## Field Sampling Report

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1.0 INTRODUCTION

The work described in this Field Sampling Report was performed by Thurston County Public Health and Social Services (TC) on behalf of the Washington State Department of Ecology (Ecology). The sampling effort was designed to provide adequate sampling data to allow the Washington State Department of Health (DOH) to determine the potential health hazards from dioxin contamination to people interacting with sediments within Priest Point Park.

This document will outline the sediment sampling and any deviations from the original Field Sampling Plan (Thurston County, September 2010).

2.0 PROJECT DESCRIPTION

2.1 Overview

Sediment characterization studies of the Olympia Harbor Navigation Channel and Port of Olympia berthing area has found elevated concentrations of dioxins. The data has raised concerns regarding the overall extent of contamination in Budd Inlet and the potential for risk to human health and the environment. To help evaluate the potential hazards for people coming into contact with sediments, TC collected and analyzed 32 sediment samples from the publicly accessible beach at Priest Point Park (currently the only public beach in the southern portion of Budd Inlet).

2.2 Sample Locations

The study zone included the northern and southern intertidal area at Priest Point Park at a minus 2 (-2) tide. TC used a Geographic Information System (GIS, based on ESRI Arcview® 8.1) program to overlay a sampling grid for the entire study zone. The grid consisted of five meter by five meter squares projected over the intertidal beach area with a continuous alphanumeric numbering sequence (Appendix A). A total of 15 sample locations were randomly pre-selected from the northern area and 25 sample locations from the southern area (Appendix A). Of these locations, 10 locations from the northern area were sampled and 20 locations from the southern area. One sample location from the northern area (U73) and one location from the southern area (RRR181) had a duplicate sample collected for total of 32 samples. The extra 5 locations from each area were sampled only if one of the pre-selected locations met the exclusion criteria.
2.3 Sampling

The sampling grid was downloaded onto a Trimble® GPS unit which was used to navigate to each selected sample grid point. If the sample location was acceptable for sampling (no evidence of burning, not vegetated, and not underwater), one discrete sample was collected into a single jar from the upper ten centimeters of sediment. When a location was assigned a duplicate sample, two sample jars were filled with the same sediment to create a duplicate set of samples.

2.4 Sample Location Moved Due to Exclusion Criteria

Since the sampling grid was created on a computer and uploaded onto a GPS device, there were selected grids that could not be sampled. One sample location on the southern area was selected (LLLL156) that was found to be vegetated and had to be replaced with location KKKK159.

3.0 SEDIMENT SAMPLING

3.1 Sample Numbering

The sample number scheme consisted of taking the grid coordinates (ex. U73) and adding either “01” for a discrete sample (U73-01) or “02” for the second sample (U73-02) when a discrete sample point had a duplicate sample collected. The sample numbers and the corresponding sample grid points were noted in the field logbook (Appendix B) and the sample numbers were used on the sample jars and chain-of-custody form (Appendix C).

3.2 Sampling Protocol

All sampling activities were conducted according to the Field Sampling Health and Safety Plan (Appendix D).

1. Sampling was performed using a team of two Thurston County employees (Koster and Soderberg).
2. Site locations were noted in field book as was the site conditions.
3. Sample collection
   a. All points within a grid were collected using one stainless steel spoon and a set of nitrile gloves.
   b. Each sample was placed into one 9 ounce pre-cleaned glass jar provided by Pace Laboratory.
   c. Instead of collecting sediment into bowls at each discrete sample location, bowls were only used for collecting duplicate samples. At
discrete sample locations, the sediment was placed directly into the glass jars with a pre-cleaned stainless steel spoon.

d. Duplicate samples were collected by placing sediment into a stainless steel bowl and mixing until it was uniform in color and texture. Two 9 ounce jars were filled and labeled with unique sample numbers.

e. Instead of decontaminating sampling spoons between sample points, three dozen stainless steel spoons were purchased so each sample point could be collected with its own spoon. All spoons and bowls were cleaned using Alconox® detergent and rinsed twice with potable water prior to sample collection.

f. Each sample jar had a label with the date and time, sampler’s initials, and sample number.

g. A custody seal was placed across each sample jar lid and down the side of the jar. Pace laboratory noted that all samples were received with their custody seals intact.

h. All sample collection information was recorded into a field logbook (Appendix B) and onto chain of custody forms (Appendix C).

i. After samples were collected, they were placed in a cooler with ice to maintain samples at or below 4°C. Pace Laboratory noted that all the samples were received at acceptable temperatures and were placed in a refrigerator and maintained below 6°C until analyzed.

3.3 Field Logbook

The following information was recorded in the field logbook for the sampling event:

- Sampling team members
- Date and time of sampling event
- Sample numbers (which incorporates the location)
- Sample location description
- Sediment description according to the Unified Soil Classification System

Due to very inclement weather at the time of sampling, gps coordinates were not written into the logbook. The GPS coordinates were collected at the time of sample collection from each sampling point using a Trimble® GPS unit. The coordinates were later downloaded to a computer and incorporated into Appendix E, but not written into the logbook.
3.4 Decontamination and Waste Handling

Stainless steel bowls and spoons were scrubbed using potable water and Alconox® detergent followed by a double rinse with potable water. Thirty-six spoons and two bowls were purchased so that no cleaning needed to take place between sample locations. The dirty spoons and bowls were cleaned and discarded.

3.5 Sample Shipping & Chain of Custody

After the samples were collected they were brought back to Thurston County Public Health and Social Services. Each sample jar was wiped clean and signed custody seals were applied prior to placing into a shipping cooler. Each sample cooler was packed with ziplock® bags of ice and included a copy of the completed chain-of-custody form. After taping the coolers shut, a custody seal was placed over each side of the cooler lids and was shipped to Pace Laboratory via Federal Express®. Pace Laboratory noted that the samples arrived at the appropriate temperature with all the custody seals intact.

3.6 Quality Control Samples for Field Collection

Two duplicate sediment samples were collected to assess field sampling precision. One duplicate sample was collected in the Priest Point Park northern area (U73-01 and U73-02), and another in the Priest Point Park southern area (RRR181-01 and RRR181-02). Since the goal was to obtain different types of sediment, the northern area was collected from an area that was close to land with a steep slope and the southern area was far out from shore in a flat area. The sediments from the northern area were described as; silty sands containing about 80% silt fines and 20% coarse sand. The sediments from the southern area were described as; >95% fine silt with fine sand. The sediments from the southern area were described as; >95% fine silt with fine sand.

Two equipment rinse samples were collected to ensure that the sampling equipment did not transfer contamination to the sediment. Rinse sample “RI-01” consisted of all stainless steel sampling spoons and mixing bowl. Rinse sample “RI-02” consisted of nitrile gloves, sample jar, and stainless steel mixing bowl. The sample was collected by pouring ASTM Type II water (provided by Pace Laboratory) into a bowl containing the corresponding equipment and then pouring the water directly from the bowl into the sample bottles. These rinse samples were labeled, chilled, shipped, and analyzed for dioxins / furans with the rest of the sediment samples.
4.0 LABORATORY ANALYSES

4.1 Analytical Methods Used For Sediment Samples

All dioxin and furan analyses were performed using Method 1613B (tetra- through octa-chlorinated dioxins and furans by isotope dilution HRGC/HRMS). A written report was prepared by Pace Laboratory documenting all the activities associated with the sample analyses (Appendix F).

4.2 Quality Assurance and Quality Control for Lab Analyses

The laboratory quality control and quality assurance sample analyses are included in the data report.

5.0 Data Management

This field sampling report represents the data deliverable to Ecology and includes; a summary of sampling, all deviations from the sampling plan, a table showing sample numbers and GPS positioning, a table of all sampling data, and a set of maps showing the area-wide sample grid as well as individual grid sample points.

All sample data, maps, and technical data from field logs (GPS coordinates, sample numbers, etc.), data report, and laboratory analyses will be retained by TC and copies will be provided to Ecology and DOH.
Appendix A

Sample Locations

(Sampling Sites - North and Sampling Sites - South)
Appendix B

Field Logbook (copy)
NO. 311
ALL-WEATHER Notebook

LEVEL

ALL-WEATHER WRITING PAPER

"Outdoor writing products for outdoor writing people."

2010
Northern Area

Weather = 60°F  O'wing Rainy

W 39° 0' 001

2/10/11

Wettest = 60°F  O'wing Rainy

M-10 15Ans. (8+4)

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2/10/11

Government List

Editorial Missed
KKK 159-1-01

Location - 2/12/08
200 N. 4th St.

Start date - 7/27/08
End date - 8/31/08

Kirkman & Kirkman

Southern Ave

10/10/10

Laetus et rursus

KKK 159-1-01 12-08

Location - 2/12/08
200 N. 4th St.

Start date - 7/27/08
End date - 8/31/08

Kirkman & Kirkman

Southern Ave

10/10/10

Laetus et rursus
Appendix C

Chain of Custody
**CHAIN OF CUSTODY**

**Preservation Codes**

- A = None
- B = HCL
- C = H2SO4
- D = HNO3
- E = Water
- F = Methanol
- G = Sodium Bisulfate Solution
- H = Sodium Thiosulfate
- J = Other

**Data Package Options**

- [ ] EPA Level III (billable)
- [ ] EPA Level IV
- [ ] On your sample (billable)
- [ ] NOT needed on your sample

**Matrix Codes**

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<td>C = Charcoal</td>
<td>GW = Ground Water</td>
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**Rush Turnaround Time Requested - Prelims**

(Rush TAT subject to approval/surchage)

- Date/Time: 10/13/06 12:00
- Date/Time: 10/14/06 10:00

**Cooler Custody Seal**

- Present
- Intact

**Sample Receipt pH**

- OK
- Adjusted

**Receipt Temp**

- 45.0 °C

**Samples on HOLD are subject to special pricing and release of liability**
**CHAIN OF CUSTODY**

**Data Package Options**
- EPA Level III
- EPA Level IV
- Not needed on your sample

**Matrix Codes**
- **A** = Air
- **B** = Biota
- **C** = Charcoal
- **D** = Oil
- **E** = Other
- **W** = Water
- **GW** = Ground Water
- **SW** = Surface Water
- **WW** = Waste Water
- **WP** = Wipes

**Preservation Codes**
- **A** = None
- **B** = HCL
- **C** = H2SO4
- **D** = HNO3
- **E** = DI Water
- **F** = Methanol
- **G** = Sodium Bisulfate Solution
- **I** = Sodium Thiosulfate
- **J** = Other

**Samples on HOLD are subject to special pricing and release of liability**

**Rush Turnaround Time Requested - Prelims**
(Rush TAT subject to approval/surcharge)

**Samples on HOLD are subject to special pricing and release of liability**

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- Received By: 10/13/2000
- Date Time: 10/13/2000

**Rush Turnaround Time Requested - Prelims**
(Rush TAT subject to approval/surcharge)

**Samples on HOLD are subject to special pricing and release of liability**

**Rush Turnaround Time Requested - Prelims**
(Rush TAT subject to approval/surcharge)

**Samples on HOLD are subject to special pricing and release of liability**
**CHAIN OF CUSTODY**

**Preservation Codes**
- A=None
- B=HCl
- C=H2SO4
- D=HN03
- E=DI Water
- H=Sodium Bisulfate Solution
- I=Sodium Thiosulfate
- J=Other

**FILTERED?** (YES/NO)

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**Data Package Options**
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- NOT needed on your sample

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- (Rush TAT subject to approval/surcharge)
- Date Needed:
- Transmit Prelim Rush Results by (complete what you want):
- Email #1:
- Email #2:
- Telephone:
- Fax:

Samples on HOLD are subject to special pricing and release of liability

**PACE Project No.:**

**Relinquished By:**
- Date/Time:
- Identified By:
- Date/Time:
- Rejected By:
- Date/Time:
- Received By:
- Date/Time:
- Receipt Temp = 32 °C
- Sample Receipt pH OK / Adjusted
- Cooler Custody Seal
- Present / Not Present
- Intact / Not Intact

**COC No.:**

**Quote #:**
- Mail To Contact:
- Mail To Company:
- Mail To Address:
- Invoice To Contact:
- Invoice To Company:
- Invoice To Address:
- Invoice To Phone:
- Mail To Address:
- Invoice To Address:
- Invoice To Address:
- Invoice To Address:
- Invoice To Address:

**VERSION 6.0 06/14/06**
**Sample Condition Upon Receipt**

**Client Name:** Thurston County  
**Project #:** 10140376

**Courier:**  
- [ ] Fed Ex  
- [ ] UPS  
- [ ] USPS  
- [ ] Client  
- [ ] Commercial  
- [ ] Pace  
- [ ] Other

**Tracking #:** 90751946 4034

**Custody Seal on Cooler/Box Present:**  
- [ ] yes  
- [ ] no  
- [ ] Seals Intact:  
- [ ] yes  
- [ ] no

**Packing Material:**  
- [ ] Bubble Wrap  
- [ ] Bubble Bag  
- [ ] None  
- [ ] Other

**Thermometer Used:**  
- [ ] Yes

**Type of Ice:**  
- [ ] Wet  
- [ ] Blue  
- [ ] None

**Samples on Ice, Cooling process has begun:**  
- [ ] No

**Cooler Temperature:**  
- [ ] 3.2°C

**Biological Tissue is Frozen:**  
- [ ] Yes  
- [ ] No

**Comments:**

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```
"Container labeled "LUL U6-01" is sample "KKK K59-01""
```

**Note:** Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the Pace Analytical Services, Inc.  
F-213Rev.00, 05Aug2009  
1700 Elm Street SE, Suite 200, Minneapolis, MN 55414
Appendix D

Field Sampling Health and Safety Plan
Priest Point Park Study in Thurston County
Health and Safety Plan

1. General
   Site name: Priest Point Park Intertidal Beach Sampling
   Safety officer: Patrick Soderberg (Thurston County Health Dept)
   Proposed date of field activities: October 2010

2. Sampling Objective
   a: Collect samples of soil from 0- 10 cm.
   b: Collect GPS readings at each sample location for incorporation into site map.

3. Key Personnel/Duties Identified:
   Patrick Soderberg - Project manager /safety officer / data collector
   Gerald Tousley - Sampler
   Brad Zulewski - Alternate sampler
   Mark Koster - Alternate sampler
   Nicky Upson - Alternate sampler

4. Site/Waste Characteristics
   Site description: Sampling activities are part of a dioxin contamination study along the beach of Priest Point Park.
   Waste types: Dioxin contaminated sediments.
   Chemical concentration: Unknown, but expected to be less than 1 ppb.

5. Hazard Summary
   Chemical Dioxins – potential routes of entry are dermal / ingestion.
   Physical Physical hazardous associated with heavy lifting and being outdoors, heat or cold stress, slips / trips / falls, uncontrolled animals and people.

6. Site Safety Work plan
   Site entry procedures: Area is open for use by the public.
7. Personnel Protection

Sampling: Sample team will use modified Level D protection. PPE will consist of nitrile gloves and waterproof boots.

Air Monitoring:
- Contaminants of concern: Dioxins.
- Monitoring equipment: Not required (no volatile compounds).

Decontamination:
- Procedures: After sample collection and equipment decontamination, personnel will remove nitrile sampling gloves and boots and visible dirt on any body part will be washed off with soap and water. Nitrile gloves will be thrown away and boots will be rinsed off.

8. Hospital

Name and Location: For all non-emergencies accidents that result in personnel needing medical attention will be brought to Group Health Medical Center at 700 Lilly Road NE, Olympia (see attached map).

9. Emergency Contact Information:

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<th>Name</th>
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Site Safety Plan Consent Agreement

I have received the Site Safety Plan for the Priest Point Park Intertidal Beach Sampling project, dated September 17, 2010. I understand its purpose and consent to adhere to its procedures and guidelines.

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</table>
Appendix E

Field Data
(on request)
REPORT OF LABORATORY ANALYSIS FOR PCDD/PCDF

Report Prepared for:

Patrick Soderberg
Thurston County Health Dept
412 Lilly Road NE
Olympia WA 98506

Report Prepared Date:
November 5, 2010

Report Information:

Pace Project #: 10140376
Sample Receipt Date: 10/13/2010
Client Project #: Budd Inlet
Client Sub PO #: N/A
State Cert #: C755

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCDD/PCDF Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

Scott Unze, Project Manager
(612) 607-6383
(612) 607-6444 (fax)
scott.unze@pacelabs.com

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.
DISCUSSION

This report presents the results from the analyses performed on thirty-four samples submitted by a representative of Thurston County. The samples were analyzed for the presence or absence of polychlorodibenzo-p-dioxins (PCDDs) and polychlorodibenzofurans (PCDFs) using a modified version of USEPA Method 1613B. Reporting limits were based on signal-to-noise measurements.

The isotopically-labeled PCDD/PCDF internal standards in the sample extracts were recovered at 25-129%. With the exception of one elevated value, which was flagged "R" on the results table, the labeled standard recoveries obtained for this project were within the Method 1613B target ranges. Also, since the quantification of the native 2,3,7,8-substituted congeners was based on isotope dilution, the data were automatically corrected for recovery and accurate values were obtained.

In some cases, interfering substances impacted the determinations of PCDD or PCDF congeners. The affected values were flagged "I" where incorrect isotope ratios were obtained.

A laboratory method blank was prepared and analyzed with each sample batch as part of our routine quality control procedures. The results show the blanks to contain trace levels of selected congeners. These were below the calibration range of the method. Sample levels similar to the corresponding blank levels were flagged "B" on the results tables and may be, at least partially, attributed to the background. It should be noted that levels less than ten times the background are not generally considered to be statistically different from the background.

Laboratory spike samples were also prepared with the sample batches using clean sand or water that had been fortified with native standard materials. The results show that the spiked native compounds were recovered at 94-139%, with relative percent differences of 0.0-19.9%. These results were all within the target ranges for this method. Matrix spikes were prepared with the 11/01/2010 sample batch using sample material from a separate project; results from these analyses will be provided upon request. Matrix spikes were not prepared with the other extraction batches.
## Minnesota Laboratory Certifications

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Appendix A

Sample Management
## CHAIN OF CUSTODY

### Preservation Codes
- A = None
- B = HCl
- C = H2SO4
- D = HNO3
- E = DI Water
- F = Methanol
- G = Sodium Bisulfate Solution
- H = Sodium Thiosulfate
- J = Other

### MATRIX CODES

<table>
<thead>
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<th>MS/MSD</th>
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<td>A = Air</td>
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<tr>
<td>B = Bota</td>
<td></td>
</tr>
<tr>
<td>C = Charcoal</td>
<td></td>
</tr>
<tr>
<td>G = Oil</td>
<td></td>
</tr>
<tr>
<td>S = Soil</td>
<td></td>
</tr>
<tr>
<td>W = Water</td>
<td></td>
</tr>
<tr>
<td>SW = Surface Water</td>
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<tr>
<td>WW = Waste Water</td>
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### Data Package Options
- ☐ EPA Level III (billable)
- ☐ EPA Level IV (billable)
- ☑ NOT needed on your sample

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### Rush Turnaround Time Requested - Prelims
- Rush TAT subject to approval/surcharge
- Date Needed: 10/12/2003
- Date/Time: 12:00 PM

### Samples on HOLD are subject to special pricing and release of liability

### Samples Receipt
- Sample Receipt pH: 0.00
- Cooler Custody Seal: Present / Not Present
- Intact / Not Intact: Intact

### Version 6.0 08/14/06
**CHAIN OF CUSTODY**

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Sampled By (Print)</th>
<th>Sampled By (Sign)</th>
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<tr>
<td>Budd Inlet</td>
<td>Patrick Sodergren</td>
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<td>Patrick Sodergren</td>
<td>360-867-2586</td>
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<td></td>
<td>Patrick Sodergren</td>
<td>360-867-2586</td>
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**Data Package Options**

- **(billable)**
  - EPA Level III
  - EPA Level IV
  - On your sample (billable)
  - NOT needed on your sample

**Matrix Codes**

- A = Air
- B = Blood
- C = Charcoal
- D = Dialysis Fluid
- E = Other
- F = Methanol
- G = Sodium Bisulfate Solution
- H = Sodium Thiosulfate
- J = Other

**Data PackaeeODtions**

- CI EPA Level III
- CI EPA Level IV
- CI On your sample (billable)
- CI NOT neeed on your sample

**PACE LAB #**

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**Rush Turnaround Time Requested - Prelims**

(Rush TAT subject to approval/surcharge)

- Data Needed:

  - Rejected By: [Signature]
  - Date/Time: 10/14/06 1200
  - Received By: [Signature]
  - Date/Time: 10/13/06 1000

**Cooler Custody Seal**

- Present / Not Present
- Intact / Not Intact

**Invoice To Contact:**

- Mail To Contact: [Address]
- Mail To Company: [Address]
- Mail To Phone:
- Invoice To Contact: [Address]
- Invoice To Company: [Address]
- Invoice To Address:
- Invoice To Phone:

**Billable Services**

- MS/MSD
- CI On your sample (billable)
- CI NOT needed on your sample

**Analysis Requested**

- EPIC 1613

**Preservation Codes**

- A = None
- B = HCL
- C = H2SO4
- D = HNO3
- E = DI Water
- F = Methanol
- G = Sodium Bisulfate Solution
- H = Sodium Thiosulfate
- J = Other

**COC No.**

- 10140376014

**Report No.**

- 10140376

**Cooler Custody Seal**

- Present / Not Present
- Intact / Not Intact

**Invoice To Phone:**

- Mail To Contact: [Address]
- Mail To Company: [Address]
- Mail To Phone:
- Invoice To Contact: [Address]
- Invoice To Company: [Address]
- Invoice To Address:
- Invoice To Phone:

**Preservation Cores**

- A = None
- B = HCL
- C = H2SO4
- D = HNO3
- E = DI Water

**Client Comments**

- LAB COMMENTS (Lab Use Only)

**Profile #**

- 03

**Sample Receipt pH**

- OK / Adjusted

**Receipt Temp:**

- 3.0°C

**Page 6 of 64**
**CHAIN OF CUSTODY**

**Preservation Codes**
- A=None
- B=HCl
- C=H2SO4
- D=HNO3
- E=DI Water
- F=Methanol
- G=Sodium Bisulfate Solution
- H=Sodium Thiosulfate

**Filtered? (YES/NO)**

**Preservation**

**Sampled By (Print):** Patricia Sperare

**Sampled By (Sign):**

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**Data Package Options**
- Regulatory Program:
  - [ ] On your sample
  - [ ] On your sample
  - [ ] NOT needed on your sample

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**Matrix Codes**
- A=Air
- W=Water
- D=Drinking Water
- G=Ground Water
- S=Salt Water
- W=Waster Water
- S=Sludge

**Matrix Codes**
- A=Air
- W=Water
- D=Drinking Water
- G=Ground Water
- S=Salt Water
- W=Waster Water
- S=Sludge

**MS/MSD**
- [ ] On your sample
- [ ] NOT needed on your sample

**PACE Project No.**

**COC No.**

**Quote #:**

**Mail To Contact:**

**Mail To Company:**

**Mail To Address:**

**Invoice To Contact:**

**Invoice To Company:**

**Invoice To Address:**

**Invoice To Phone:**

**CLIENT COMMENTS**

**LAB COMMENTS**

(Lab Use Only)

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**Rush Turnaround Time Requested - Prelims**

(Rush TAT subject to approval/surcharge)

**Date Needed:**

**Relinquished By:**

**Date/Time:**

**Certified By:**

**Date/Time:**

**PACE Project No.**

**Recipient Temp:**

**Sample Receipt pH:**

**Cooler Custody Seal:**

**Present/Not Present**

**Intact/Not Intact**

---

**Company Name:** THURSTON COUNTY

**Branch/Location:** Hayacieous Waste

**Project Contact:** Patricia Sperare

**Phone:** 360-867-2586

**Project Number:**

**Project Name:** Budd Inlet

**Project State:** WA

**Sampled By (Print):** Patricia Sperare

**Sampled By (Sign):**

---

**UPPER MIDWEST REGION**

MN: 612-607-1700 WI: 920-469-2436

**Quote #:**

**Mail To Contact:**

**Mail To Company:**

**Mail To Address:**

**Invoice To Contact:**

**Invoice To Company:**

**Invoice To Address:**

**Invoice To Phone:**

**CLIENT COMMENTS**

**LAB COMMENTS**

(Lab Use Only)

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**Rush Turnaround Time Requested - Prelims**

(Rush TAT subject to approval/surcharge)

**Date Needed:**

**Relinquished By:**

**Date/Time:**

**Certified By:**

**Date/Time:**

**PACE Project No.**

**Recipient Temp:**

**Sample Receipt pH:**

**Cooler Custody Seal:**

**Present/Not Present**

**Intact/Not Intact**

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**Version 6.0 06/14/06**

Page 3 of 3
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<tr>
<td><strong>Client Name:</strong> Tomson County</td>
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<tr>
<td><strong>Project #</strong> 10140376</td>
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<tr>
<td><strong>Courier:</strong> Fed Ex □ UPS □ USPS □ Client □ Commercial □ Pace Other □</td>
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<td><strong>Tracking #:</strong> 90151944 4034</td>
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<td><strong>Packing Material:</strong> □ Bubble Wrap □ Bubble Bag □ None □ Other □</td>
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<td><strong>Type of Ice:</strong> □ Wet □ Blue □ None □</td>
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<td><strong>Cooler Temperature:</strong> □ 3.21°C □</td>
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<td><strong>Biological Tissue is Frozen:</strong> □ Yes □ No □</td>
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<td><strong>Temp Blank:</strong> □ Yes □ No □</td>
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<td><strong>Chilled volume received for Dissolved tests:</strong> □ Includes date/time/ID/Analysis □ Matrix:</td>
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<tr>
<td><strong>Sample Labels match COC:</strong> □ Yes □ No □ NA □</td>
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<tr>
<td><strong>All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.</strong> □ Yes □ No □ NA □</td>
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<tr>
<td><strong>All containers needing preservation are found to be in compliance with EPA recommendation.</strong> □ Yes □ No □ NA □</td>
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<td>**Exception: VOA, Coliform, TOC, Oil and Grease, WI-DRO (water) □ Yes □ No □ NA □</td>
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<td><strong>Person Contacted:</strong> Paul S.</td>
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<tr>
<td><strong>Date/Time:</strong> 10/12/10</td>
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<tr>
<td><strong>Comments/ Resolution:</strong></td>
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<td><strong>Field Data Required?</strong> Y/N</td>
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<td><strong>Note:</strong> Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina Division of Environmental Management, Inc. F-213Rev.00, 05Aug2009</td>
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<td><strong>Report No...:</strong> 10140376_1613</td>
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**Note:** Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina Division of Environmental Management, Inc. F-213Rev.00, 05Aug2009.
Reporting Flags

A = Reporting Limit based on signal to noise
B = Less than 10x higher than method blank level
C = Result obtained from confirmation analysis
D = Result obtained from analysis of diluted sample
E = Exceeds calibration range
I = Interference present
J = Estimated value
Nn = Value obtained from additional analysis
P = PCDE Interference
R = Recovery outside target range
S = Peak saturated
U = Analyte not detected
V = Result verified by confirmation analysis
X = %D Exceeds limits
Y = Calculated using average of daily RFs
* = See Discussion
Appendix B

Sample Analysis Summary
## Method 1613B Sample Analysis Results

**Client** - Thurston County Health Dept

<table>
<thead>
<tr>
<th>Native Isomers</th>
<th>Conc (pg/L)</th>
<th>EMPC (pg/L)</th>
<th>EDL (pg/L)</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
</tr>
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<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
<td>ND</td>
<td>1.10</td>
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<td>2,3,7,8-TCDF-13C</td>
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<td>(Using 2005 WHO Factors - Using PRL/2 where ND)</td>
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- **Conc** = Concentration (Totals include 2,3,7,8-substituted isomers).
- **EMPC** = Estimated Maximum Possible Concentration
- **EDL** = Estimated Detection Limit
- **Internal Standards**
- **ng's Added**
- **Percent Recovery**

**Notes:**
- **ND** = Not Detected
- **NA** = Not Applicable
- **NC** = Not Calculated
- **J** = Estimated value
- **B** = Less than 10x higher than method blank level
- **I** = Interference present

---

**REPORT OF LABORATORY ANALYSIS**

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Method 1613B Sample Analysis Results

Client - Thurston County Health Dept

<table>
<thead>
<tr>
<th>Native Isomers</th>
<th>Conc pg/L</th>
<th>EMPC pg/L</th>
<th>EDL pg/L</th>
<th>Internal Standards</th>
<th>ng’s Added</th>
<th>Percent Recovery</th>
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<td>(Using 2005 WHO Factors - Using PRL/2 where ND)</td>
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<td>1.9</td>
<td>1.50</td>
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<td>2.00</td>
<td></td>
<td>J</td>
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<td></td>
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</tbody>
</table>

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit
Equivalence: 2.2 pg/L
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present
## Duplicate Analysis Results

### Client: Thurston County Health Dept

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<th>Compound</th>
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<th>Duplicate Conc.</th>
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<td>ND</td>
<td>NA</td>
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Conc = Concentration   RPD = Relative Percent Difference   NA = Not Applicable   ND = Not Detected

RPD calculations are based on unrounded intermediate data. Consequently, it may not be possible to precisely reconstruct the resultant values from the rounded concentration results, due to rounding errors.
<table>
<thead>
<tr>
<th>Native Isomers</th>
<th>Conc (pg/L)</th>
<th>EMPC (pg/L)</th>
<th>EDL (pg/L)</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
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<td>Total HpCDF</td>
<td>ND</td>
<td>1.20</td>
<td>2.00</td>
<td>(Using 2005 WHO Factors - Using PRL/2 where ND)</td>
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</tr>
<tr>
<td>1,2,3,4,6,7,8-HpCDD</td>
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<td>1.30</td>
<td>J</td>
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<td>1.40</td>
<td>1.40</td>
<td>J</td>
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Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
EDL = Estimated Detection Limit  
NA = Not Applicable  
NC = Not Calculated  
ND = Not Detected  
J = Estimated value  
B = Less than 10x higher than method blank level  
I = Interference present
**Method 1613B Sample Analysis Results**

Client - Thurston County Health Dept

<table>
<thead>
<tr>
<th>Native Isomers</th>
<th>Conc ng/Kg</th>
<th>EMPC ng/Kg</th>
<th>EDL ng/Kg</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
</tr>
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<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
<td>ND</td>
<td>-</td>
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<td>2,3,7,8-TCDF-13C</td>
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<td>-</td>
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<td>-</td>
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<td>ND</td>
<td>-</td>
<td>0.077</td>
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<td>2.00</td>
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<td>1,2,3,7,8-PeCDF</td>
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<td>ND</td>
<td>-</td>
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<td>-</td>
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<tr>
<td>1,2,3,4,6,7,8-HpCDF</td>
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<td>-</td>
<td>0.045</td>
<td>J</td>
<td>Total 2,3,7,8-TCDD</td>
<td></td>
</tr>
<tr>
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<td>ND</td>
<td>-</td>
<td>0.044</td>
<td>Equivalence: 0.15 ng/Kg</td>
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</tr>
<tr>
<td>Total HpCDF</td>
<td>0.096</td>
<td>-</td>
<td>0.044</td>
<td>J</td>
<td>(Using 2005 WHO Factors - Using PRL/2 where ND)</td>
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<tr>
<td>1,2,3,4,6,7,8-HpCDD</td>
<td>0.350</td>
<td>-</td>
<td>0.080</td>
<td>BJ</td>
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</tr>
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<td>Total HpCDD</td>
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<td>-</td>
<td>0.080</td>
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<td>-</td>
<td>0.099</td>
<td>BJ</td>
<td></td>
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</tbody>
</table>

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).

EMPC = Estimated Maximum Possible Concentration

EDL = Estimated Detection Limit

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Estimated value

B = Less than 10x higher than method blank level

**REPORT OF LABORATORY ANALYSIS**

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# Method 1613B Sample Analysis Results

Client - Thurston County Health Dept

<table>
<thead>
<tr>
<th>Native Isomers</th>
<th>Conc</th>
<th>EMPC</th>
<th>EDL</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
<td>0.59</td>
<td>-----</td>
<td>0.11</td>
<td>J</td>
<td>2,3,7,8-TCDF-13C</td>
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<td>J</td>
<td>2,3,7,8-TCDD-13C</td>
<td>2.00</td>
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<tr>
<td>2,3,7,8-TCDD</td>
<td>ND</td>
<td>-----</td>
<td>0.27</td>
<td>J</td>
<td>2,3,4,7,8-PeCDF-13C</td>
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</tr>
<tr>
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<td>J</td>
<td>1,2,3,7,8-PeCDF-13C</td>
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<td>1,2,3,7,8-PeCDF</td>
<td>ND</td>
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<td>J</td>
<td>1,2,3,7,8,9-HxCDF-13C</td>
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<td>ND</td>
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<td>J</td>
<td>1,2,3,6,7,8-HxCDD-13C</td>
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<td>Total PeCDD</td>
<td>ND</td>
<td>-----</td>
<td>0.36</td>
<td>J</td>
<td>1,2,3,4,6,7,8-HpCDF-13C</td>
<td>2.00</td>
</tr>
<tr>
<td>1,2,3,4,7,8-HxCDF</td>
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<td>OCDD-13C</td>
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<td>0.39</td>
<td>J</td>
<td>1,2,3,4,6,7,8-HpCDF-13C</td>
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<tr>
<td>1,2,3,7,8,9-HxCDF</td>
<td>ND</td>
<td>-----</td>
<td>0.59</td>
<td>J</td>
<td>1,2,3,4-TCDD-13C</td>
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<td>Total HxCDF</td>
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<td>2,3,7,8-TCDF-37Cl4</td>
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<td>1,2,3,4,7,8-HxCDD</td>
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<td>2,3,7,8-TCDD-37Cl4</td>
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<td>0.66</td>
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<td>2,3,7,8-TCDD-37Cl4</td>
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<tr>
<td>1,2,3,7,8,9-HxCDD</td>
<td>0.66</td>
<td>-----</td>
<td>0.53</td>
<td>J</td>
<td>2,3,7,8-TCDD-37Cl4</td>
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<tr>
<td>Total HxCDD</td>
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<td>1,2,3,4,6,7,8-HpCDF</td>
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<td>Equivalence: 1.4 ng/Kg</td>
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<td>(Using 2005 WHO Factors - Using PRL/2 where ND)</td>
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<td>2,3,7,8-TCDD-37Cl4</td>
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Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit
J = Estimated value
ND = Not Detected
NA = Not Applicable
NC = Not Calculated

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Method 1613B Sample Analysis Results

Client - Thurston County Health Dept

<table>
<thead>
<tr>
<th>Native Isomers</th>
<th>Conc (ng/Kg)</th>
<th>EMPC (ng/Kg)</th>
<th>EDL (ng/Kg)</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
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<td>2.3,7,8-TCDF-13C</td>
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<td>1,2,3,7,8-PeCDF</td>
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<td>1,2,3,7,8-TCDF-13C</td>
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<td>Total PeCDD</td>
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<td>1,2,3,7,8-TCDF-13C</td>
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<td>1,2,3,7,8,9-HxCDD</td>
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<td>0.38</td>
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<td>Equivalence: 1.2 ng/Kg</td>
<td>(Using 2005 WHO Factors - Using PRL/2 where ND)</td>
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<td></td>
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<td>1,2,3,4,6,7,8-HpCDD</td>
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<td>OCDD</td>
<td>220.00</td>
<td>0.84</td>
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</table>

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit
Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present
## Duplicate Analysis Results

**Client:** Thurston County Health Dept

<table>
<thead>
<tr>
<th>Compound</th>
<th>Sample Conc. ng/Kg</th>
<th>Duplicate Conc. ng/Kg</th>
<th>RPD %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
<td>0.59</td>
<td>0.62</td>
<td>5.8</td>
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<tr>
<td>Total TCDF</td>
<td>5.2</td>
<td>4.1</td>
<td>23.3</td>
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<tr>
<td>2,3,7,8-TCDD</td>
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<td>ND</td>
<td>NA</td>
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<tr>
<td>Total TCDD</td>
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<td>1,2,3,7,8-PeCDF</td>
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<tr>
<td>2,3,4,7,8-PeCDF</td>
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<td>0.32</td>
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<tr>
<td>Total PeCDF</td>
<td>3.4</td>
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<td>2.8</td>
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<tr>
<td>1,2,3,7,8-PeCDD</td>
<td>ND</td>
<td>ND</td>
<td>NA</td>
</tr>
<tr>
<td>Total PeCDD</td>
<td>ND</td>
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<td>NA</td>
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<td>1,2,3,4,7,8-HxCDF</td>
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<td>NA</td>
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<td>ND</td>
<td>NA</td>
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<td>2,3,4,6,7,8-HxCDF</td>
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<td>Total HxCDF</td>
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<td>12</td>
<td>21.4</td>
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<td>ND</td>
<td>NA</td>
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<tr>
<td>1,2,3,6,7,8-HxCDD</td>
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<td>1.3</td>
<td>14.8</td>
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<td>1,2,3,7,8,9-HxCDD</td>
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<td>1,2,3,4,6,7,8-HpCDF</td>
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<td>7.4</td>
<td>16.4</td>
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<td>1,2,3,4,7,8,9-HpCDF</td>
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<td>Total HpCDF</td>
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<tr>
<td>OCDD</td>
<td>250</td>
<td>220</td>
<td>11.9</td>
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</tbody>
</table>

**Notes:**

- **Conc = Concentration**
- **RPD = Relative Percent Difference**
- **NA = Not Applicable**
- **ND = Not Detected**

RPD calculations are based on unrounded intermediate data. Consequently, it may not be possible to precisely reconstruct the resultant values from the rounded concentration results, due to rounding errors.
Method 1613B Sample Analysis Results
Client - Thurston County Health Dept

<table>
<thead>
<tr>
<th>Native Isomers</th>
<th>Conc ng/Kg</th>
<th>EMPC ng/Kg</th>
<th>EDL ng/Kg</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
<td>0.048</td>
<td>0.038</td>
<td>J</td>
<td>2,3,7,8-TCDF-13C</td>
<td>2.00</td>
<td>72</td>
</tr>
<tr>
<td>Total TCDF</td>
<td>0.048</td>
<td>0.038</td>
<td>J</td>
<td>2,3,7,8-TCDF-13C</td>
<td>2.00</td>
<td>72</td>
</tr>
<tr>
<td>2,3,7,8-TCDD</td>
<td>ND</td>
<td>0.047</td>
<td></td>
<td>2,3,7,8-TCDD-13C</td>
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<td>70</td>
</tr>
<tr>
<td>Total TCDD</td>
<td>ND</td>
<td>0.047</td>
<td></td>
<td>2,3,7,8-TCDD-13C</td>
<td>2.00</td>
<td>70</td>
</tr>
<tr>
<td>1,2,3,7,8-PeCDF</td>
<td>ND</td>
<td>0.053</td>
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<td>2,3,6,7,8-HxCDF-13C</td>
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<td>74</td>
</tr>
<tr>
<td>2,3,4,7,8-PeCDF</td>
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<td>2,3,4,6,7,8-HxCDF-13C</td>
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<td>1,2,3,7,8-PeCDD</td>
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<td>Total PeCDD</td>
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<td>2,3,4,6,7,8-HxCDD-13C</td>
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<td>1,2,3,4,7,8-HxCDF</td>
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<td>2,3,4,6,7,8-HxCDF-13C</td>
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<td>1,2,3,6,7,8-HxCDF</td>
<td>ND</td>
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<td>OCDD-13C</td>
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<td>2,3,4,6,7,8-HxCDF</td>
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<td>1,2,3,7,8,9-HxCDD</td>
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<td>0.048</td>
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<td></td>
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<tr>
<td>Total HxCDD</td>
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<tr>
<td>1,2,3,6,7,8-HpCDF</td>
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<td>Total 2,3,7,8-TCDD</td>
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<td>Equivalence: 0.12 ng/Kg</td>
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<td>Total HpCDF</td>
<td>ND</td>
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<tr>
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<td>Total HpCDD</td>
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<td>0.048</td>
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<td>OCDF</td>
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<td>0.062</td>
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<tr>
<td>OCDD</td>
<td>0.470</td>
<td>0.063</td>
<td>I</td>
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</tr>
</tbody>
</table>

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit
ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

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Method 1613B Sample Analysis Results
Client - Thurston County Health Dept

<table>
<thead>
<tr>
<th>Native Isomers</th>
<th>Conc ng/Kg</th>
<th>EMPC ng/Kg</th>
<th>EDL ng/Kg</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
<td>ND</td>
<td>0.060</td>
<td>2,3,7,8-TCDF-13C</td>
<td>2.00</td>
<td>68</td>
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<tr>
<td>Total TCDF</td>
<td>ND</td>
<td>0.060</td>
<td>2,3,7,8-TCDD-13C</td>
<td>2.00</td>
<td>76</td>
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<tr>
<td>2,3,7,8-TCDD</td>
<td>ND</td>
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<td>1,2,3,7,8-PeCDF-13C</td>
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<td>Total TCDD</td>
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<td>1,2,3,7,8-PeCCDF-13C</td>
<td>2.00</td>
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<td>1,2,3,7,8-PeCDF</td>
<td>ND</td>
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<td>1,2,3,6,7,8-HxCDF-13C</td>
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<td>Total PeCDF</td>
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<td>Total PeCDD</td>
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<td>0.160</td>
<td>1,2,3,4,6,7,8-HeCDF-13C</td>
<td>2.00</td>
<td>75</td>
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<td>1,2,3,4,7,8-HxCDF</td>
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<td>1,2,3,4,6,7,8-HeCDF-13C</td>
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<tr>
<td>1,2,3,4,7,8-HxCDF</td>
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<td>0.063</td>
<td>OCDD-13C</td>
<td>4.00</td>
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<td>Total HxCDF</td>
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<td>NA</td>
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<td>0.120</td>
<td>1,2,3,7,8-HxCDF-13C</td>
<td>2.00</td>
<td>NA</td>
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<tr>
<td>Total HxCDD</td>
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<td>Total 2,3,7,8-TCDD</td>
<td>Equivalence: 0.18 ng/Kg</td>
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<td>Total 2,3,7,8-TCDD</td>
<td>(Using 2005 WHO Factors - Using PRL/2 where ND)</td>
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<tr>
<td>Total HpCDF</td>
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<td>Total HpCDD</td>
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<td>0.62</td>
<td>0.081</td>
<td>I</td>
<td></td>
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</tr>
</tbody>
</table>

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit
Internal Standards = Interim certified standards.
ng's Added = Number of ng added.
Percent Recovery = Percent of added ng recovered.
Total 2,3,7,8-TCDD = Total TCDD.
Equivalent value = 0.18 ng/Kg.

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

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## Duplicate Analysis Results

Client: Thurston County Health Dept

<table>
<thead>
<tr>
<th>Compound</th>
<th>Sample Conc. (ng/Kg)</th>
<th>Duplicate Conc. (ng/Kg)</th>
<th>RPD (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
<td>0.048</td>
<td>ND</td>
<td>NA</td>
</tr>
<tr>
<td>Total TCDF</td>
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<td>ND</td>
<td>NA</td>
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<tr>
<td>2,3,7,8-TCDD</td>
<td>ND</td>
<td>ND</td>
<td>NA</td>
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<tr>
<td>Total TCDD</td>
<td>ND</td>
<td>ND</td>
<td>NA</td>
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<tr>
<td>1,2,3,7,8-PeCDF</td>
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<td>Total PeCDF</td>
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<td>NA</td>
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<td>1,2,3,7,8-PeCDD</td>
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<td>NA</td>
</tr>
<tr>
<td>Total PeCDD</td>
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<td>ND</td>
<td>NA</td>
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<td>1,2,3,4,7,8-HxCDF</td>
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<td>NA</td>
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<tr>
<td>1,2,3,6,7,8-HxCDF</td>
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<td>NA</td>
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<tr>
<td>2,3,4,6,7,8-HxCDF</td>
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<td>NA</td>
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<tr>
<td>1,2,3,7,8,9-HxCDF</td>
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<td>NA</td>
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<td>NA</td>
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<td>1,2,3,4,7,8-HxCDD</td>
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<td>1,2,3,6,7,8-HxCDD</td>
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<td>1,2,3,7,8,9-HxCDD</td>
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<td>Total HxCDD</td>
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<td>NA</td>
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<td>1,2,3,4,7,8,9-HpCDF</td>
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<td>ND</td>
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<td>12.9</td>
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<tr>
<td>OCDF</td>
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<tr>
<td>OCDD</td>
<td>ND</td>
<td>ND</td>
<td>NA</td>
</tr>
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</table>

Conc = Concentration  RPD = Relative Percent Difference  NA = Not Applicable  ND = Not Detected

RPD calculations are based on unrounded intermediate data. Consequently, it may not be possible to precisely reconstruct the resultant values from the rounded concentration results, due to rounding errors.
**Method 1613B Sample Analysis Results**

**Client** - Thurston County Health Dept

<table>
<thead>
<tr>
<th>Native Isomers</th>
<th>Conc (ng/Kg)</th>
<th>EMPC (ng/Kg)</th>
<th>EDL (ng/Kg)</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
<td>0.50</td>
<td>-</td>
<td>0.099</td>
<td>2,3,7,8-TCDF-13C</td>
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<td>Total TCDF</td>
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<td>-</td>
<td>0.999</td>
<td>2,3,7,8-TCDF-13C</td>
<td>2.00</td>
<td>87</td>
</tr>
<tr>
<td>2,3,7,8-TCDD</td>
<td>ND</td>
<td>-</td>
<td>0.150</td>
<td>2,3,7,8-TCDD-13C</td>
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</tr>
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<td>-</td>
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<td>2,3,7,8-TCDD-13C</td>
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<tr>
<td>1,2,3,7,8-PeCDF</td>
<td>0.36</td>
<td>-</td>
<td>0.160</td>
<td>1,2,3,6,7,8-HxCDF-13C</td>
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</tr>
<tr>
<td>Total PeCDF</td>
<td>2.40</td>
<td>-</td>
<td>0.150</td>
<td>1,2,3,6,7,8-HxCDF-13C</td>
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</tr>
<tr>
<td>1,2,3,7,8-PeCDD</td>
<td>0.28</td>
<td>-</td>
<td>0.240</td>
<td>1,2,3,6,7,8-HxCDD-13C</td>
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<td>Total PeCDD</td>
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<td>-</td>
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<td>1,2,3,6,7,8-HxCDD-13C</td>
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</tr>
<tr>
<td>1,2,3,4,7,8-HxCDF</td>
<td>0.53</td>
<td>-</td>
<td>0.240</td>
<td>1,2,3,6,7,8-HpCDF-13C</td>
<td>2.00</td>
<td>86</td>
</tr>
<tr>
<td>1,2,3,6,7,8-HxCDF</td>
<td>ND</td>
<td>-</td>
<td>0.310</td>
<td>OCDD-13C</td>
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<td>2,3,4,6,7,8-HxCDF</td>
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<td>0.250</td>
<td>1,2,3,4,6,7,8-HpCDF-13C</td>
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<td>1,2,3,7,8,9-HxCDF</td>
<td>0.29</td>
<td>-</td>
<td>0.280</td>
<td>1,2,3,4,6,7,8-HpCDF-13C</td>
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<tr>
<td>Total HxCDF</td>
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<td>-</td>
<td>0.270</td>
<td>1,2,3,7,8,9-HxCDF-13C</td>
<td>2.00</td>
<td>NA</td>
</tr>
<tr>
<td>1,2,3,4,7,8-HxCDD</td>
<td>0.43</td>
<td>-</td>
<td>0.360</td>
<td>2,3,7,8-TCDF-37Cl4</td>
<td>0.20</td>
<td>88</td>
</tr>
<tr>
<td>1,2,3,6,7,8-HxCDD</td>
<td>1.20</td>
<td>-</td>
<td>0.340</td>
<td>2,3,7,8-TCDF-37Cl4</td>
<td>0.20</td>
<td>88</td>
</tr>
<tr>
<td>1,2,3,7,8,9-HxCDD</td>
<td>0.53</td>
<td>-</td>
<td>0.360</td>
<td>2,3,7,8-TCDF-37Cl4</td>
<td>0.20</td>
<td>88</td>
</tr>
<tr>
<td>Total HxCDD</td>
<td>13.00</td>
<td>-</td>
<td>0.350</td>
<td>2,3,7,8-TCDF-37Cl4</td>
<td>0.20</td>
<td>88</td>
</tr>
</tbody>
</table>

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

- Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
- EMPC = Estimated Maximum Possible Concentration
- EDL = Estimated Detection Limit
- NC = Not Calculated
- ND = Not Detected
- NA = Not Applicable

**REPORT OF LABORATORY ANALYSIS**

This report shall not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.
Client's Sample ID: U73-01
Lab Sample ID: 10140376007
Filename: U101029A_15
Injected By: BAL
Total Amount Extracted: 13.4 g
% Moisture: 22.9
Dry Weight Extracted: 10.4 g

<table>
<thead>
<tr>
<th>ICAL ID</th>
<th>Filename(s)</th>
<th>Method Blank ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>U101029A_03</td>
<td></td>
<td>BLANK-26823</td>
</tr>
</tbody>
</table>

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit
NC = Not Calculated
NA = Not Applicable
ND = Not Detected

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit
NC = Not Calculated
NA = Not Applicable
ND = Not Detected

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit
NC = Not Calculated
NA = Not Applicable
ND = Not Detected
Client's Sample ID: U73-02
Lab Sample ID: 10140376008
Filename: U101029A_16
Injected By: BAL

<table>
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<tr>
<th>Total Amount Extracted</th>
<th>% Moisture</th>
<th>Dry Weight Extracted</th>
<th>ICAL ID</th>
<th>CCal Filename(s)</th>
<th>Method Blank ID</th>
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</thead>
<tbody>
<tr>
<td>13.4 g</td>
<td>24.6</td>
<td>10.1 g</td>
<td>U100929</td>
<td>U101029A_03</td>
<td>BLANK-26823</td>
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</tbody>
</table>

**Method 1613B Sample Analysis Results**

<table>
<thead>
<tr>
<th>Native Isomers</th>
<th>Conc (ng/Kg)</th>
<th>EMPC (ng/Kg)</th>
<th>EDL (ng/Kg)</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
<td>ND</td>
<td>-----</td>
<td>0.087</td>
<td>2,3,7,8-TCDF-13C</td>
<td>2.00</td>
<td>60</td>
</tr>
<tr>
<td>Total TCDF</td>
<td>0.28</td>
<td>-----</td>
<td>0.087</td>
<td>J</td>
<td>2.00</td>
<td>63</td>
</tr>
<tr>
<td>2,3,7,8-TCDD</td>
<td>0.18</td>
<td>-----</td>
<td>0.130 BJ</td>
<td>2,3,7,8-TCDD-13C</td>
<td>2.00</td>
<td>58</td>
</tr>
<tr>
<td>Total TCDD</td>
<td>0.18</td>
<td>-----</td>
<td>0.130 BJ</td>
<td>1,2,3,7,8-TCDD-13C</td>
<td>2.00</td>
<td>59</td>
</tr>
<tr>
<td>1,2,3,7,8-PeCDF</td>
<td>ND</td>
<td>-----</td>
<td>0.180</td>
<td>1,2,3,6,7,8-HxCDF-13C</td>
<td>2.00</td>
<td>62</td>
</tr>
<tr>
<td>2,3,4,7,8-PeCDF</td>
<td>ND</td>
<td>-----</td>
<td>0.190</td>
<td>2,3,4,6,7,8-HxCDF-13C</td>
<td>2.00</td>
<td>60</td>
</tr>
<tr>
<td>Total PeCDF</td>
<td>1.90</td>
<td>-----</td>
<td>0.190 J</td>
<td>1,2,3,7,8-9-HxCDF-13C</td>
<td>2.00</td>
<td>62</td>
</tr>
<tr>
<td>1,2,3,7,8-PeCDD</td>
<td>ND</td>
<td>-----</td>
<td>0.190 J</td>
<td>1,2,3,6,7,8-HxCDD-13C</td>
<td>2.00</td>
<td>58</td>
</tr>
<tr>
<td>Total PeCDD</td>
<td>0.34</td>
<td>-----</td>
<td>0.190 J</td>
<td>1,2,3,4,6,7,8-HpCDF-13C</td>
<td>2.00</td>
<td>57</td>
</tr>
<tr>
<td>1,2,3,4,7,8-HxCDF</td>
<td>ND</td>
<td>-----</td>
<td>0.100</td>
<td>1,2,3,4,6,7,8-HpCDF-13C</td>
<td>2.00</td>
<td>55</td>
</tr>
<tr>
<td>1,2,3,6,7,8-HxCDF</td>
<td>0.15</td>
<td>-----</td>
<td>0.087 J</td>
<td>OCDD-13C</td>
<td>4.00</td>
<td>49</td>
</tr>
<tr>
<td>2,3,4,6,7,8-HxCDF</td>
<td>0.11</td>
<td>-----</td>
<td>0.073 J</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,2,3,7,8-9-HxCDF</td>
<td>ND</td>
<td>-----</td>
<td>0.110</td>
<td>1,2,3,4-TCD-13C</td>
<td>2.00</td>
<td>NA</td>
</tr>
<tr>
<td>Total HxCDF</td>
<td>2.90</td>
<td>-----</td>
<td>0.092 J</td>
<td>1,2,3,7,8-9-HxCDD-13C</td>
<td>2.00</td>
<td>NA</td>
</tr>
<tr>
<td>1,2,3,4,7,8-HxCDD</td>
<td>ND</td>
<td>-----</td>
<td>0.140</td>
<td>2,3,7,8-TCD-37Cl4</td>
<td>0.20</td>
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<tr>
<td>1,2,3,6,7,8-HxCDD</td>
<td>0.38</td>
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<td>0.160 J</td>
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<td></td>
</tr>
<tr>
<td>1,2,3,7,8,9-HxCDD</td>
<td>0.26</td>
<td>-----</td>
<td>0.160 J</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total HxCDD</td>
<td>3.60</td>
<td>-----</td>
<td>0.160 J</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,2,3,4,6,7,8-HpCDF</td>
<td>1.40</td>
<td>-----</td>
<td>0.130 J</td>
<td>Total 2,3,7,8-TCD</td>
<td>2.00</td>
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</tr>
<tr>
<td>1,2,3,4,7,8,9-HpCDF</td>
<td>ND</td>
<td>-----</td>
<td>0.087</td>
<td>Equivalence: 0.50 ng/Kg</td>
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<td></td>
</tr>
<tr>
<td>Total HpCDF</td>
<td>3.10</td>
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<td>0.110 J</td>
<td>(Using 2005 WHO Factors - Using PRL/2 where ND)</td>
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<td></td>
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<tr>
<td>1,2,3,4,6,7,8-HpCDD</td>
<td>5.10</td>
<td>-----</td>
<td>0.150</td>
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<td></td>
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<tr>
<td>Total HpCDD</td>
<td>12.00</td>
<td>-----</td>
<td>0.150</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>OCDF</td>
<td>2.00</td>
<td>-----</td>
<td>0.130 J</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OCDD</td>
<td>34.00</td>
<td>-----</td>
<td>0.360</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit
Internal Standards = Concentration (using 2005 WHO Factors - Using PRL/2 where ND)
ng's Added = 1,2,3,4,7,8,9-HpCDF = 0.150
Percent Recovery = 1,2,3,4,7,8,9-HpCDF = 0.150

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
Method 1613B Sample Analysis Results
Client - Thurston County Health Dept

<table>
<thead>
<tr>
<th>Native Isomers</th>
<th>Conc (ng/Kg)</th>
<th>EMPC (ng/Kg)</th>
<th>EDL (ng/Kg)</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
<td>1.30</td>
<td>-----</td>
<td>0.160</td>
<td>2,3,7,8-TCDF-13C</td>
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<td>95</td>
</tr>
<tr>
<td>Total TCDF</td>
<td>12.00</td>
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<td>2,3,7,8-TCDF-13C</td>
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<td>89</td>
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<tr>
<td>2,3,7,8-TCDD</td>
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<td>0.16</td>
<td>0.100</td>
<td>2,3,4,7,8-PeCDF-13C</td>
<td>2.00</td>
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</tr>
<tr>
<td>Total TCDD</td>
<td>4.60</td>
<td>0.16</td>
<td>0.100</td>
<td>2,3,4,7,8-PeCDF-13C</td>
<td>2.00</td>
<td>89</td>
</tr>
<tr>
<td>1,2,3,7,8-PeCDF</td>
<td>1.00</td>
<td>-----</td>
<td>0.150</td>
<td>1,2,3,6,7,8-HxCDF-13C</td>
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<tr>
<td>2,3,4,7,8-PeCDF</td>
<td>1.40</td>
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<td>2,3,4,6,7,8-HxCDF-13C</td>
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</tr>
<tr>
<td>Total PeCDF</td>
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<td>0.170</td>
<td>1,2,3,7,8,9-HxCDF-13C</td>
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</tr>
<tr>
<td>1,2,3,7,8-PeCDD</td>
<td>1.00</td>
<td>-----</td>
<td>0.360</td>
<td>1,2,3,6,7,8-HxCDD-13C</td>
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</tr>
<tr>
<td>Total PeCDD</td>
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<td>0.360</td>
<td>1,2,3,4,6,7,8-HpCDF-13C</td>
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<td>1,2,3,4,7,8-HxCDF</td>
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<td>0.560</td>
<td>1,2,3,4,6,7,8-HpCDF-13C</td>
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<tr>
<td>1,2,3,4,6,7,8-HxCDF</td>
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<td>0.350</td>
<td>1,2,3,4,6,7,8-HpCDF-13C</td>
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<td>0.470</td>
<td>1,2,3,4,6,7,8-HpCDF-13C</td>
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<td>1,2,3,7,8,9-HxCDF</td>
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<td>0.330</td>
<td>1,2,3,4-TCCD-13C</td>
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<td>1,2,3,4,7,8-HxCDD</td>
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<td>0.350</td>
<td>2,3,7,8-TCDD-37Cl4</td>
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<tr>
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<td>0.380</td>
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<tr>
<td>Total HxCDD</td>
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<td>0.370</td>
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</tr>
<tr>
<td>1,2,3,4,6,7,8-HpCDF</td>
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<td>0.290</td>
<td>Total 2,3,7,8-TCDD</td>
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</tr>
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<td>1,2,3,4,7,8,9-HpCDF</td>
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<td>Equivalence: 4.8 ng/Kg</td>
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<td>Total HpCDF</td>
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<td>0.380</td>
<td>(Using 2005 WHO Factors - Using PRL/2 where ND)</td>
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<td>1,2,3,4,6,7,8-HpCDF</td>
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<td>0.830</td>
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<tr>
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<td>0.830</td>
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</tr>
<tr>
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<td>0.880</td>
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</tbody>
</table>

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit
Percent Recovery

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
NA = Not Applicable
NC = Not Calculated
EDL = Estimated Detection Limit
J = Estimated value
I = Interference present
**Method 1613B Sample Analysis Results**

Client - Thurston County Health Dept

<table>
<thead>
<tr>
<th>Native Isomers</th>
<th>Conc ng/Kg</th>
<th>EMPC ng/Kg</th>
<th>EDL ng/Kg</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
<td>----</td>
<td>0.18</td>
<td>0.071</td>
<td>I</td>
<td>2,3,7,8-TCDF-13C</td>
<td>2.00</td>
</tr>
<tr>
<td>Total TCDF</td>
<td>0.66</td>
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<td>0.071</td>
<td>J</td>
<td>2,3,7,8-TCDD-13C</td>
<td>2.00</td>
</tr>
<tr>
<td>2,3,7,8-TCDD</td>
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<td>----</td>
<td>0.074</td>
<td>BJ</td>
<td>2,3,7,8-PeCDF-13C</td>
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<td>1,2,3,4-TCDF-13C</td>
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<td>0.140</td>
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<td>1,2,3,6,7,8-HxCDD</td>
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<td>----</td>
<td>0.140</td>
<td>J</td>
<td>2,3,7,8-TCDD</td>
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<td>2,3,7,8-TCDD</td>
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<td>1,2,3,4,6,7,8-HpCDF</td>
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<td>J</td>
<td>(Using 2005 WHO Factors - Using PRL/2 where ND)</td>
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<td>OCDF</td>
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<td>0.220</td>
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</table>

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit
Internal Standards = ng's Added
Percent Recovery = Percent Recovery

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

Temperature, relative humidity, and other environmental conditions were not recorded.

Client's Sample ID: CC102-01
Lab Sample ID: 10140376010
Filename: U101029A_17
Injected By: BAL

**REPORT OF LABORATORY ANALYSIS**

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Report No......10140376_1613
## Method 1613B Sample Analysis Results

Client - Thurston County Health Dept

<table>
<thead>
<tr>
<th>Native Isomers</th>
<th>Conc ng/Kg</th>
<th>EMPC ng/Kg</th>
<th>EDL ng/Kg</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
<td>ND</td>
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<td>0.16</td>
<td>2,3,7,8-TCDF-13C</td>
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<td>2,3,7,8-TCDD</td>
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<td>2,3,7,8-TCDD-13C</td>
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<td>1,2,3,7,8-PeCDF</td>
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<td>2,3,4,6,7,8-PeCDF-13C</td>
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<td>1,2,3,7,8-PeCDF-13C</td>
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<td>1,2,3,6,7,8-PeCDD-13C</td>
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<td>1,2,3,4,6,7,8-PeCDD-13C</td>
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<td>1,2,3,4,7,8-HxCDF</td>
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<td>0.22</td>
<td>1,2,3,4,6,7,8-HxCDF-13C</td>
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<td>1,2,3,6,7,8-HxCDF</td>
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<td>0.22</td>
<td>OCDD-13C</td>
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<tr>
<td>1,2,3,7,8,9-HxCDF</td>
<td>ND</td>
<td>-----</td>
<td>0.23</td>
<td>1,2,3,4,7,8-HxCDF-13C</td>
<td>2.00</td>
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<tr>
<td>Total HxCDF</td>
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<td>0.21</td>
<td>1,2,3,7,8,9-HxCDF-13C</td>
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<td>Total 2,3,7,8-TCDD</td>
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Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
EDL = Estimated Detection Limit  
NC = Not Calculated  
ND = Not Detected  
NA = Not Applicable  
Results reported on a dry weight basis and are valid to no more than 2 significant figures.  
J = Estimated value  
I = Interference present
Method 1613B Sample Analysis Results
Client - Thurston County Health Dept

<table>
<thead>
<tr>
<th>Native Isomers</th>
<th>Conc ng/Kg</th>
<th>EMPC ng/Kg</th>
<th>EDL ng/Kg</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
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<td>2,3,7,8-TCDF</td>
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<td>Total HxCDD</td>
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<td>NA</td>
<td>ND</td>
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Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit
Internal Standards = Concentration of added internal standards.
ng's Added = ng's of internal standards added.
Percent Recovery = Percent recovery of added internal standards.

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit
Internal Standards = Concentration of added internal standards.
ng's Added = ng's of internal standards added.
Percent Recovery = Percent recovery of added internal standards.

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value

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Method 1613B Sample Analysis Results

Client - Thurston County Health Dept

<table>
<thead>
<tr>
<th>Native Isomers</th>
<th>Conc (ng/Kg)</th>
<th>EMPC (ng/Kg)</th>
<th>EDL (ng/Kg)</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
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<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
<td>ND</td>
<td>0.17</td>
<td>2,3,7,8-TCDF-13C</td>
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<td>1,2,3,4-TCDD-13C</td>
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</table>

Conc = Concentration (Totals include 2,3,7,8-substituted isomers)  
EMPC = Estimated Maximum Possible Concentration  
EDL = Estimated Detection Limit  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Estimated value
### Method 1613B Sample Analysis Results

**Client**: Thurston County Health Dept

<table>
<thead>
<tr>
<th>Native Isomers</th>
<th>Conc (ng/Kg)</th>
<th>EMPC (ng/Kg)</th>
<th>EDL (ng/Kg)</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
<td>0.74</td>
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<td>J</td>
<td>2,3,7,8-TCDF-13C</td>
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<td>2,3,7,8-TCDF-13C</td>
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<tr>
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<td>2,3,7,8-TCDD-13C</td>
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<td>J</td>
<td>1,2,3,4,7,8-HxCDF-13C</td>
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<td>NA</td>
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<tr>
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<td>1,2,3,7,8,9-HxCDF-13C</td>
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<td>1,2,3,4,7,8-HxCDD</td>
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<td>(Using 2005 WHO Factors - Using PRL/2 where ND)</td>
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</table>

**Conc** = Concentration (Totals include 2,3,7,8-substituted isomers).
**EMPC** = Estimated Maximum Possible Concentration
**EDL** = Estimated Detection Limit
**Internal Standards**
**ng's Added**
**Percent Recovery**

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Estimated value
I = Interference present

---

**REPORT OF LABORATORY ANALYSIS**

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Method 1613B Sample Analysis Results

Client - Thurston County Health Dept

<table>
<thead>
<tr>
<th>Native Isomers</th>
<th>Conc ng/Kg</th>
<th>EMPC ng/Kg</th>
<th>EDL ng/Kg</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
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<td>2,3,7,8-TCDF</td>
<td>0.19</td>
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<td>2,3,7,8-TCDF-13C</td>
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<td>(Using 2005 WHO Factors - Using PRL/2 where ND)</td>
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Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit
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NA = Not Applicable
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J = Estimated value

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### Method 1613B Sample Analysis Results

**Client - Thurston County Health Dept**

<table>
<thead>
<tr>
<th>Native Isomers</th>
<th>Conc</th>
<th>EMPC</th>
<th>EDL</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
</tr>
</thead>
<tbody>
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<td>2,3,7,8-TCDF</td>
<td>0.74</td>
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<td>J</td>
<td>2,3,7,8-TCDF-13C</td>
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<td>1,2,3,4,6,7,8-HpCDF-13C</td>
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<td>1,2,3,4,7,8-HxCDF</td>
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Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit
NC = Not Calculated
NA = Not Applicable
ND = Not Detected

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Estimated value
I = Interference present
# Method 1613B Sample Analysis Results

Client - Thurston County Health Dept

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<thead>
<tr>
<th>Native Isomers</th>
<th>Conc (ng/Kg)</th>
<th>EMPC (ng/Kg)</th>
<th>EDL (ng/Kg)</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
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<td>(Using 2005 WHO Factors - Using PRL/2 where ND)</td>
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Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
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EDL = Estimated Detection Limit
Internal Standards
ng's Added
Percent Recovery
ND = Not Detected
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---

REPORT OF LABORATORY ANALYSIS

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Method 1613B Sample Analysis Results
Client - Thurston County Health Dept

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<th>Native Isomers</th>
<th>Conc ng/Kg</th>
<th>EMPC ng/Kg</th>
<th>EDL ng/Kg</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
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Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
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EDL = Estimated Detection Limit
Internal Standards
ng's Added
Percent Recovery

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J = Estimated value

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Report No.....10140376_1613
## Method 1613B Sample Analysis Results

Client - Thurston County Health Dept

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<th>Native Isomers</th>
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<th>EMPC (ng/Kg)</th>
<th>EDL (ng/Kg)</th>
<th>Internal Standards</th>
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<th>Percent Recovery</th>
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<td>1,2,3,4,6,7,8-HpCDF</td>
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<td>0.31</td>
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<td>Total 2,3,7,8-TCDD</td>
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<tr>
<td>1,2,3,4,7,8,9-HpCDF</td>
<td>ND</td>
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<td>0.49</td>
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<td>Equivalence: 3.9 ng/Kg</td>
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<tr>
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<td>(Using 2005 WHO Factors - Using PRL/2 where ND)</td>
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<tr>
<td>1,2,3,4,6,7,8-HpCDD</td>
<td>73.00</td>
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<td>0.87</td>
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<tr>
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<td>-----</td>
<td>2.00</td>
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</table>

**Conc** = Concentration (Totals include 2,3,7,8-substituted isomers).
**EMPC** = Estimated Maximum Possible Concentration
**EDL** = Estimated Detection Limit
**NC** = Not Calculated
**ND** = Not Detected
**NA** = Not Applicable

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Estimated value
### Method 1613B Sample Analysis Results
**Client:** Thurston County Health Dept

**Native Isomers**

<table>
<thead>
<tr>
<th>Isomer(s)</th>
<th>Conc (ng/Kg)</th>
<th>EMPC (ng/Kg)</th>
<th>EDL (ng/Kg)</th>
<th>Internal Standards</th>
<th>ng'sAdded</th>
<th>Percent Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
<td>ND</td>
<td>0.17</td>
<td>2,3,7,8-TCDF-13C</td>
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<tr>
<td>2,3,7,8-TCDD</td>
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<td>2,3,7,8-TCDD-13C</td>
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</tr>
<tr>
<td>2,3,7,8-PeCDF</td>
<td>0.51</td>
<td>0.28</td>
<td>2,3,4,6,7,8-HxCDF-13C</td>
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<td>82</td>
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</tr>
<tr>
<td>2,3,4,6,7,8-HxCDF</td>
<td>0.38</td>
<td>0.26</td>
<td>2,3,4,6,7,8-HxCDF-13C</td>
<td>2.00</td>
<td>93</td>
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<tr>
<td>Total</td>
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<td>OCDD-13C</td>
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<tr>
<td>1,2,3,7,8-HxCDF</td>
<td>6.30</td>
<td>0.26</td>
<td>1,2,3,7,8-HxCDF-13C</td>
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<td>NA</td>
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<td>1,2,3,4,7,8-HpCDF</td>
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<td>0.23</td>
<td>Total 2,3,7,8-TCDD</td>
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<td>Equivalence: 0.76 ng/Kg</td>
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<td>(Using 2005 WHO Factors - Using PRL/2 where ND)</td>
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<td>11.00</td>
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<tr>
<td>Total HpCDF</td>
<td>27.00</td>
<td>0.49</td>
<td></td>
<td></td>
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<tr>
<td>OCDF</td>
<td>4.40</td>
<td>0.30</td>
<td>J</td>
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<td></td>
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<tr>
<td>OCDD</td>
<td>68.00</td>
<td>1.20</td>
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</tbody>
</table>

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit
ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

### REPORT OF LABORATORY ANALYSIS

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### Method 1613B Sample Analysis Results

Client - Thurston County Health Dept

<table>
<thead>
<tr>
<th>Native Isomers</th>
<th>Conc ng/Kg</th>
<th>EMPC ng/Kg</th>
<th>EDL ng/Kg</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
<td>0.75</td>
<td>0.14</td>
<td>J</td>
<td>2,3,7,8-TCDF-13C</td>
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<td>Total TCDF</td>
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<td>0.14</td>
<td>J</td>
<td>2,3,7,8-TCDD-13C</td>
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<td>91</td>
</tr>
<tr>
<td>2,3,7,8-TCDD</td>
<td>ND</td>
<td>0.19</td>
<td>J</td>
<td>1,2,3,7,8-PeCDF-13C</td>
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<td>107</td>
</tr>
<tr>
<td>Total TCDD</td>
<td>ND</td>
<td>0.19</td>
<td>J</td>
<td>1,2,3,7,8-PeCDF-13C</td>
<td>2.00</td>
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<td>1,2,3,7,8-PeCDF</td>
<td>0.46</td>
<td>0.15</td>
<td>J</td>
<td>1,2,3,6,7,8-HxCDF-13C</td>
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<td>2,3,4,7,8-PeCDF</td>
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<td>0.21</td>
<td>J</td>
<td>2,3,4,6,7,8-HxCDF-13C</td>
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<td>Total PeCDF</td>
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<td>0.18</td>
<td>J</td>
<td>1,2,3,7,8,9-HxCDF-13C</td>
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<td>1,2,3,7,8-PeCDD</td>
<td>0.67</td>
<td>0.30</td>
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<td>1,2,3,6,7,8-HxCDD-13C</td>
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</tr>
<tr>
<td>Total PeCDD</td>
<td>5.70</td>
<td>0.30</td>
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<td>1,2,3,4,6,7,8-HxCDF-13C</td>
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<td>57</td>
</tr>
<tr>
<td>1,2,3,4,7,8-HxCDF</td>
<td>1.00</td>
<td>0.37</td>
<td>J</td>
<td>1,2,3,4,6,7,8-HxCDF-13C</td>
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<tr>
<td>1,2,3,6,7,8-HxCDF</td>
<td>0.64</td>
<td>0.35</td>
<td>J</td>
<td>OCDD-13C</td>
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<td>2,3,4,6,7,8-HxCDF</td>
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<td>0.22</td>
<td>J</td>
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<tr>
<td>1,2,3,7,8,9-HxCDF</td>
<td>0.51</td>
<td>0.31</td>
<td>J</td>
<td>1,2,3,4-TCDD-13C</td>
<td>2.00</td>
<td>NA</td>
</tr>
<tr>
<td>Total HxCDF</td>
<td>15.00</td>
<td>0.31</td>
<td>J</td>
<td>1,2,3,7,8,9-HxCDF-13C</td>
<td>2.00</td>
<td>NA</td>
</tr>
<tr>
<td>1,2,3,4,7,8-HxCDD</td>
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<td>J</td>
<td>2,3,7,8-TCDD-37Cl4</td>
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<td>1,2,3,6,7,8-HxCDD</td>
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<td>0.39</td>
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<td>1,2,3,7,8,9-HxCDD</td>
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<td>0.59</td>
<td>J</td>
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</tr>
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<td>Total HxCDD</td>
<td>27.00</td>
<td>0.45</td>
<td>J</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>1,2,3,4,6,7,8-HpCDF</td>
<td>20.00</td>
<td>0.40</td>
<td>J</td>
<td>Total 2,3,7,8-TCDD</td>
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<tr>
<td>1,2,3,4,7,8,9-HpCDF</td>
<td>ND</td>
<td>0.47</td>
<td>J</td>
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<td>(Using 2005 WHO Factors - Using PRL/2 where ND)</td>
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<tr>
<td>1,2,3,4,6,7,8-HpCDD</td>
<td>45.00</td>
<td>0.83</td>
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<td>1.00</td>
<td>J</td>
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<td>OCDD</td>
<td>360.00</td>
<td>1.20</td>
<td>J</td>
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</tbody>
</table>

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
EDL = Estimated Detection Limit  
Internal Standards = ng's Added  
Percent Recovery = Percent Recovery  
J = Estimated value  

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**REPORT OF LABORATORY ANALYSIS**

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## Method 1613B Sample Analysis Results

Client - Thurston County Health Dept

<table>
<thead>
<tr>
<th>Native Isomers</th>
<th>Conc</th>
<th>EMPC</th>
<th>EDL</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
<td>ND</td>
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<td>0.19</td>
<td>2,3,7,8-TCDF-13C</td>
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<td>2,3,7,8-TCDF-13C</td>
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<td>2,3,7,8-TCDD</td>
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<td>2,3,7,8-TCDD-13C</td>
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<td>0.29</td>
<td>2,3,7,8-TCDD-13C</td>
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<tr>
<td>1,2,3,7,8-PeCDF</td>
<td>0.32</td>
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<td>0.31</td>
<td>J</td>
<td>1,2,3,6,7,8-HxCDF-13C</td>
<td>2.00</td>
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<tr>
<td>2,3,4,7,8-PeCDF</td>
<td>ND</td>
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<td>0.32</td>
<td>J</td>
<td>1,2,3,7,8-9-HxCDF-13C</td>
<td>2.00</td>
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<tr>
<td>1,2,3,7,8-PeCDD</td>
<td>ND</td>
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<td>0.52</td>
<td>1,2,3,6,7,8-HxCDD-13C</td>
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<td>1,2,3,4,6,7,8-HpCDF-13C</td>
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<tr>
<td>1,2,3,6,7,8-HxCDF</td>
<td>ND</td>
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<td>0.28</td>
<td>1,2,3,4,6,7,8-HpCDF-13C</td>
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<tr>
<td>2,3,4,6,7,8-HxCDF</td>
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<td>0.26</td>
<td>OCDD-13C</td>
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<td>0.21</td>
<td>1,2,3,4-TCDD-13C</td>
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<td>NA</td>
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<tr>
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<td>0.27</td>
<td>J</td>
<td>1,2,3,7,8-9-HxCDF-13C</td>
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<tr>
<td>1,2,3,7,8,9-HxCDD</td>
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<td>0.37</td>
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<tr>
<td>Total HxCDD</td>
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<td>0.45</td>
<td>J</td>
<td>(Using 2005 WHO Factors - Using PRL/2 where ND)</td>
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<tr>
<td>1,2,3,4,6,7,8-HpCDF</td>
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<td>1.60</td>
<td>0.35</td>
<td>I</td>
<td>Total 2,3,7,8-TCDD</td>
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<td>1,2,3,4,7,8,9-HpCDF</td>
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<td>NA</td>
<td>ND = Not Detected</td>
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<tr>
<td>Total HpCDF</td>
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<td>0.44</td>
<td>J</td>
<td>ND = Not Detected</td>
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<tr>
<td>1,2,3,4,6,7,8-HpCDD</td>
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<td>Total HpCDD</td>
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<td>ND = Not Detected</td>
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<td>1.10</td>
<td>J</td>
<td>OCDF = Estimated Detection Limit</td>
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</table>

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Estimated value
I = Interference present
### Method 1613B Sample Analysis Results

**Client** - Thurston County Health Dept

<table>
<thead>
<tr>
<th>Native Isomers</th>
<th>Conc (ng/Kg)</th>
<th>EMPC (ng/Kg)</th>
<th>EDL (ng/Kg)</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
<td>0.71</td>
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<td>0.10</td>
<td>J</td>
<td>2,3,7,8-TCDF-13C</td>
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<td>Total TCDF</td>
<td>2.70</td>
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<td>0.10</td>
<td>J</td>
<td>2,3,7,8-TCDF-13C</td>
<td>2.00</td>
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<td>2,3,7,8-PeCDF-13C</td>
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<td>1,2,3,7,8-PeCDF</td>
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<td>-----</td>
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<td>J</td>
<td>1,2,3,7,8-PeCDF-13C</td>
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<td>2,3,7,8-TCDD-37Cl4</td>
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Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
EDL = Estimated Detection Limit  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  
J = Estimated value

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Method 1613B Sample Analysis Results

Client - Thurston County Health Dept

<table>
<thead>
<tr>
<th>Native Isomers</th>
<th>Conc (ng/Kg)</th>
<th>EMPC (ng/Kg)</th>
<th>EDL (ng/Kg)</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
</tr>
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<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
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<td>2,3,7,8-TCDF-13C</td>
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<td>2,3,4,7,8-PCDF-13C</td>
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<td>1,2,3,7,8-PCDF</td>
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<td>0.30 J</td>
<td>2,3,6,7,8-HxCDF-13C</td>
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<td>2,3,4,6,7,8-HxCDF-13C</td>
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<td>2,3,4,6,8-HxCDD-13C</td>
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<td>OCDD-13C</td>
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<td>2,3,4,6,7,8-HxCDF</td>
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<td>1,2,3,7,8-9-HxCDF</td>
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<td>1,2,3,4-TCDD-13C</td>
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<td>NA</td>
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<td>0.27 J</td>
<td>2,3,7,8-9-HxCDD-13C</td>
<td>2.00</td>
<td>NA</td>
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<td>1,2,3,4,7,8-HxCDD</td>
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<td>2,3,7,8-TCDD-37CI4</td>
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<td>0.35 J</td>
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<td>0.30 J</td>
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<td>0.28 J</td>
<td>Total 2,3,7,8-TCDD</td>
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<td>Equivalence: 0.76 ng/Kg</td>
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<td>(Using 2005 WHO Factors - Using PRL/2 where ND)</td>
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<td>0.19 J</td>
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<td>0.77</td>
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</table>

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit
NC = Not Calculated

Results are valid to no more than 2 significant figures.

J = Estimated value

REPORT OF LABORATORY ANALYSIS
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Method 1613B Sample Analysis Results

Client - Thurston County Health Dept

<table>
<thead>
<tr>
<th>Native Isomers</th>
<th>Conc ng/Kg</th>
<th>EMPC ng/Kg</th>
<th>EDL ng/Kg</th>
<th>Internal Standards</th>
<th>ng’s Added</th>
<th>Percent Recovery</th>
</tr>
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<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
<td>ND</td>
<td>ND</td>
<td>0.25</td>
<td>2,3,7,8-TCDF-13C</td>
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<td>0.25</td>
<td>J</td>
<td>2,3,7,8-TCDD-13C</td>
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<td>2,3,7,8-TCDD</td>
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<td>2,3,7,8-TCDF-13C</td>
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EMPC = Estimated Maximum Possible Concentration
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ND = Not Detected
NA = Not Applicable
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I = Interference present
Method 1613B Sample Analysis Results

Client - Thurston County Health Dept

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<th>Native Isomers</th>
<th>Conc (ng/Kg)</th>
<th>EMPC (ng/Kg)</th>
<th>EDL (ng/Kg)</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
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<td>Total TCDF</td>
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<td>2,3,7,8-TCDF-13C</td>
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<td>1,2,3,7,8-PeCDD</td>
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Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit
Internal Standards = ng's Added
Percent Recovery = Percent Recovery
Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present
ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
Tel: 612-607-1700
Fax: 612-607-6444

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Method 1613B Sample Analysis Results
Client - Thurston County Health Dept

<table>
<thead>
<tr>
<th>Native Isomers</th>
<th>Conc ng/Kg</th>
<th>EMPC ng/Kg</th>
<th>EDL ng/Kg</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
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<td>2,3,7,8-PeCDF-13C</td>
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<td>2,3,4,6,7,8-HxCDF-13C</td>
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<td>1,2,3,4,6,7,8-HpCDF-13C</td>
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<td>1,2,3,4,6,7,8-HpCDF-13C</td>
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<td>2,3,4,6,7,8-HxCDF</td>
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<td>0.66</td>
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<td>OCDD-13C</td>
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<td>1,2,3,7,8,9-HxCDF</td>
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<td>1,2,3,4-TCDD-13C</td>
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<tr>
<td>Total HpCDF</td>
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<td>(Using 2005 WHO Factors - Using PRL/2 where ND)</td>
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</table>

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit
NC = Not Calculated
EDL = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS
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### Method 1613B Sample Analysis Results

**Client:** Thurston County Health Dept

<table>
<thead>
<tr>
<th>Native Isomers</th>
<th>Conc (ng/Kg)</th>
<th>EMPC (ng/Kg)</th>
<th>EDL (ng/Kg)</th>
<th>Internal Standards</th>
<th>ng’s Percent Recovery</th>
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<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
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<td>0.39</td>
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<td>2,3,7,8-TCDF-13C</td>
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<td>Total TCDF</td>
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<td>0.39</td>
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<td>2,3,7,8-TCDD-13C</td>
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<td>2,3,7,8-TCDD</td>
<td>ND</td>
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<td>2,3,7,8-TeCDF-13C</td>
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<tr>
<td>1,2,3,7,8-PeCDF</td>
<td>0.62</td>
<td>0.38</td>
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<td>2,3,6,7,8-HxCDF-13C</td>
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<td>0.26</td>
<td>0.27</td>
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<td>2,3,4,6,7,8-HpCDF-13C</td>
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<td>0.35</td>
<td>0.34</td>
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**Conc** = Concentration (Totals include 2,3,7,8-substituted isomers).

**EMPC** = Estimated Maximum Possible Concentration

**EDL** = Estimated Detection Limit

**Internal Standards**

**Percent Recovery**

---

**Conc** = Concentration (Totals include 2,3,7,8-substituted isomers).

**EMPC** = Estimated Maximum Possible Concentration

**EDL** = Estimated Detection Limit

**Percent Recovery**

---

**Results reported on a dry weight basis and are valid to no more than 2 significant figures.**

**J** = Estimated value

**I** = Interference present

---

**REPORT OF LABORATORY ANALYSIS**

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Client's Sample ID: YYY190-01  
Lab Sample ID: 10140376029  
Filename: U101030A_10  
Injected By: BAL  
Total Amount Extracted: 15.7 g  
% Moisture: 30.1  
Dry Weight Extracted: 11.0 g  
ICAL ID: U100929  
CCal Filename(s): U101029A_19  
Method Blank ID: BLANK-26823  

### Native Isomers

<table>
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<tr>
<th>Native Isomers</th>
<th>Conc (ng/Kg)</th>
<th>EMPC (ng/Kg)</th>
<th>EDL (ng/Kg)</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
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<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
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<td>2.3,7,8-TCDF-13C</td>
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<td>2,3,4,6,7,8-HxCDF</td>
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<td>0.21</td>
<td>1,2,3,4-TCDD-13C</td>
<td>2.00</td>
<td>NA</td>
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<tr>
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<td>0.28 J</td>
<td>1,2,3,7,8-9-HxCDF-13C</td>
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<td>NA</td>
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<tr>
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<td>Equivalence: 0.84 ng/Kg</td>
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<tr>
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Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
EDL = Estimated Detection Limit  
ND = Not Detected  
NA = Not Applicable  
NC = Not Calculated  

Results reported on a dry weight basis and are valid to no more than 2 significant figures.  
J = Estimated value
### Method 1613B Sample Analysis Results

**Client:** Thurston County Health Dept  

<table>
<thead>
<tr>
<th>Native Isomers</th>
<th>Conc ng/Kg</th>
<th>EMPC ng/Kg</th>
<th>EDL ng/Kg</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
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<td>0.29</td>
<td>2,3,7,8-TCDF-13C</td>
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<td>2,3,7,8-TCDF-13C</td>
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<td>81</td>
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<td>2,3,7,8-TCDD</td>
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<td>2,3,4,7,8-PeCDF-13C</td>
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<td>2,3,7,8-PeCDF-13C</td>
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<td>1,2,3,6,7,8-HxCDF-13C</td>
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<td>2,3,4,6,7,8-HxCDF-13C</td>
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<td>0.18</td>
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<td>1,2,3,7,8,9-HxCDF</td>
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<td>1,2,3,4-TCDD-13C</td>
<td>2.00</td>
<td>NA</td>
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<td>1,2,3,7,8-9-HxCDF-13C</td>
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<tr>
<td>1,2,3,4,7,8-HxCDD</td>
<td>ND</td>
<td>0.18</td>
<td>2,3,7,8-TCDD-37Cl4</td>
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<td>1,2,3,6,7,8-HxCDD</td>
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<td>0.18</td>
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<td>NA</td>
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<td>1,2,3,7,8,9-HxCDD</td>
<td>0.30</td>
<td>0.18</td>
<td>NA</td>
<td>0.25</td>
<td>NA</td>
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<tr>
<td>Total HxCDD</td>
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<td>0.18</td>
<td>NA</td>
<td>0.25</td>
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<td>1,2,3,4,6,7,8-HpCDF</td>
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<td>Total 2,3,7,8-TCDD</td>
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<td>1,2,3,4,7,8,9-HpCDF</td>
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<td>Equivalence: 0.52 ng/Kg</td>
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<tr>
<td>Total HpCDF</td>
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<td>0.21</td>
<td>(Using 2005 WHO Factors - Using PRL/2 where ND)</td>
<td>0.25</td>
<td>NA</td>
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<tr>
<td>1,2,3,4,6,7,8-HpCDD</td>
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<td>Total 2,3,7,8-TCDD</td>
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<td>NA</td>
<td>0.25</td>
<td>NA</td>
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<tr>
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<td>J</td>
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<td>NA</td>
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<td>0.28</td>
<td>J</td>
<td>0.25</td>
<td>NA</td>
<td></td>
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</tbody>
</table>

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration  
EDL = Estimated Detection Limit  
Results reported on a dry weight basis and are valid to no more than 2 significant figures.  
J =Estimated value  
I = Interference present
## Method 1613B Sample Analysis Results

**Client - Thurston County Health Dept**

<table>
<thead>
<tr>
<th>Native Isomers</th>
<th>Conc (ng/Kg)</th>
<th>EMPC (ng/Kg)</th>
<th>EDL (ng/Kg)</th>
<th>Internal Standards</th>
<th>ng’s Added</th>
<th>Percent Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
<td>ND</td>
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<td>0.36</td>
<td>2,3,7,8-TCDF-13C</td>
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<td>2,3,7,8-TCDF-13C</td>
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<td>0.63</td>
<td>2,3,7,8-TCDD-13C</td>
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<td>1,2,3,7,8-PeCDF</td>
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<td>1,2,3,7,8-PeCDF-13C</td>
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<td>2,3,4,7,8-PeCDF-13C</td>
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<td>1,2,3,7,8-PeCDF-13C</td>
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<td>1,2,3,4,7,8-HxCDF-13C</td>
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<td>1,2,3,6,7,8-HxCDF</td>
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<td>OCDD-13C</td>
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<td>1,2,3,4-TCDD-13C</td>
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<td>1,2,3,7,8,9-HxCDF</td>
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Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit
Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

**REPORT OF LABORATORY ANALYSIS**

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Report No.....10140376_1613
Method 1613B Sample Analysis Results

Client - Thurston County Health Dept

Client's Sample ID QQQQ204-01
Lab Sample ID 10140376032
Filename U101030A_13
Injected By BAL
Total Amount Extracted 14.3 g
% Moisture 29.3
Dry Weight Extracted 10.1 g
ICAL ID U100929
CCal Filename(s) U101029A_19
Method Blank ID BLANK-26823

Native Isomers Conc EMPC EDL Internal Standards ng's Added Percent Recovery

<table>
<thead>
<tr>
<th>Isomers</th>
<th>Conc ng/Kg</th>
<th>EMPC ng/Kg</th>
<th>EDL ng/Kg</th>
<th>Standards</th>
<th>ng's Added</th>
<th>Recovery</th>
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<tr>
<td>2,3,7,8-TCDF</td>
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Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit
INTERNAL STANDARDS

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
R = Recovery outside target range
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<tr>
<th>Native Isomers</th>
<th>Conc (ng/Kg)</th>
<th>EMPC (ng/Kg)</th>
<th>EDL (ng/Kg)</th>
<th>Internal Standards</th>
<th>Recovery Percent</th>
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Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit
Percent Recovery
Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value

REPORT OF LABORATORY ANALYSIS
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Report No.....10140376_1613
Method 1613B Sample Analysis Results
Client - Thurston County Health Dept

Client's Sample ID: XXXX198-01
Lab Sample ID: 10140376034
Filename(s): U101030A_14
Injected By: BAL

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**Results**

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<th>Native Isomers</th>
<th>Conc (ng/Kg)</th>
<th>EMPC (ng/Kg)</th>
<th>EDL (ng/Kg)</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
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<td>2,3,7,8-TCDF-13C</td>
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Conc = Concentration (Totals include 2,3,7,8-substituted isomers).  
EMPC = Estimated Maximum Possible Concentration.  
EDL = Estimated Detection Limit.  
NC = Not Calculated.

Results reported on a dry weight basis and are valid to no more than 2 significant figures.  
J = Estimated value.
# Method 1613B Blank Analysis Results

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<th>Native Isomers</th>
<th>Conc</th>
<th>EMPC</th>
<th>EDL</th>
<th>Internal Standards</th>
<th>ng's Added</th>
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<td>2.5</td>
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</table>

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit

J = Estimated value
I = Interference present
**Method 1613B Blank Analysis Results**

<table>
<thead>
<tr>
<th>Native Isomers</th>
<th>Conc</th>
<th>EMPC</th>
<th>EDL</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
<td>ND</td>
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<td>2,3,7,8-TCDF-13C</td>
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<td>2,3,4,7,8-PeCDF-13C</td>
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<td>0.091 J</td>
<td>2,3,4,7,8-TCDD-13C</td>
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<tr>
<td>1,2,3,7,8-PeCDF</td>
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<tr>
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<td>0.053</td>
<td>OCDD-13C</td>
<td>4.00</td>
<td>64</td>
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<td>NA</td>
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<td>-----</td>
<td>0.066</td>
<td>0.053 I</td>
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<td></td>
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<td>(Using 2005 WHO Factors - Using PRL/2 where ND)</td>
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</tr>
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<td>0.110 J</td>
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</table>

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit

Results reported on a total weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present
Method 1613B Blank Analysis Results

<table>
<thead>
<tr>
<th>Native Isomers</th>
<th>Conc (ng/Kg)</th>
<th>EMPC (ng/Kg)</th>
<th>EDL (ng/Kg)</th>
<th>Internal Standards</th>
<th>ng’s Added</th>
<th>Percent Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
<td>ND</td>
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<td>0.21</td>
<td>2,3,7,8-TCDF-13C</td>
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<td>Total TCDF</td>
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<td>2,3,7,8-TCDD-13C</td>
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</tr>
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<td>2,3,7,8-TCDD</td>
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<td>2,3,4,7,8-PeCDF-13C</td>
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<td>1,2,3,7,8-PeCDF-13C</td>
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<td>1,2,3,7,8-HxCDF-13C</td>
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<td>0.56</td>
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<td>1,2,3,4,6,7,8-HpCDF-13C</td>
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<td>1,2,3,4,7,8-HxCDF</td>
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<td>-----</td>
<td>0.39</td>
<td>OCDD-13C</td>
<td>4.00</td>
<td>53</td>
</tr>
<tr>
<td>1,2,3,7,8,9-HxCDF</td>
<td>ND</td>
<td>-----</td>
<td>0.83</td>
<td>1,2,3,4-TCCD-13C</td>
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<td>NA</td>
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<tr>
<td>Total HxCDF</td>
<td>ND</td>
<td>-----</td>
<td>0.52</td>
<td>1,2,3,7,8,9-HxCDD-13C</td>
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<td>Equivalence: 0.65 ng/Kg</td>
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<td>(Using 2005 WHO Factors - Using PRL/2 where ND)</td>
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<td>1,2,3,4,7,8,9-HpCDF</td>
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<td>0.39</td>
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<td>(Using 2005 WHO Factors - Using PRL/2 where ND)</td>
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<td>1.70</td>
<td></td>
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<td>J</td>
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</table>

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

J = Estimated value
## Method 1613B Blank Analysis Results

<table>
<thead>
<tr>
<th>Native Isoomers</th>
<th>Conc ng/Kg</th>
<th>EMPC ng/Kg</th>
<th>EDL ng/Kg</th>
<th>Internal Standards</th>
<th>ng's Added</th>
<th>Percent Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
<td>ND</td>
<td>-----</td>
<td>0.066</td>
<td>2,3,7,8-TCDF-13C</td>
<td>2.00</td>
<td>71</td>
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<tr>
<td>Total TCDF</td>
<td>ND</td>
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<td>0.066</td>
<td>2,3,7,8-TCDF-13C</td>
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</tr>
<tr>
<td>2,3,7,8-TCDD</td>
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<td>71</td>
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<td>1,2,3,7,8,9-HxCDF</td>
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<td>0.060</td>
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<tr>
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<td>0.051</td>
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<tr>
<td>1,2,3,4,6,7,8-HpCDF</td>
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<td>0.049</td>
<td>Total 2,3,7,8-TCDD</td>
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<tr>
<td>1,2,3,4,7,8,9-HpCDF</td>
<td>ND</td>
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<td>0.073</td>
<td>Equivalence: 0.091 ng/Kg</td>
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<td>ND</td>
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<td>0.061</td>
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</table>

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
EDL = Estimated Detection Limit

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present
Method 1613B Laboratory Control Spike Results

<table>
<thead>
<tr>
<th>Compound</th>
<th>Cs</th>
<th>Cr</th>
<th>Lower Limit</th>
<th>Upper Limit</th>
<th>% Rec.</th>
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<td>11</td>
<td>7.5</td>
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<td>10</td>
<td>11</td>
<td>6.7</td>
<td>15.8</td>
<td>110</td>
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<tr>
<td>1,2,3,7,8-PeCDF</td>
<td>50</td>
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<td>40.0</td>
<td>67.0</td>
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<td>1,2,3,7,8-PeCDF</td>
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Cs = Concentration Spiked (ng/mL)
Cr = Concentration Recovered (ng/mL)
Rec. = Recovery (Expressed as Percent)
Control Limit Reference: Method 1613, Table 6, 10/94 Revision
R = Recovery outside of control limits
Nn = Value obtained from additional analysis
* = See Discussion
## Method 1613B Laboratory Control Spike Results

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Cs = Concentration Spiked (ng/mL)
Cr = Concentration Recovered (ng/mL)
Rec. = Recovery (Expressed as Percent)
Control Limit Reference: Method 1613, Table 6, 10/94 Revision
R = Recovery outside of control limits
Nn = Value obtained from additional analysis
* = See Discussion

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REPORT OF LABORATORY ANALYSIS

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### Method 1613B Laboratory Control Spike Results

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Cs = Concentration Spiked (ng/mL)
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Method 1613B Laboratory Control Spike Results

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Cs = Concentration Spiked (ng/mL)
Cr = Concentration Recovered (ng/mL)
Rec. = Recovery (Expressed as Percent)

Control Limit Reference: Method 1613, Table 6, 10/94 Revision
R = Recovery outside of control limits
Nn = Value obtained from additional analysis
* = See Discussion
## Method 1613B Laboratory Control Spike Results

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Cs = Concentration Spiked (ng/mL)  
Cr = Concentration Recovered (ng/mL)  
Rec. = Recovery (Expressed as Percent)  
Control Limit Reference: Method 1613, Table 6, 10/94 Revision  
R = Recovery outside of control limits  
Nn = Value obtained from additional analysis  
* = See Discussion
## Method 1613B Laboratory Control Spike Results

### Lab Sample ID
LCSD-26825

### Filename
U101029A_07

### Total Amount Extracted
10.1 g

### ICAL ID
U100929

### CCal Filename
U101029A_03

### Method Blank ID
BLANK-26823

### Control Limit Reference: Method 1613, Table 6, 10/94 Revision

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Method 1613B Laboratory Control Spike Results

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</table>

Cs = Concentration Spiked (ng/mL)
Cr = Concentration Recovered (ng/mL)
Rec. = Recovery (Expressed as Percent)
Control Limit Reference: Method 1613, Table 6, 10/94 Revision
R = Recovery outside of control limits
Nn = Value obtained from additional analysis
* = See Discussion
## Method 1613B

**Spike Recovery Relative Percent Difference (RPD) Results**

<table>
<thead>
<tr>
<th>Compound</th>
<th>Spike 1 %REC</th>
<th>Spike 2 %REC</th>
<th>%RPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
<td>115</td>
<td>117</td>
<td>1.7</td>
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<tr>
<td>2,3,7,8-TCDD</td>
<td>110</td>
<td>110</td>
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<tr>
<td>1,2,3,7,8-PeCDF</td>
<td>113</td>
<td>116</td>
<td>2.6</td>
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<tr>
<td>2,3,4,7,8-PeCDF</td>
<td>107</td>
<td>110</td>
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<td>1,2,3,7,8-PeCDD</td>
<td>99</td>
<td>97</td>
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<td>1,2,3,4,7,8-HxCDF</td>
<td>111</td>
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<td>116</td>
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</tr>
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<td>116</td>
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<td>1,2,3,7,8,9-HxCDF</td>
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<tr>
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<td>117</td>
<td>118</td>
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</table>

%REC = Percent Recovered  
RPD = The difference between the two values divided by the mean value
Method 1613B

Spike Recovery Relative Percent Difference (RPD) Results

<table>
<thead>
<tr>
<th>Compound</th>
<th>Spike 1 %REC</th>
<th>Spike 2 %REC</th>
<th>%RPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,3,7,8-TCDF</td>
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<td>110</td>
<td>5.3</td>
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<td>2,3,7,8-TCDD</td>
<td>109</td>
<td>100</td>
<td>8.6</td>
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<tr>
<td>1,2,3,7,8-PeCDF</td>
<td>114</td>
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<td>2,3,4,7,8-PeCDF</td>
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%REC = Percent Recovered
RPD = The difference between the two values divided by the mean value
**Method 1613B**

**Spike Recovery Relative Percent Difference (RPD) Results**

<table>
<thead>
<tr>
<th>Compound</th>
<th>Spike 1 %REC</th>
<th>Spike 2 %REC</th>
<th>%RPD</th>
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<tbody>
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%REC = Percent Recovered  
RPD = The difference between the two values divided by the mean value