



CITY OF LIMA, OHIO

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July 16, 2015

Ms. Peggy Christie
Ohio EPA Division of Surface Water
Northwest District Office
347 N. Dunbridge Rd.
Bowling Green, Ohio 43402

**Re: Mercury Variance Application
City of Lima, Ohio**

Dear, Ms. Peggy Christie

The attachment to this letter contains the Mercury Variance Application submittal, to be included and reviewed as part of Lima's most recent NPDES permit renewal application. This submittal includes the following items:

> Mercury Variance Application

If you have any questions or need further explanation, please contact me at 419-221-5191.

Sincerely,

Russell C. Bales

Russell C. Bales
Supervisor Lima Wastewater Treatment Plant

cc: Gary A. Sheely, Director of Utilities
Dave Schnipke, Environmental Compliance
James Bookman, Industrial Monitoring Laboratory Chief
File

MERCURY VARIANCE APPLICATION

PREPARED FOR:

**CITY OF LIMA WASTEWATER TREATMENT PLANT
PERMIT NO. 2PE00000*MD
1200 FT. AMANDA ROAD
LIMA, OHIO 45804**

PREPARED BY:

Russell C. Bales - WWTP Supervisor

David L. Schnipke – Environmental Compliance Manager

James R. Bookman – Industrial Monitoring Chief / Lab Supervisor

City of Lima Utilities Department

July 16, 2015

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ABBREVIATIONS

A., ac	Acres
Avg.	Average
BOD	Biochemical Oxygen Demand
CaCO ₃	Calcium Carbonate
D.O.	Dissolved Oxygen
EPA	Environmental Protection Agency
Est.	Estimate
Ft. of (')	Feet
Gal.	Gallon
gpd or GPD	Gallons per Day
gpm or GPM	Gallons per Minute
in. or (")	Inches
lbs.	Pounds
max. or Max.	Maximum
ug/l	Micrograms per Liter
mgd or MGD	Million Gallons per Day
mg/l	Milligrams per Liter
Misc.	Miscellaneous
#	Number
O & M	Operation and Maintenance
%	Percent
rpm	Revolutions per Minute
Res. Or R.	Residential
s.f. of Sq. Ft.	Square Feet
S.R.	State Route
S.S.	Suspended Solids
x or X	Times
TDH	Total Dynamic Head
Cu. M.	Cubic Meters
Cl	Chlorine
DI	Sludge Density Index
SCFM	Standard Cubic Feet per Minute
ng/l	nanograms/liter

Introduction

The City of Lima, Ohio owns and operates a publicly owned treatment works located at 1200 Ft Amanda Road, Lima, Ohio, Allen County, that discharges into the Ottawa River. The Ohio EPA has issued the City a National Pollutant Discharge Elimination System Permit No. 2PE00000*MD. This permit was effective January 1, 2013 and expired on February 28, 2015. The NPDES permit has a required average monthly mercury limit of 7.6 ng/l with a daily loading of 0.29 kg/d and average monthly loading of 0.0013 kg/d.

Lima has utilized mercury analytical method 1631E, which is approximately 200 times more sensitive than the previous approved method (EPA Method 245.1 or 245.2) since March, 2000. The minimum detection level (MDL) for this new method is 0.2 ng/l. The practical quantification level is 0.5 ng/l. The monitoring data indicates a NPDES limit of 1.3 ng/l will typically be exceeded, but the current limit of 7.6 ng/L has only been exceeded once during the term of the current permit.

Implementation of the general mercury variance is intended to prevent substantial and widespread social and economic impacts. The estimated cost to remove additional mercury beyond current treatment capabilities through the end-of-pipe treatment are not cost-effective based upon knee-of-the-curve analysis and studies performed by Foster Wheeler Environmental Corporation, DRI/ McGraw Hill and the Ohio EPA, which support that fact.

Determination of Eligibility for a Mercury Variance

Lima's current permit, 2PE00000*MD, already contains language for a general mercury variance. To comply with the conditions of the variance, Lima has done the following:

- a. Lima has had no violations for mercury at station 604 during this permit cycle.
- b. Lima has complied with all of the conditions of the general mercury variance included in its NPDES permit.
- c. Lima's contract lab (Alloway Testing, Inc.) uses Method 1631E for mercury analyses.
- d. Lima has worked with the Northwest Ohio Solid Waste District and assisted with the annual Household Hazardous Waste Clean-up events.
- e. Lima began site visits / inspections of dental offices.
- f. Lima has made contact with all schools (middle school through college) and all monitored industries and requires them to submit the appropriate PMP annual report.
- g. Lima monitors the POTW influent and effluent at least once each month for mercury using method 1631E, as required by the NPDES permit.
- h. Lima has achieved an annual average mercury effluent concentration of less than 12 ng/L every year of this permit cycle..
- i. Lima has submitted an annual PMP using OEPA's recommended form every year of this permit cycle. This report contains all of the information requested as part of the variance.

For the above reasons, Lima requests that the general mercury variance contained in the current NPDES permit be extended into the new permit with the current 7.6 ng/l limit. Even though operating data from the last 12 months indicates that a PEQ limit of less than the current limit might be attainable, the testing results in the last permit cycle gives cause for concern with meeting an even more stringent limit. With major upgrades at the plant currently underway, and with other major projects under the Long Term Control Plan, it is uncertain how loadings and concentrations may be affected in this next permit cycle.

Determination of Eligibility for a Mercury Variance {OAC 3745-33-07(D)(10)} :

“On the adoption date of this rule (4/1/2007), the director has determined that the average cost to reduce mercury below twelve nanograms per liter from a waste stream through end-of-pipe treatment is in excess of ten million dollars per pound of mercury removed. On the adoption date of this rule, the director has determined that requiring removal of mercury by construction of end-of-pipe controls to attain mercury WQS, requiring controls more stringent than those required by sections 301(b) and 306 of the act would result in substantial and widespread social and economic impact. The director may determine whether there are other means by which the permittee could comply with the WQBEL without constructing end-of-pipe treatment based on the information provided by the permittee in the application submitted in accordance with this paragraph. The director has also determined that the increased risk to human health and the environment associated with granting the variance compared with compliance with the WQS absent the variance is consistent with the protection of the public health, safety, and welfare.”

For the purpose of determining eligibility under this section, influent and effluent concentrations for mercury from the Lima Wastewater Treatment Plant are listed in Table 1. The results listed in Table 1 are from monthly sampling from the previous year as required by the NPDES permit.

The mercury data in Table 1 indicates that the 30 day average WQBEL limit of 1.3 ng/l as specified in permit 2PE00000*MD will be exceeded, and end-of-pipe treatment would be required. However, the mercury data demonstrates that the Lima WWTP achieved an annual average mercury effluent concentration (AAMEC) of 12 ng/L as required to apply for a general mercury variance.

Table 1: Mercury Sampling Data from Lima WWTP Influent & Effluent

	601 Influent (ng/l)	604 Effluent (ng/l)	%Removal
August- 2014	8.0	1.1	86.2
September-2014	8.1	0.7	91.4
October-2014	29.3	0.8	97.3
November-2014	11.6	1.0	91.4
December-2014	12.6	0.8	93.7
January- 2015	9.2	1.4	84.8
February-2015	8.0	1.7	83.0

March-2015	15.3	1.2	92.2
April-2015	8.1	4.6	43.2
May-2015	11.3	5.5	51.3
June-2015	26.5	4.6	82.6
July-2015	17.3	1.3	92.4
Average removal			82.5 %

The data in Table 1 indicates the Lima WWTP will remove an average of 82.5 % of the mercury from the influent. Many conditions may change the removal rate. Increased wastewater flows, infiltration of storm water, and climatic conditions are just a few variables that could affect the removal rate.

Certification Statement

As an authorized representative for the City of Lima, I am applying to the Director of Ohio EPA for coverage under the mercury variance from the 30-day average water quality-based mercury limit in the above-referenced NPDES permit. I hereby certify that the Lima Wastewater Treatment Plant intends to be subject to the mercury variance terms and conditions of paragraph (D) (10) of Rule 3745-33-07 under Chapter 3745-33 of the Ohio Administrative Code. To the best of my knowledge, the Lima WWTP NPDES permitted discharge from Final Outfall -001 is currently able to achieve an annual average mercury concentration of 12 ng/l prior to the expiration date of our renewed permit.

Russell C. Bales
 Russell C Bales
 Supervisor of Lima WWTP
 Lima, Ohio

Certification Number: WW4-1007064-09

Date: July 16, 2015

Plan of Study

1. Identification of Main Mercury Sources

Sampling has indicated that dental practices are the major contributors of mercury to the collection system. As such, it is Lima's intent to target this sector to most effectively reduce the amount of new mercury introduced into the collection system. These dental practices are listed in Table 3.

2. Description of Current Plans to Reduce or Eliminate Known Sources

Occasionally an industry, school, or private resident will call the POTW to ask for assistance in properly disposing of mercury or a mercury-containing device. On these occasions, the Industrial Monitoring & Lab Chief will pick up the mercury and properly and safely transport the mercury back to the POTW. The local Office of Homeland Security is then contacted to safely transport the mercury to a recycling center in Bowling Green, OH or make arrangements for its safe transport.

Dentists have adopted dental BMPs to reduce their impact on the POTW.

3. Identification of Other Potential Mercury Sources

Other potential sources of mercury are mercury arc lamps, fluorescent lights, thermostats, thermometers, old alkaline batteries, mercurochrome, maze toys, shoes with lights in the soles, washing machines, automobile switches, gas-pilot ranges, latex paint, cosmetics, fireworks, livestock and poultry remedies, turf products, special paper coatings, and maritime paint. Ohio and Indiana are the only Great Lakes States that have no mercury product regulations. Illinois, Michigan, Minnesota, New York, and Wisconsin have extensive mercury product regulations. Inappropriate disposal of these items can significantly contribute to mercury levels in the County sewer system.

The City will continue to look for evidence of the kinds of solid wastes mentioned above during routine sewer cleaning, inspection, and maintenance and during sewer system sampling. Additional survey efforts involving contacting individual businesses and residences may be necessary under these circumstances to identify the mercury sources.

4. Proposed Schedule for Identifying and Evaluating Potential Reduction, Elimination, and Prevention Methods

Actions that will be taken as soon as practical:

1. Northeast Ohio Regional Sewer District (NEORS) has provided further training to Lima's inspector. Since NEORS has been a leader in the state in regulation of dentists, it seems logical to utilize their guidance.
2. Further sampling will be conducted that checks the discharge of dental offices outside of the Allentown Road LS basin.
3. Lima will continue monitoring of the POTW influent and effluent as required by the NPDES permit.
4. Lima will continue its efforts to identify other entities that may discharge mercury. If any are found, attempts will be made to halt or reduce the discharge.

Non-Compliance with the WQBEL Explanation and Basis

OAC 3745-33-07(D)(10)(a)(iv)

There are commercial customers on the Lima collection system; however, a large majority of customers are residential. Lima may be able to reduce the amount of mercury that is discharged into the collection system by monitoring and inspection of commercial customers. These types of mercury reduction practices may not be practical in significantly reducing mercury discharges by residential customers. Education of the residential dischargers may be the only practical method of mercury reduction, but offers the least amount of control for Lima Wastewater Treatment Plant. Significant sources of mercury entering the collection system could be from potable water supplies or from surface run-off infiltrating the collection system. Routine cleaning could contribute to periodic elevated levels of mercury entering the treatment plant. These factors make it highly improbable that Lima can consistently meet the WQBEL of 1.3 ng/l without substantial end-of-pipe controls.

APPENDIX

KNOWN RESOURCES FOR MERCURY REDUCTION/ELIMINATION

Web sites

www.epa.gov/p2/
www.epa.ohio.gov/opp/
www.epa.gov/glnpo/bns/
www.epa.gov/grtlakes/

Documents

Wisconsin Strategy for Regulating Mercury in Wastewater

Wisconsin Department of Natural Resources - May 1996
PO Box 7921 Madison, WI 53707-7921
(608) 266-2621

Blueprint for Mercury Reduction

Western Lake Superior Sanitary District (WLSSD) - March 1997
2626 Courtland Street, Duluth MN 55806-1894
(218) 722-3336

Mercury Waste Pollution Prevention

United States Environmental Protection Agency Region 5
77 W. Jackson Blvd., Chicago IL 60604
(312) 353-2000 or (800) 621-8431

Mercury in Medical Waste

United States Environmental Protection Agency Region 5
77 W. Jackson Blvd., Chicago IL 60604
(312) 353-2000 or (800) 621-8431

Mercury Pollution Prevention in Michigan

Michigan Mercury Pollution Prevention Task Force - April 1996
PO Box 30028, Lansing MI 48909-7528

Report on the Mercury Contamination Reduction Initiative

Minnesota Pollution Control Agency - March 1999
520 Lafayette Rd, St. Paul MN 55155
(612) 296-6300

Mercury: In your Community and the Environment

Wisconsin Department of Natural Resources
PO Box 7921 Madison, WI 53707-7921
(608) 266-2621

Strategies for Mercury Control in Minnesota

Minnesota Pollution Control Agency
Mercury Task Force
520 Lafayette Rd, St. Paul MN 55155
(612) 296-6300

A Guide for Dentists "How to manage waste from your dental practice"

Western Lake Superior Sanitary District (WLSSD) - March 1997
2626 Courtland Street, Duluth MN 55806-1894
(218) 722-3336 Hotline (218) 722-0761

The Case Against Mercury: Rx for Pollution Prevention

Terrene Institute / USEPA Region 5 - 1995
1717 K Street, NW
Suite 801, Washington, DC 20006
(202) 833-8317

Ohio Dental Association Bulk Mercury Collection Project

Contact: Bill Narotski
Ohio EPA Office of Pollution Prevention
Lazarus Government Center
PO Box 1049, Columbus OH 43216-1049
(614) 644-3469

or
Ohio Dental Association
Contact: Chris Moore
1370 Dublin Rd, Columbus OH 43215
(614) 486-2700
(800)282-1526

TABLE 2
Industrial Account Names/ Addresses

<u>Industry</u>	<u>Industry Number</u>	<u>Sample Code</u>	<u>Address</u>
American Trim LLC	158	SQ	999 West Grand Avenue
Buckeye Rubber Products #1	58	SS	637 North Jackson
#2	59	SS	
Crothall Healthcare	106	SQ	1010 East High
Dana Corporation	64	SM	777 Bible Road
Ford Motor Company	181	SQ	1155 Bible Road
Joint Systems Manufacturing	60	SQ	1155 Buckeye Road
Keystone Meats	66	SQ	3585 Harding Highway
Koop Road LS	9	SM	2601 Koop Road
Lima Memorial Hospital	83	SQ	1001 Bellefontaine Ave.
Lima Tank Wash	178	SM	1590 Findlay Road
Metokote Corporation	87	SQ	1340 Neubrecht Road
Nelson Packaging	163	SQ	1801 Reservoir Road
Nickles Bakery of Ohio	85	SM	1950 North Sugar Street
Pepsi-Cola Bottlers	62	SM	1750 Greeley Chapel Road
Proctor & Gamble Mfg. Co.	94	SM	3875 Reservoir Road
Reservoir Road Lift Station	19	SM	2450 Reservoir Road
St. Rita's Medical Center	104	SQ	730 West Market St.
Superior Forge & Steel	141	SQ	1820 McClain Road
Trinity Industries	53	NS	425 East O'Connor Avenue

Whemco Ohio Foundries A 122
B 123

SS

1600 McClain Road

Guardian LLC

2485 Houx Parkway

BEF Foods, Inc. 190

651 Commerce Parkway

TABLE 3
LIMA DENTAL OFFICES

Affiliated Oral Surgeons Bryan Luna	505 N. Cable Road	(419) 331-0000
Affordable Dentures Lima William Cline	1951 Bellefontaine Rod	(419) 228-6680
Allen County Health Partners	442 East 8 th Street	(419) 221-3072
Denture Center Michael Terveer Howard Koch	1331 West Market	(419) 229-4966 (419) 229-8781
Gary P. Brunk	2345 West Elm Street	(419) 227-5544
Burns Dental Alyson Amerson	459 South Main	(419) 228-5502
Lima Dental Associates Erik Risolvato Kenneth Clemens Kristin Gerity Matthew Snipes	2115 Allentown Road	(419) 228-4036
Oral Surgery Associates Patrick Chaney	830 West High St. Suite 301	(419) 227-5155
Crawford Dental Associates J. Chris Crawford	855 West Market St. Suite B	(419) 228-3311
Gene C. Dugan Brad Place	1707 Allentown Road	(419) 224-3464
John D Flack	829 East Elm Street	(419) 225-0080
David Hancock	555 West Elm Street	(419) 229-0776
Thomas P. Heckler	1337 North Cable Road	(419) 228-8929
Donald Knowles	1235 West Market	(419)222-1188

Gary G. Miller	1031 Ritchie Ave.	(419) 228-3384
Stephen G. Roush	1702 Allentown Road	(419) 227-2093
Jack Spratt Jr.	1335 North Cable Road	(419) 222-4342
Mark T. Zehler	459 South Main Street	(419) 228-5502
Dr. Wiggins & Associates	1333 North Cable Road	(419) 991-0000
Aspen Dental	3292 Elida Road	(419) 549-5605
Whole Health Dentistry J. Ellis Erin Ellis Ben Warnock	230 N. Eastown Road	(419) 516-4660
Jeffrey Blandford	3000 Elida Road	(419) 331-1080
West Elm St. Dentistry	555 W Elm Street	(419) 229-0776
Courtney Flemming David Fulks	2115 Allentown Road	(419) 228-4036
Health Partners of Western Ohio	441 E. 8 TH Street	(419) 221-3072
Harold Lauer	727 E. Wayne	(419) 586-6195
Andrea Leopold	2969 Blue Jacket Court	(419) 586-6195