



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

2017 East Chicago Lead and Copper Compliance Verification Sampling

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Purpose of Sampling Project

Indiana House Bill 1344 was signed by the Governor on April 20, 2017, which requires the Indiana Department of Environmental Management (IDEM) to conduct testing of the water supply for East Chicago to determine whether it is in compliance with the national primary drinking water regulations for lead. As a result, IDEM staff collected compliance verification samples during April and May of 2017 in order to confirm the 2016 lead results reported by the City of East Chicago (EC) - Public Water Supply Identification (PWSID) IN5245012.

EC has been in compliance with the lead and copper rule (LCR) since 1993. Per the LCR, EC is required to collect 30 lead and copper compliance samples once every three years, but monitoring schedule was adjusted once the new treatment plant was activated in spring 2016. EC most recently monitored during the June 1st – September 30th, 2016 monitoring period. 30 compliance samples were collected on July 26, 2016. It is important to note that each compliance sample location meets the Tier 1 sample site criteria set by the LCR. Tier 1 sites are known to have a high risk of lead and/or copper contamination.

The 2016 lead 90th percentile was 8.4 parts per billion (ppb) and copper 90th percentile was 72 parts per billion (ppb). The lead action level (AL) is 15 ppb and copper AL is 1,300 ppb. All of the 2016 compliance samples were below both ALs. Therefore the LCR does not require any additional action to be taken by the PWS since the 90th percentile results were below ALs.

In order to verify the 2016 lead results, IDEM reached out to the same 30 homes EC sampled in 2016. IDEM sent a letter to the 30 locations on April 7, 2017. IDEM staff also made phone calls and even visited some homes to try and schedule a time for collecting samples. Staff from the EC Water Department assisted with scheduling sampling times since homeowners were more likely to answer the phone when seeing a caller ID with an area code from EC. After multiple attempts, IDEM was able to schedule sampling times for a total of 23 of the 30 homes. 12 additional homeowners made special requests for sampling for a total of 35 homes tested.

Sampling Event

IDEM staff collected samples at a total of 35 homes. 23 of 35 homes were compliance verification sample locations. 12 of 35 homes were sampled because customers made a special request.

Total Number of Sample Locations Summary

Total Number of Homes Sampled	Total Number of Compliance Verification Homes	Special Request Homes
35	23 out of 30	12

The sampling conducted by IDEM's Drinking Water Branch staff involved collecting a total of 3 Lead and Copper samples and 2 Orthophosphate samples at each home. This type of sampling is more robust than the LCR sampling requirements. In order to follow proper sampling procedures, the homeowners were instructed that the water could not be used for at least 6 hours and no more than 18 hours prior to collection of the samples. The sampling was conducted in the early morning hours after water was in contact with the plumbing overnight. Samples were also taken after residents came home from work as long as the water was not used for at least 6 hours. Homeowners answered a questionnaire to ensure the water was not used for at least 6 hours. See.

Sample Procedures at each home:

1. Collect first draw 1 Liter lead and copper sample
2. Collect initial 500 mL Orthophosphate sample
3. Flush water for 1 minute and collect 1 Liter lead and copper sample
4. Flush water for an additional 2 minutes and collect 1 Liter lead and copper sample
5. Collect 500 mL Orthophosphate sample

Total Number of Pb/Cu Samples	Total Number of First Draw 1 Liter Pb/Cu Samples	Total Number of 1 Minute Flush 1 Liter Pb/Cu Samples	Total Number of 3 Minute Flush 1 Liter Pb/Cu Samples
105	35	35	35

23 compliance verification samples were collected on 4/18/17, 4/19/17, 5/1/17, 5/2/17, and 5/10/17. A compliance verification sample means a 1 Liter, 1st draw sample was

collected from a cold water tap typically used for consumption and the sample was collected from a home used for EC's 2016 compliance sampling.

A total of 105, 1 Liter, lead and copper samples were collected, because 3 lead and copper samples were collected at each of the 35 homes. Why were 3 lead and copper samples collected at each home? The purpose of collecting 3 different lead and copper samples was to collect samples that represent different segments of the drinking water plumbing system. The first draw 1 Liter sample represents the water sitting in contact with homeowner's premise plumbing (according to the Lead and Copper Rule). The purpose of the 1 minute flush sample is to collect the water that has been sitting in contact with the service line and premise plumbing. The purpose of the 3 minute flush sample represents the water coming from the main (supplied by the city).

In addition to lead and copper sampling, IDEM staff collected 2 Orthophosphate samples at each home. Why were Orthophosphate samples collected at each residence? EC treats their water with a blended phosphate, which contains a mixture of orthophosphate and polyphosphate. The poly-orthophosphate blend is approved for corrosion control and to sequester iron and manganese. Therefore it is important to record the orthophosphate residual levels at the customers' taps. According to the "EPA Optimal Corrosion Control Treatment Evaluation Technical Recommendations for Primacy Agencies and Public Water Systems," orthophosphate treatment for controlling lead and copper should target residual concentrations of 1.0 to 3.0 mg/L as PO₄. 2 Orthophosphate samples were collected at each residence to verify a minimum orthophosphate residual of 1.0 mg/L as PO₄.

Sample Results

All lead, copper, and orthophosphate samples were submitted to the Indiana State Department of Health (ISDH) Laboratory for analysis. ISDH is a certified drinking water laboratory and uses approved methods to analyze drinking water samples to ensure compliance with regulations.

ISDH Lab Analysis Method

<u>Analyte</u>	<u>Lab Analysis Method</u>
Lead	200.8 DW
Copper	200.8 DW
Orthophosphate	365.1

Compliance Verification Sample Data

Sample Delivery Group	IDEM Date Collected	IDEM Lead (ppb) 1st Draw	City of East Chicago 2016 Lead (ppb) 1st Draw	IDEM Copper (ppb) 1st Draw	City of East Chicago 2016 Copper (ppb) 1st Draw
13720	4/18/2017	<1.0	<1.0	10.7	3
13721	4/19/2017	10.3	9.3	2.1	4
13722	4/18/2017	<1.0	1	1.7	1
13723	4/19/2017	1.4	1.2	3.4	6
13724	4/19/2017	6.1	8	3.6	3
13725	4/19/2017	<1.0	<1.0	4.6	4
13726	4/19/2017	<1.0	<1.0	21.6	14
13727	4/18/2017	<1.0	<1.0	65.6	92
13728	4/18/2017	5.2	8.4	65.1	59
13729	4/19/2017	1.2	1.5	16.5	21
13730	4/18/2017	<1.0	<1.0	64.6	4
13731	4/19/2017	7.4	11	83.7	48
13732	4/18/2017	<1.0	<1.0	4.4	56
13733	4/19/2017	<1.0	<1.0	56.7	72
13764	5/2/2017	<1.0	1.8	8.7	50
13765	5/2/2017	<1.0	<1.0	1.8	19
13766	5/1/2017	1.2	1.7	6.2	10
13767	5/1/2017	1.1	1.8	3.8	5
13768	5/1/2017	11.4	7.8	41.1	140
13769	5/1/2017	1.6	2.4	3.8	6
13771	5/2/2017	<1.0	<1.0	10.4	11
13773	5/1/2017	5.6	5.3	6.4	10
13804	5/10/2017	1.3	2.60	2.4	3

IDEM (2017) vs City of East Chicago (2016) Lead Results

