Ohio Administrative Code

Rule 3745-81-86 Control of lead and copper - monitoring requirements for lead and copper in tap water.

Effective: May 1, 2018

(A) Sample site location and mapping requirements.

(1) Each public water system shall complete a materials evaluation of the distribution system in order to identify a pool of targeted sampling sites that meets the requirements of this rule and is sufficiently large to ensure that the public water system can collect the number of lead and copper tap samples required in paragraph (C) of this rule. All sites from which first-draw samples are collected shall be selected from this pool of targeted sampling sites. Sampling sites may not include taps that have point-of-use or point-of-entry treatment devices designed to remove inorganic contaminants.

(2) A public water system shall use any information on lead, copper, and galvanized steel that the system has collected in corrosivity monitoring when conducting a materials evaluation. When such information is insufficient to locate the requisite number of lead and copper sampling sites that meet the targeting criteria in paragraph (A) of this rule, the public water system shall review the following sources of information in order to identify a sufficient number of sampling sites:

(a) All plumbing codes, permits, and records in the files of the building department which indicate the plumbing materials that are installed within publicly and privately owned structures connected to the distribution system.

(b) Inspections and records of the distribution system that indicate the material composition of the service connections that connect a structure to the distribution system.

(c) All existing water quality information, which includes the results of all prior analyses of the system or individual structures connected to the system, indicating locations that may be particularly susceptible to high lead or copper concentrations.

In addition, the system shall seek to collect such information where possible in the course of normal

operations (e.g., checking service line materials while reading water meters or performing maintenance activities).

(3) The sampling sites selected for a community public water system's sampling pool ("tier one sampling sites") shall consist of single family structures that meet one of the following:

(a) Contain copper pipes with lead solder installed after 1982 and before 1989 or contain lead pipes; or.

(b) Are served by a lead service line. When multiple-family residences comprise at least twenty per cent of the structures served by a public water system, the system may include these types of structures in the sampling pool.

(4) Any community public water system with insufficient tier one sampling sites shall complete the sampling pool with "tier two sampling sites", consisting of buildings, including multiple-family residences, that meet one of the following:

(a) Contain copper pipes with lead solder installed after 1982 and before 1989 or contain lead pipes; or.

(b) Are served by a lead service line.

(5) Any community public water system with insufficient tier one and tier two sampling sites shall complete the sampling pool with "tier three sampling sites", consisting of single family structures that contain copper pipes with lead solder installed before 1983. A community public water system with insufficient tier 1, tier 2, and tier 3 sampling sites shall complete the sampling pool with representative sites throughout the distribution system. For the purpose of this paragraph, a representative site is a site in which the plumbing materials used at that site would be commonly found at other sites served by the public water system.

(6) The sampling sites selected for a nontransient noncommunity public water system ("tier one sampling sites") shall consist of buildings that meet one of the following:

(a) Contain copper pipes with lead solder installed after 1982 and before 1989 or contain lead pipes.

(b) Are served by a lead service line.

(7) A nontransient noncommunity public water system with insufficient tier one sites that meet the targeting criteria in paragraph (A)(6) of this rule shall complete the sampling pool with sampling sites that contain copper pipes with lead solder installed before 1983. If additional sites are needed to complete the sampling pool, the nontransient noncommunity water system shall use representative sites throughout the distribution system. For the purpose of this paragraph, a representative site is a site in which the plumbing materials used at that site would be commonly found at other sites served by the public water system.

(8) Any public water system whose distribution system contains lead service lines shall draw fifty per cent of the samples collected during each monitoring period from sites that contain lead pipes, or copper pipes with lead solder, and fifty per cent of those samples from sites served by a lead service line. A public water system that cannot identify a sufficient number of sampling sites served by a lead service line shall collect first-draw samples from all of the sites identified as being served by such lines.

(9) Mapping requirements.

The owner or operator of a community or nontransient noncommunity water system shall do all of the following, as applicable:

(a) Community water systems.

The owner or operator shall identify and map areas of the system that are known or likely to contain lead service lines, and identify characteristics of buildings served by the system that may have solder, fixtures or pipes that contain lead. Characteristics of buildings may be described in a narrative referenced in paragraph (A)(9)(d) of this rule.

(b) Single building community water systems and nontransient noncommunity water systems.

The owner or operator shall identify and map areas of the system with solder, fixtures or pipes containing lead in buildings served by the system. Characteristics of the system may be described in a narrative referenced in paragraph (A)(9)(d) of this rule.

(c) Submit a copy of the applicable map to the Ohio department of health and the Ohio department of job and family services.

(d) The applicable map, and a list of sampling site locations identified in paragraphs (A)(1) to (A)(8) of this rule including the contact information for the owner and occupant for each sampling site shall be submitted to the director. Water systems may submit a narrative providing additional detail (e.g., description of the building and the plumbing materials) with the map and list of sampling site locations. The documentation submitted shall be acceptable and complete.

(e) The owner or operator of an existing community or nontransient noncommunity water system shall complete the initial submission of the information specified in paragraphs (A)(9)(a) or (A)(9)(b) of this rule in accordance with section 6109.121 of the Revised Code. The owner or operator of a new community or nontransient noncommunity water system shall complete the initial submission of the information specified in paragraph (A)(9)(a) or (A)(9)(b) of this rule when applying for plan approval in accordance with Chapter 3745-91 of the Administrative Code.

(f) The water system owner or operator shall update and resubmit information required in paragraphs (A)(9)(a) to (A)(9)(d) of this rule once every five years, beginning five years after March 9, 2017.

(B) Sample collection methods.

(1) All tap samples for lead and copper collected in accordance with rules 3745-81-80 to 3745-81-89 of the Administrative Code, with the exception of lead service line samples collected under paragraph (C)(1) of rule 3745-81-84 of the Administrative Code and samples collected under paragraph (B)(3) of this rule, shall be first-draw samples.

(2) Each first-draw tap sample for lead and copper shall be one liter in volume and have stood motionless in the plumbing system of its sampling site for at least six hours. First-draw samples from residential housing shall be collected from the cold-water kitchen tap or bathroom sink tap. First-

draw samples from a non-residential building shall be one liter in volume and shall be collected at an interior tap from which water is typically drawn for consumption. Non-first-draw samples collected in lieu of first-draw samples pursuant to paragraph (B)(5) of this rule shall be one liter in volume and shall be collected at an interior tap from which water is typically drawn for consumption. First-draw samples may be collected by the public water system or the system may allow residents to collect first-draw samples after instructing the residents of the sampling procedures specified in this paragraph. To avoid problems of residents handling nitric acid, acidification of first-draw samples may be done up to fourteen days after the sample is collected. After acidification to resolubilize the metals, the sample must stand in the original container for the time specified in the approved EPA method before the sample can be analyzed. If a public water system allows residents to perform sampling, the system may not challenge, based on alleged errors in sample collection, the accuracy of sampling results.

(3) Each service line sample shall be one liter in volume and have stood motionless in the lead service line for at least six hours. Each lead service line sample shall be collected in one of the following three ways:

(a) At the tap after flushing the volume of water between the tap and the lead service line. The volume of water shall be calculated based on the interior diameter and length of the pipe between the tap and the lead service line.

(b) Tapping directly into the lead service line.

(c) If the sampling site is a building constructed as a single-family residence, allowing the water to run until there is a significant change in temperature which would be indicative of water that has been standing in the lead service line.

(4) A public water system shall collect each first-draw tap sample from the same sampling site from which a previous sample was collected. If, for any reason, the water system cannot gain entry to a sampling site in order to collect a follow-up tap sample, the system may collect the follow-up tap sample from another sampling site in its sampling pool as long as the new site meets the same targeting criteria and is within reasonable proximity of the original site.

(5) A nontransient noncommunity water system, or a community water system that meets the criteria of paragraph (G)(8) of rule 3745-81-85 of the Administrative Code, that does not have enough taps that can supply first-draw samples, as defined in rule 3745-81-01 of the Administrative Code may apply to the director in writing to substitute non-first-draw samples. Such public water systems shall collect as many first-draw samples from appropriate taps as possible and identify sampling times and locations that would likely result in the longest standing time for the remaining sites.

(C) Number of samples. Public water systems shall collect at least one sample during each monitoring period specified in paragraph (D) of this rule from the number of sites listed in the second column ("standard monitoring") of the table in this paragraph. A system conducting reduced monitoring under paragraph (D)(4) of this rule shall collect at least one sample from the number of sites specified in the third column ("reduced monitoring") of the table in this paragraph during each monitoring period specified in paragraph (D)(4) of this rule. Such reduced monitoring sites shall be representative of the sites required for standard monitoring. A public water system that has fewer than five drinking water taps that can be used for human consumption meeting the sample site criteria of paragraph (A) of this rule to reach the required number of sample sites listed in paragraph (C) of this rule, shall collect at least one sample from each tap and then shall collect additional samples from those taps on different days during the monitoring period to meet the required number of sites. Alternately, the director may allow these public water systems to collect a number of samples less than the number of sites specified in paragraph (C) of this rule, provided that one hundred per cent of all taps that can be used for human consumption are sampled. The director shall approve this reduction of the minimum number of samples in writing based on a request from the system or onsite verification by the director. The director may specify sampling locations when a public water system is conducting reduced monitoring. The table is as follows:

System size (number of people served)	Number of sites (standard monitoring)	Number of sites (reduced monitoring)
>100,000	100	50
10,001 to 100,000	60	30
3,301 to 10,000	40	20
501 to 3,300	20	10
101 to 500	10	5
<101	5	5

(D) Timing of monitoring.

(1) Initial tap sampling. The first six-month monitoring period for new community or nontransient noncommunity water systems shall begin on either January first or July first, whichever comes first after activation as a water system.

(a) All large systems shall monitor during two consecutive six-month periods.

(b) All small and medium systems shall monitor during each six-month monitoring period until one of the following occurs:

(i) The public water system exceeds the lead or copper action level and is therefore required to implement the corrosion control treatment requirements under rule 3745-81-81 of the Administrative Code, in which case the system shall continue monitoring in accordance with paragraph (D)(2) of this rule.

(ii) The public water system monitoring results do not exceed the lead or copper action level during two consecutive six-month monitoring periods, in which case the system may reduce monitoring in accordance with paragraph (D)(4) of this rule.

(2) Monitoring after installation of corrosion control and source water treatment.

(a) Any large system which installs optimal corrosion control treatment pursuant to paragraph (D)(4) of rule 3745-81-81 of the Administrative Code shall monitor during two consecutive six-month monitoring periods in accordance with paragraph (D)(5) of rule 3745-81-81 of the Administrative Code.

(b) Any small or medium system which installs optimal corrosion control treatment pursuant to paragraph (E)(5) of rule 3745-81-81 of the Administrative Code shall monitor during two consecutive six-month monitoring periods in accordance with paragraph (E)(6) of rule 3745-81-81 of the Administrative Code.

(c) Any public water system which installs source water treatment pursuant to paragraph (A)(3) of

rule 3745-81-83 of the Administrative Code shall monitor during two consecutive six-month monitoring periods by the date specified in paragraph (A)(4) of rule 3745-81-83 of the Administrative Code.

(3) Monitoring after the director specifies water quality parameter values for optimal corrosion control. After the director specifies the values for water quality control parameters under paragraph (F) of rule 3745-81-82 of the Administrative Code, the public water system shall monitor during each subsequent six-month monitoring period, with the first monitoring period to begin on the date the director specifies the optimal values under paragraph (F) of rule 3745-81-82 of the Administrative Code.

(4) Reduced monitoring.

(a) A small or medium water system that does not exceed either the lead or copper action level during two consecutive six-month monitoring periods may reduce the number of samples according to paragraph (C) of this rule, and reduce the frequency of sampling to one monitoring period per year. A small or medium public water system collecting fewer than five samples as specified in paragraph (C) of this rule, that does not exceed either the lead or copper action level during two consecutive six-month monitoring periods may reduce the frequency of sampling to one monitoring period per year. In no case can this public water system reduce the number of samples required below the minimum of one sample per available tap. This sampling shall begin during the calendar year immediately following the end of the second consecutive six-month monitoring period.

(b) Reduced annual monitoring. Any public water system that meets the lead action level and maintains the range of values for the water quality control parameters reflecting optimal corrosion control treatment approved by the director under paragraph (F) of rule 3745-81-82 of the Administrative Code during each of two consecutive six-month monitoring periods may reduce the frequency of monitoring to once per year and to reduce the number of lead and copper samples in accordance with paragraph (C) of this rule if it receives written approval from the director. This sampling shall begin during the calendar year immediately following the end of the second consecutive six-month monitoring period. The director shall review monitoring, treatment, and other relevant information submitted by the public water system in accordance with rule 3745-81-90 of the Administrative Code, and shall notify the system in writing, when the director determines the system

is eligible to commence reduced monitoring pursuant to this paragraph. The director shall review, and where appropriate, revise such a determination when the system submits new monitoring or treatment data, or when other data relevant to the number and frequency of tap sampling become available.

(c) Reduced triennial monitoring. As of the effective date of this rule, no water systems are eligible to monitor for lead and copper once every three years without applying for and obtaining written approval from the director. Any public water system that exceeds the lead action level or fails to maintain the range of values for the water quality control parameters reflecting optimal corrosion control treatment approved by the director under paragraph (F) of rule 3745-81-82 of the Administrative Code during five consecutive monitoring periods will not be eligible to reduce the frequency of monitoring from annually to once every three years. To apply for approval, an eligible water system shall provide the director with documentation that at least one of the criteria listed in paragraphs (D)(4)(c)(i) to (D)(4)(c)(iii) of this rule were met. Samples collected once every three years shall be collected no later than every third calendar year. In addition to reviewing information submitted pursuant to paragraphs (D)(4)(c)(i) to (D)(4)(c)(iii) of this rule, the director shall review monitoring, treatment and other relevant information submitted by the public water system in accordance with rule 3745-81-90 of the Administrative Code, as part of the monitoring frequency determination. Any water systems that did not receive written approval from the director and were conducting triennial monitoring prior the effective date of this rule, shall conduct annual lead and copper monitoring. When the water system submits new monitoring or treatment data, or when other data relevant to the number and frequency of tap sampling becomes available, the director shall review, and where appropriate, revise the determination.

(i) The water system shall demonstrate that the tap water lead level computed under paragraph (C)(3) of rule 3745-81-80 of the Administrative Code is less than or equal to 0.005 milligrams per liter and the tap water copper level computed under paragraph (C)(3) of rule 3745-81-80 of the Administrative Code is less than or equal to 0.65 milligrams per liter for five consecutive monitoring periods.

(ii) The water system shall demonstrate that the system has maintained the range of values for water quality control parameters reflecting optimal corrosion control treatment approved by the director under paragraph (F) of rule 3745-81-82 of the Administrative Code, if applicable, during five

consecutive monitoring periods.

(iii) The water system shall demonstrate that the system does not own service lines, fixtures, pipe or solder that contain lead.

(d) A public water system that reduces the number of sampling sites and the frequency of monitoring shall collect these samples from representative sites included in the pool of targeted sampling sites identified in paragraph (A) of this rule. Public water systems monitoring annually or less frequently shall conduct the lead and copper tap water monitoring during the months of June through September unless the director has approved a different sampling period in accordance with paragraph (D)(4)(d)(i) of this rule.

(i) The director may approve a different period for conducting the lead and copper tap sampling for public water systems collecting a reduced number of samples. Such a period shall be no longer than four consecutive months and shall represent a time of normal operation where the highest levels of lead are most likely to occur. For a nontransient noncommunity water system that does not operate during the months of June through September, and for which the period of normal operation where the highest levels of lead are most likely to occur is not known, the director shall designate a period that represents a time of normal operation for the system. This sampling shall begin during the period approved by the director in the calendar year immediately following the end of the second consecutive six-month monitoring period for systems initiating annual monitoring and during the three-year period following the end of the third consecutive year of annual monitoring for systems initiating triennial monitoring.

(ii) Public water systems monitoring annually, that have been collecting samples during the months of June through September and that receive the director's approval to alter their sample collection period under paragraph (D)(4)(d)(i) of this rule, shall collect their next round of samples during a time period that ends no later than twenty-one months after the previous round of sampling. Public water systems monitoring triennially that have been collecting samples during the months of June through September, and receive the director's approval to alter the sampling collection period in accordance with paragraph (D)(4)(d)(i) of this rule, shall collect their next round of samples during a time period that ends no later than forty-five months after the previous round of sampling. Subsequent rounds of sampling shall be collected annually or triennially, as required by this rule.

(5) Action level exceedance while on reduced monitoring.

(a) A small or medium water system subject to reduced monitoring that exceeds the lead or copper action level shall resume tap water monitoring in accordance with paragraph (D)(3) of this rule and collect the number of samples specified for standard monitoring under paragraph (C) of this rule. Such a public water system shall also conduct water quality parameter monitoring in accordance with paragraph (B), (C), or (D), as appropriate, of rule 3745-81-87 of the Administrative Code during the monitoring period in which the system exceeded the action level. Any such public water system may resume annual monitoring for lead and copper at the tap at the reduced number of sites specified in paragraph (C) of this rule after it has completed two subsequent consecutive six-month rounds of monitoring that meet the criteria of paragraph (D)(4)(a) of this rule or may resume triennial monitoring for lead and copper after it demonstrates that it meets the criteria of paragraph (D)(4)(c) of this rule.

(b) Any public water system subject to the reduced monitoring frequency that exceeds the lead or copper action level during any four-month monitoring period or fails to operate at or above the minimum value or within the range of values for the water quality parameters specified by the director under paragraph (F) of rule 3745-81-82 of the Administrative Code for more than nine days in any six-month period specified in paragraph (D) of rule 3745-81-87 of the Administrative Code shall conduct tap water sampling for lead and copper at the frequency specified in paragraph (D)(3) of this rule, collect the number of samples specified for standard monitoring for lead and copper under paragraph (C) of this rule, and shall resume monitoring for water quality parameters within the distribution system in accordance with paragraph (D) of rule 3745-81-87 of the Administrative Code. This standard tap water monitoring shall begin no later than the six-month period beginning January first or July first, whichever comes first, following the lead or copper action level exceedance or water quality parameter excursion. Such a public water system may resume reduced monitoring for lead and copper at the tap and for water quality parameters within the distribution system under the following conditions:

(i) The public water system may resume annual monitoring for lead and copper at the tap at the reduced number of sites specified in paragraph (C) of this rule after it has completed two subsequent six-month rounds of monitoring that meet the criteria of paragraph (D)(4)(b) of this rule and the

system has received written acceptance from the director that it is appropriate to resume reduced monitoring on an annual frequency. This sampling shall begin during the calendar year immediately following the end of the second consecutive six-month monitoring period.

(ii) The system may resume triennial monitoring for lead and copper after it demonstrates that it meets the criteria of paragraph (D)(4)(c) of this rule and the public water system has received written acceptance from the director.

(iii) The public water system may reduce the number of water quality parameter tap water samples required in accordance with paragraph (E)(1) of rule 3745-81-87 of the Administrative Code and the frequency with which the system collects such samples in accordance with paragraph (E)(2) of rule 3745-81-87 of the Administrative Code. Such a system may not resume triennial monitoring for water quality parameters at the tap until the system demonstrates, in accordance with the requirements of paragraph (E)(3) of rule 3745-81-87 of the Administrative Code, that the system has re-qualified for triennial monitoring.

(6) Reduced monitoring and changes in water quality, treatment or water source. Any public water system subject to a reduced monitoring frequency under paragraph (D)(4) of this rule shall notify the director, and any consecutive or wholesale system, in writing in accordance with paragraph (A)(3) of rule 3745-81-90 of the Administrative Code of any of the following including, but not limited to changes in water quality that has the potential to affect or is affecting optimal corrosion control, upcoming substantial change in treatment, or an addition of a new source. The director shall review and approve the addition of a new source or substantial change in water treatment before it is implemented by the water system. The director may require the public water system to resume sampling in accordance with paragraph (D)(3) of this rule and collect the number of samples specified for standard monitoring under paragraph (C) of this rule or take other appropriate steps such as increased water quality parameter monitoring or re-evaluation of its corrosion control treatment given the potentially different water quality considerations.

(E) Additional monitoring by public water systems.

The results of any monitoring conducted in addition to the minimum requirements of this rule shall be considered by the public water system and the director in making any determinations, i.e.,

calculating the ninetieth percentile lead or copper level, under rule 3745-81-80 of the Administrative Code. Samples meeting any of the criteria in paragraphs (E)(1) to (E)(5) of this rule will be identified as special purpose and not be considered for compliance with rules 3745-81-80 to 3745-81-90 of the Administrative Code. Water systems shall comply with the requirements for consumer notice of special purpose sample results per paragraph (A) of rule 3745-81-85 of the Administrative Code.

(1) Samples taken outside the required monitoring period.

(2) Samples taken from a tier site lower than the required tier.

(3) Repeat samples taken from the same site during the same monitoring period (i.e. investigatory samples) unless the water system has fewer than five taps as described in paragraph (C) of this rule.

(4) Samples not collected in accordance with the approved sampling methodology of this rule.

(5) Samples taken after lead service line replacement in accordance with rule 3745-81-84 of the Administrative Code.

(F) Invalidation of lead or copper tap water samples.

A sample invalidated under this paragraph does not count toward determining lead or copper ninetieth percentile levels under paragraph (C)(3) of rule 3745-81-80 of the Administrative Code or toward meeting the minimum monitoring requirements of paragraph (C) of this rule.

(1) The director may invalidate a lead or copper tap water sample if at least one of the following conditions is met.

(a) The laboratory establishes that improper sample analysis caused erroneous results.

(b) The director determines that the sample was taken from a site that did not meet the site selection criteria of this rule.

(c) The sample container was damaged in transit.

(d) There is substantial reason to believe that the sample was subject to tampering.

(2) The public water system shall report the results of all samples to the director and all supporting documentation for samples the system believes should be invalidated.

(3) To invalidate a sample under paragraph (F)(1) of this rule, the decision and the rationale for the decision shall be documented in writing. The director may not invalidate a sample solely on the grounds that a follow-up sample result is higher or lower than that of the original sample.

(4) The public water system shall collect replacement samples for any samples invalidated under paragraph (F)(1) of this rule if, after the invalidation of one or more samples, the system has too few samples to meet the minimum requirements of paragraph (C) of this rule. Any such replacement samples shall be taken as soon as possible, but no later than twenty days after the date the director invalidates the sample or by the end of the applicable sampling period, whichever occurs later. Replacement samples taken after the end of the applicable sampling period shall not also be used to meet the sampling requirements of a subsequent sampling period. The replacement samples shall be taken at the same locations as the invalidated samples or, if that is not possible, at locations other than those already used for sampling during the sampling period.