



Dioxins

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Pace Analytical Services, Inc.
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Report Prepared for:

Luke Keyzer
City of Otsego MI
117 E. Orleans St.
Otsego MI 49078

**REPORT OF
LABORATORY
ANALYSIS FOR
2,3,7,8-TCDD**

Report Summary:

This report contains results of three drinking water samples analyzed to determine 2,3,7,8-TCDD content. These samples were analyzed according to Method 1613 by High Resolution Gas Chromatography/High Resolution Mass Spectrometry.

Report Prepared Date:

April 30, 2018

Report Information:

Pace Project #: 10427706
Sample Receipt Date: 04/18/2018
Client Project #: City of Otsego Dioxins
Client Sub PO #: N/A
State Cert #: 9909

Invoicing & Reporting Options:

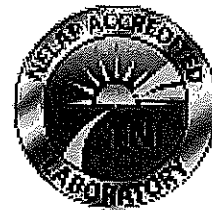
The report provided has been invoiced as a Level 2 Drinking Water Report. If an upgrade of this report package is requested, an additional charge may be applied.

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

This report has been reviewed by:

April 30, 2018

Joanne Richardson,
(612) 607-6453
(612) 607-6444 (fax)



Report of Laboratory Analysis

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



Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
A2LA	2926.01	Mississippi	MN00064
Alabama	40770	Montana	CERT0092
Alaska	MN00064	Nebraska	NE-OS-18-06
Alaska	UST-078	Nevada	MN00064
Arizona	AZ0014	New Jersey (NE	MN002
Arkansas	88-0680	New York (NEL	11647
CNMI Saipan	MP0003	New hampshire	2081
California	MN00064	North Carolina	27700
Colorado	MN00064	North Carolina	530
Connecticut	PH-0256	North Dakota	R-036
EPA Region 8	8TMS-L	Ohio	41244
Florida (NELAP	E87605	Ohio VAP	CL101
Georgia (EDP)	959	Oklahoma	9507
Guam EPA	959	Oregon (ELAP)	MN200001
Hawaii	MN00064	Oregon (OREL	MN300001
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200011	Puerto Rico	MN00064
Indiana	C-MN-01	South Carolina	74003001
Iowa	368	Tennessee	TN02818
Kansas	E-10167	Texas	T104704192
Kentucky	90062	Utah (NELAP)	MN00064
Louisiana	03086	Virginia	460163
Louisiana	MN00064	Washington	C486
Maine	MN00064	West Virginia #	9952C
Maryland	322	West Virginia D	382
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-L

REPORT OF LABORATORY ANALYSIS

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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

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

Client Name: City of Oostego
 Project #: _____

WO# : 10427706
 PM: JMR Due Date: 04/25/18
 CLIENT: City of Oostego

Courier: Fed Ex UPS USPS Client
 Commercial Pace SpeeDee Other: _____
 Tracking Number: 17 V88 770 02 4922 8422

Custody Seal on Cooler/Box Present? Yes No Seals Intact? Yes No
 Optional: Proj. Due Date: _____ Proj. Name: _____

Packing Material: Bubble Wrap Bubble Bags None Other: _____ Temp Blank? Yes No

Thermometer Used: 151401163 G87A9155100842
 Type of Ice: Wet Blue None Dry Melted

Cooler Temp Read (°C): 3.3 Cooler Temp Corrected (°C): 3.5
 Temp should be above freezing to 6°C Correction Factor: +0.2 Biological Tissue Frozen? Yes No N/A
 Date and Initials of Person Examining Contents: Hf 4-18-18

USDA Regulated Soil (N/A, water sample)
 Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? Yes No
 Did samples originate from a foreign source (Internationally, including Hawaii and Puerto Rico)? Yes No
 If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

	COMMENTS:
Chain of Custody Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3.
Sampler Name and/or Signature on COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered Volume Received for Dissolved Tests? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	12.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>	
All containers needing acid/base preservation have been checked? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> HNO ₃ <input type="checkbox"/> H ₂ SO ₄ <input type="checkbox"/> NaOH Positive for Res. Chlorine? Y N
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , <2pH, NaOH >9 Sulfide, NaOH >12 Cyanide) <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Sample #
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____	

CLIENT NOTIFICATION/RESOLUTION

Person Contacted: Luke Keyzer Date/Time: 4/18/18 13:56
 Comments/Resolution: 3 samples two containers for each sample. Field Data Required? Yes No

Project Manager Review: Jeanne Richardson Date: 4-18-18

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).



Drinking Water Analysis Results
2,3,7,8-TCDD -- USEPA Method 1613B

Sample ID.....DW Well 3 #1
Client..... City of Otsego MI
Lab Sample ID..... 10427706001

Date Collected.....04/16/2018
Date Received.....04/18/2018
Date Extracted.....04/19/2018

	Sample DW Well 3 #1	Method Blank	Lab Spike	Lab Spike Dup
[2,3,7,8-TCDD]	ND	ND	--	--
LOQ	5.0 pg/L	5.0 pg/L	--	--
2,3,7,8-TCDD Recovery	--	--	112%	110%
Spike Recovery Limit	--	--	73-146%	73-146%
RPD				1.6%
IS Recovery	68%	71%	61%	66%
IS Recovery Limits	31-137%	31-137%	25-141%	25-141%
CS Recovery	75%	86%	84%	84%
CS Recovery Limits	42-164%	42-164%	37-158%	37-158%
Filename	Y180427A_16	F180427A_04	F180426B_16	F180426B_17
Analysis Date	04/27/2018	04/27/2018	04/27/2018	04/27/2018
Analysis Time	18:22	10:20	01:37	02:09
Analyst	BAL	ZMS	SMT	SMT
Volume	0.953L	1.006L	1.009L	0.968L
Dilution	NA	NA	NA	NA
ICAL Date	11/12/2017	04/26/2018	04/26/2018	04/26/2018
CCAL Filename	Y180427A_05	F180427A_02	F180426B_04	F180426B_04

- ! = Outside the Control Limits
- ND = Not Detected
- LOQ = Limit of Quantitation
- Limits = Control Limits from Method 1613 (10/94 Revision), Tables 6A and 7A
- RPD = Relative Percent Difference of Lab Spike Recoveries
- IS = Internal Standard [2,3,7,8-TCDD-¹³C₁₂]
- CS = Cleanup Standard [2,3,7,8-TCDD-³⁷Cl₄]

Analyst: Brian A. Lark



Drinking Water Analysis Results
2,3,7,8-TCDD -- USEPA Method 1613B

Tel 12-607-1700
 Fax 12-607-6444

Sample ID.....DW Well 4 #1
 Client..... City of Otsego MI
 Lab Sample ID..... 10427706003

Date Collected.....04/16/2018
 Date Received.....04/18/2018
 Date Extracted.....04/19/2018

	Sample DW Well 4 #1	Method Blank	Lab Spike	Lab Spike Dup
[2,3,7,8-TCDD]	ND	ND	--	--
LOQ	5.0 pg/L	5.0 pg/L	--	--
2,3,7,8-TCDD Recovery	--	--	112%	110%
Spike Recovery Limit	--	--	73-146%	73-146%
RPD				1.6%
IS Recovery	63%	71%	61%	66%
IS Recovery Limits	31-137%	31-137%	25-141%	25-141%
CS Recovery	72%	86%	84%	84%
CS Recovery Limits	42-164%	42-164%	37-158%	37-158%
Filename	Y180427A_17	F180427A_04	F180426B_16	F180426B_17
Analysis Date	04/27/2018	04/27/2018	04/27/2018	04/27/2018
Analysis Time	18:42	10:20	01:37	02:09
Analyst	BAL	ZMS	SMT	SMT
Volume	0.969L	1.006L	1.009L	0.968L
Dilution	NA	NA	NA	NA
ICAL Date	11/12/2017	04/26/2018	04/26/2018	04/26/2018
CCAL Filename	Y180427A_05	F180427A_02	F180426B_04	F180426B_04

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- ND = Not Detected
- LOQ = Limit of Quantitation
- Limits = Control Limits from Method 1613 (10/94 Revision), Tables 6A and 7A
- RPD = Relative Percent Difference of Lab Spike Recoveries
- IS = Internal Standard [2,3,7,8-TCDD-¹³C₁₂]
- CS = Cleanup Standard [2,3,7,8-TCDD-³⁷Cl₄]

Analyst: Brian A. Lark

Project No.....10427706



Pace Analytical Services, LLC.
1700 Elm Street - Suite 200
Minneapolis, MN, 55414

Drinking Water Analysis Results
2,3,7,8-TCDD -- USEPA Method 1613B

Tel 12-607-1700
Fax 12-607-6444

Sample ID.....DW Well 5 #1
Client..... City of Otsego MI
Lab Sample ID..... 10427706005

Date Collected.....04/16/2018
Date Received.....04/18/2018
Date Extracted.....04/19/2018

	Sample DW Well 5 #1	Method Blank	Lab Spike	Lab Spike Dup
[2,3,7,8-TCDD]	ND	ND	--	--
LOQ	5.0 pg/L	5.0 pg/L	--	--
2,3,7,8-TCDD Recovery	--	--	112%	110%
Spike Recovery Limit	--	--	73-146%	73-146%
RPD				1.6%
IS Recovery	68%	71%	61%	66%
IS Recovery Limits	31-137%	31-137%	25-141%	25-141%
CS Recovery	78%	86%	84%	84%
CS Recovery Limits	42-164%	42-164%	37-158%	37-158%
Filename	Y180427A_18	F180427A_04	F180426B_16	F180426B_17
Analysis Date	04/27/2018	04/27/2018	04/27/2018	04/27/2018
Analysis Time	19:03	10:20	01:37	02:09
Analyst	BAL	ZMS	SMT	SMT
Volume	0.968L	1.006L	1.009L	0.968L
Dilution	NA	NA	NA	NA
ICAL Date	11/12/2017	04/26/2018	04/26/2018	04/26/2018
CCAL Filename	Y180427A_05	F180427A_02	F180426B_04	F180426B_04

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- ND = Not Detected
- LOQ = Limit of Quantitation
- Limits = Control Limits from Method 1613 (10/94 Revision), Tables 6A and 7A
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Project No.....10427706