02875
1,2,3,4,7,8-HxCDD	0.0696	0.0348	0.1	0.00348
1,2,3,6,7,8-HxCDD	0.125	0.0625	0.1	0.00625
1,2,3,7,8,9-HxCDD	0.118	0.059	0.1	0.0059
1,2,3,4,6,7,8-HpCDD	0.404	0.202	0.01	0.00202
1,2,3,4,6,7,8,9-OCDD	6.42	6.42	0.0001	0.000642
2,3,7,8-TCDF	0.122	0.122	0.1	0.0122
1,2,3,7,8-PeCDF	0.464	0.464	0.05	0.0232
2,3,4,7,8-PeCDF	0.065	0.0325	0.5	0.01625
1,2,3,4,7,8-HxCDF	0.0685	0.0685	0.1	0.00685
1,2,3,6,7,8-HxCDF	0.0308	0.0154	0.1	0.00154
2,3,4,6,7,8-HxCDF	0.0311	0.01555	0.1	0.001555
1,2,3,7,8,9-HxCDF	0.0147	0.00735	0.1	0.000735
1,2,3,4,6,7,8-HpCDF	0.221	0.1105	0.01	0.001105
1,2,3,4,7,8,9-HpCDF	0.0254	0.0127	0.01	0.000127
1,2,3,4,6,7,8,9-OCDF	0.257	0.1285	0.0001	0.00001285
<b>Total TEQ</b>				0.12641685
<b>Reported TEQ</b>				0.126

\*Conc. = concentration of contaminant detected, expressed in picograms per gram (pg/g)

<sup>†</sup>DL = detection limit; the lowest concentration of a chemical that can reliably be distinguished from a zero concentration. In this column, contaminants that were not detected are shaded in gray. These non-detects were expressed as half the detection limit. All concentrations were reported in picograms per gram (pg/g)

<sup>‡</sup>TEF = toxicity equivalency factor

<sup>§</sup>TEQ = toxicity equivalency quotient

**Table B-9: Calcasieu Estuary Station 11, Blue Crab Meat & Fat, Dioxins and Furans**

<b>Compound</b>	<b>Conc.*</b>	<b>1/2 DL<sup>†</sup></b>	<b>TEF<sup>‡</sup></b>	<b>TEQ<sup>§</sup></b>
2,3,7,8-TCDD	0.394	0.394	1	0.394
1,2,3,7,8-PeCDD	0.653	0.653	1	0.653
1,2,3,4,7,8-HxCDD	0.351	0.351	0.1	0.0351
1,2,3,6,7,8-HxCDD	0.629	0.629	0.1	0.0629
1,2,3,7,8,9-HxCDD	0.449	0.449	0.1	0.0449
1,2,3,4,6,7,8-HpCDD	1.66	1.66	0.01	0.0166
1,2,3,4,6,7,8,9-OCDD	12.8	12.8	0.0001	0.00128
2,3,7,8-TCDF	3.84	3.84	0.1	0.384
1,2,3,7,8-PeCDF	9.58	9.58	0.05	0.479
2,3,4,7,8-PeCDF	1.35	1.35	0.5	0.675
1,2,3,4,7,8-HxCDF	0.43	0.43	0.1	0.043
1,2,3,6,7,8-HxCDF	3.11	3.11	0.1	0.311
2,3,4,6,7,8-HxCDF	0.0691	0.03455	0.1	0.003455
1,2,3,7,8,9-HxCDF	0.0939	0.04695	0.1	0.004695
1,2,3,4,6,7,8-HpCDF	1.66	1.66	0.01	0.0166
1,2,3,4,7,8,9-HpCDF	0.046	0.023	0.01	0.00023
1,2,3,4,6,7,8,9-OCDF	0.188	0.094	0.0001	9.4E-06
			<b>Total TEQ</b>	3.124769
			<b>Reported TEQ</b>	3.12

\*Conc. = concentration of contaminant detected, expressed in picograms per gram (pg/g)

<sup>†</sup>DL = detection limit; the lowest concentration of a chemical that can reliably be distinguished from a zero concentration. In this column, contaminants that were not detected are shaded in gray. These non-detects were expressed as half the detection limit. All concentrations were reported in picograms per gram (pg/g)

<sup>‡</sup>TEF = toxicity equivalency factor

<sup>§</sup>TEQ = toxicity equivalency quotient

**Table B-10: Calcasieu Estuary Station 2, Red Drum Meat, PCB\* Congeners**

PCB Congener	Conc. †	TEF‡	TEQ§
77	13.3	0.0001	0.00133
81	0.4555	0.0001	0.00004555
105	273.5	0.0001	0.02735
114	13.9	0.0005	0.00695
118	1040.5	0.0001	0.10405
123	14.7	0.0001	0.00147
126	3.79	0.1	0.379
156	125	0.0005	0.0625
157	32.65	0.0005	0.016325
167	73.75	0.00001	0.0007375
169	0.3645	0.01	0.003645
189	14.15	0.0001	0.001415
<b>Total TEQ</b>			0.60481805
<b>Reported TEQ</b>			0.603

\*PCB = polychlorinated biphenyl

†Conc. = concentration of contaminant detected, expressed in picograms per gram (pg/g)

‡ TEF = toxicity equivalency factor

§ TEQ = toxicity equivalency quotient

**Table B-11: Calcasieu Estuary Station 4M, Blue Crab Meat, PCB\* Congeners**

PCB Congener	Conc. †	TEF‡	TEQ§
77	235	0.0001	0.0235
81	14.7	0.0001	0.00147
105	3510	0.0001	0.351
114	212	0.0005	0.106
118	14100	0.0001	1.41
123	272	0.0001	0.0272
126	64.2	0.1	6.42
156	1690	0.0005	0.845
157	428	0.0005	0.214
167	1020	0.00001	0.0102
169	4.74	0.01	0.0474
189	212	0.0001	0.0212
<b>Total TEQ</b>			9.47697
<b>Reported TEQ</b>			9.48

\*PCB = polychlorinated biphenyl

†Conc. = concentration of contaminant detected, expressed in picograms per gram (pg/g)

‡ TEF = toxicity equivalency factor

§ TEQ = toxicity equivalency quotient

**Table B-12: Calcasieu Estuary Station 5, Red Drum Meat, PCB\* Congeners**

<b>PCB Congener</b>	<b>Conc. †</b>	<b>TEF‡</b>	<b>TEQ§</b>
77	19.1	0.0001	0.00191
81	0.669	0.0001	0.0000669
105	580	0.0001	0.058
114	32.1	0.0005	0.01605
118	2460	0.0001	0.246
123	30.5	0.0001	0.00305
126	7.62	0.1	0.762
156	338	0.0005	0.169
157	90.6	0.0005	0.0453
167	224	0.00001	0.00224
169	0.534	0.01	0.00534
189	67.3	0.0001	0.00673
<b>Total TEQ</b>			1.3156869
<b>Reported TEQ</b>			1.32

\*PCB = polychlorinated biphenyl

†Conc. = concentration of contaminant detected, expressed in picograms per gram (pg/g)

‡ TEF = toxicity equivalency factor

§ TEQ = toxicity equivalency quotient

**Table B-13: Calcasieu Estuary Station 6, Blue Crab Meat & Fat, PCB\* Congeners**

<b>PCB Congener</b>	<b>Conc. †</b>	<b>TEF‡</b>	<b>TEQ§</b>
77	86.6	0.0001	0.00866
81	5.8	0.0001	0.00058
105	1290	0.0001	0.129
114	88.8	0.0005	0.0444
118	5730	0.0001	0.573
123	106	0.0001	0.0106
126	23.5	0.1	2.35
156	710	0.0005	0.355
157	184	0.0005	0.092
167	458	0.00001	0.00458
169	3.1	0.01	0.031
189	108	0.0001	0.0108
<b>Total TEQ</b>			3.60962
<b>Reported TEQ</b>			3.61

\*PCB = polychlorinated biphenyl

†Conc. = concentration of contaminant detected, expressed in picograms per gram (pg/g)

‡ TEF = toxicity equivalency factor

§ TEQ = toxicity equivalency quotient

**Table B-14: Calcasieu Estuary Station 7, Sand Seatrout Meat, PCB\* Congeners**

PCB Congener	Conc. <sup>†</sup>	TEF <sup>‡</sup>	TEQ <sup>§</sup>
77	57.7	0.0001	0.00577
81	1.76	0.0001	0.000176
105	1410	0.0001	0.141
114	88.5	0.0005	0.04425
118	5910	0.0001	0.591
123	71.1	0.0001	0.00711
126	11.9	0.1	1.19
156	774	0.0005	0.387
157	193	0.0005	0.0965
167	460	0.00001	0.0046
169	2.69	0.01	0.0269
189	113	0.0001	0.0113
<b>Total TEQ</b>			2.505606
<b>Reported TEQ</b>			2.51

\*PCB = polychlorinated biphenyl

<sup>†</sup>Conc. = concentration of contaminant detected, expressed in picograms per gram (pg/g)

<sup>‡</sup> TEF = toxicity equivalency factor

<sup>§</sup> TEQ = toxicity equivalency quotient

**Table B-15: Calcasieu Estuary Station 8, Blue Crab Meat, PCB\* Congeners**

PCB Congener	Conc. <sup>†</sup>	TEF <sup>‡</sup>	TEQ <sup>§</sup>
77	8.57	0.0001	0.000857
81	0.519	0.0001	0.0000519
105	94.7	0.0001	0.00947
114	5.32	0.0005	0.00266
118	445	0.0001	0.0445
123	7.97	0.0001	0.000797
126	1.8	0.1	0.18
156	41.6	0.0005	0.0208
157	11.8	0.0005	0.0059
167	31.5	0.00001	0.000315
169	0.281	0.01	0.00281
189	4.93	0.0001	0.000493
<b>Total TEQ</b>			0.2686539
<b>Reported TEQ</b>			0.269

\*PCB = polychlorinated biphenyl

<sup>†</sup>Conc. = concentration of contaminant detected, expressed in picograms per gram (pg/g)

<sup>‡</sup> TEF = toxicity equivalency factor

<sup>§</sup> TEQ = toxicity equivalency quotient

**Table B-16: Calcasieu Estuary Station 9, Southern Flounder Meat, PCB\* Congeners**

PCB Congener	Conc. †	1/2 DL ‡	TEF §	TEQ**
77	1.48	1.48	0.0001	0.000148
81	0.0875	0.04375	0.0001	0.000004375
105	23.4	23.4	0.0001	0.00234
114	1.22	1.22	0.0005	0.00061
118	91.8	91.8	0.0001	0.00918
123	1.43	1.43	0.0001	0.000143
126	0.304	0.304	0.1	0.0304
156	11.2	11.2	0.0005	0.0056
157	3.37	3.37	0.0005	0.001685
167	7.04	7.04	0.00001	0.0000704
169	0.103	0.0515	0.01	0.000515
189	1.89	1.89	0.0001	0.000189
<b>Total TEQ</b>				0.050884775
<b>Reported TEQ</b>				0.0509

\*PCB = polychlorinated biphenyl

†Conc. = concentration of contaminant detected, expressed in picograms per gram (pg/g)

‡DL = detection limit; the lowest concentration of a chemical that can reliably be distinguished from a zero concentration. In this column, contaminants that were not detected are shaded in gray. These non-detects were expressed as half the detection limit. All concentrations were reported in picograms per gram (pg/g)

§TEF = toxicity equivalency factor

\*\*TEQ = toxicity equivalency quotient

**Table B-17: Calcasieu Estuary Station 10, Red Drum Meat, PCB\* Congeners**

PCB Congener	Conc. †	1/2 DL ‡	TEF §	TEQ**
77	1.16	1.16	0.0001	0.000116
81	0.06	0.03	0.0001	0.000003
105	20.4	20.4	0.0001	0.00204
114	0.338	0.169	0.0005	0.0000845
118	85.9	85.9	0.0001	0.00859
123	1.13	1.13	0.0001	0.000113
126	0.34	0.17	0.1	0.017
156	7	7	0.0005	0.0035
157	3.05	3.05	0.0005	0.001525
167	5.27	5.27	0.00001	0.0000527
169	0.0681	0.03405	0.01	0.0003405
189	0.693	0.693	0.0001	0.0000693
<b>Total TEQ</b>				0.033434
<b>Reported TEQ</b>				0.0334

\*PCB = polychlorinated biphenyl

†Conc. = concentration of contaminant detected, expressed in picograms per gram (pg/g)

‡DL = detection limit; the lowest concentration of a chemical that can reliably be distinguished from a zero concentration. In this column, contaminants that were not detected are shaded in gray. These non-detects were expressed as half the detection limit. All concentrations were reported in picograms per gram (pg/g)

§TEF = toxicity equivalency factor

\*\*TEQ = toxicity equivalency quotient

**Table B-18: Calcasieu Estuary Station 11, Black Drum Meat, PCB\* Congeners**

PCB Congener	Conc. †	1/2 DL ‡	TEF §	TEQ**
77	2.87	2.87	0.0001	0.000287
81	0.131	0.0655	0.0001	0.0000655
105	60.8	60.8	0.0001	0.00608
114	3.53	3.53	0.0005	0.001765
118	278	278	0.0001	0.0278
123	3.68	3.68	0.0001	0.000368
126	0.725	0.725	0.1	0.0725
156	33.2	33.2	0.0005	0.0166
157	14.6	14.6	0.0005	0.0073
167	28.5	28.5	0.00001	0.000285
169	0.092	0.046	0.01	0.00046
189	5.69	5.69	0.0001	0.000569
<b>Total TEQ</b>				0.13402055
<b>Reported TEQ</b>				0.134

\*PCB = polychlorinated biphenyl

†Conc. = concentration of contaminant detected, expressed in picograms per gram (pg/g)

‡DL = detection limit; the lowest concentration of a chemical that can reliably be distinguished from a zero concentration. In this column, contaminants that were not detected are shaded in gray. These non-detects were expressed as half the detection limit. All concentrations were reported in picograms per gram (pg/g)

§TEF = toxicity equivalency factor

\*\*TEQ = toxicity equivalency quotient

**Table B-19: Correction of Calcasieu Estuary Station 4L, Black Drum Meat, Dioxins and Furans**

Compound	Conc.*	1/2 DL <sup>†</sup>	TEF <sup>‡</sup>	TEQ <sup>§</sup>
2,3,7,8-TCDD	0.180	0.09	1	0.09
1,2,3,7,8-PeCDD	0.279	0.1395	1	0.1395
1,2,3,4,7,8-HxCDD	0.453	0.2265	0.1	0.02265
1,2,3,6,7,8-HxCDD	0.81	0.81	0.1	0.081
1,2,3,7,8,9-HxCDD	0.427	0.2135	0.1	0.02135
1,2,3,4,6,7,8-HpCDD	0.813	0.813	0.01	0.00813
1,2,3,4,6,7,8,9-OCDD	2.44	2.44	0.0001	0.000244
2,3,7,8-TCDF	3.97	3.97	0.1	0.397
1,2,3,7,8-PeCDF	7.9	7.9	0.05	0.395
2,3,4,7,8-PeCDF	2.32	2.32	0.5	1.16
1,2,3,4,7,8-HxCDF	2.87	2.87	0.1	0.287
1,2,3,6,7,8-HxCDF	16.3	16.3	0.1	1.63
2,3,4,6,7,8-HxCDF	0.18	0.09	0.1	0.009
1,2,3,7,8,9-HxCDF	0.31	0.155	0.1	0.0155
1,2,3,4,6,7,8-HpCDF	31.4	31.4	0.01	0.314
1,2,3,4,7,8,9-HpCDF	0.248	0.124	0.01	0.00124
1,2,3,4,6,7,8,9-OCDF	0.682	0.341	0.0001	3.41E-05
<b>Total TEQ</b>				4.571648
<b>Reported TEQ</b>				36.3

\*Conc. = concentration of contaminant detected, expressed in picograms per gram (pg/g)

<sup>†</sup>DL = detection limit; the lowest concentration of a chemical that can reliably be distinguished from a zero concentration. In this column, contaminants that were not detected are shaded in gray. These non-detects were expressed as half the detection limit. All concentrations were reported in picograms per gram (pg/g)

<sup>‡</sup>TEF = toxicity equivalency factor

<sup>§</sup>TEQ = toxicity equivalency quotient

**Table B-20: Differences observed in dioxin congener concentrations in red drum sampled from Calcasieu Estuary Station 2**

<b>Compound</b>	<b>Sample Conc.*</b>	<b>Field Duplicate Conc.</b>
2,3,7,8-TCDD	0.126 <sup>†</sup>	0.169
1,2,3,7,8-PeCDD	0.127	0.127
1,2,3,4,7,8-HxCDD	0.199	0.181
1,2,3,6,7,8-HxCDD	0.192	0.182
1,2,3,7,8,9-HxCDD	0.189	0.176
1,2,3,4,6,7,8-HpCDD	3.10	0.601
1,2,3,4,6,7,8,9-OCDD	20.5	3.57
2,3,7,8-TCDF	0.152	0.209
1,2,3,7,8-PeCDF	0.432	0.423
2,3,4,7,8-PeCDF	0.109	0.111
1,2,3,4,7,8-HxCDF	0.0744	0.0776
1,2,3,6,7,8-HxCDF	1.05	0.926
2,3,4,6,7,8-HxCDF	0.0478	0.0961
1,2,3,7,8,9-HxCDF	0.0823	0.155
1,2,3,4,6,7,8-HpCDF	1.06	0.467
1,2,3,4,7,8,9-HpCDF	0.111	0.083
1,2,3,4,6,7,8,9-OCDF	2.40	0.639

\*Conc. = concentration of contaminant detected, expressed in picograms per gram (pg/g)  
As listed in the raw data, the detection limit is reported for those congeners that were not detected.

<sup>†</sup>Nondetects are shaded in gray.