

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT WATER DIVISION -
WATER SUPPLY PROGRAM
ADMINISTRATIVE CODE

CHAPTER 335-7-11
CONTROL OF LEAD AND COPPER

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335-7-11-.01 Definitions.

When used in this chapter, the following words and terms shall have the meaning assigned to them as shown:

(a) Action Level--The concentration of lead or copper in water which is used to determine compliance with these regulations. This action level value is the 90th percentile level determined from monitoring water at specific sites in the distribution system.

(b) Corrosion inhibitor--A substance capable of reducing the corrosivity of water towards metal plumbing materials, especially lead and copper, by forming a protective film on the interior surface of those materials.

(c) Compliance Limit--The level of 0.015 mg/1 of lead and 1.3 mg/1 of copper in drinking water. To determine compliance, a system shall compare its lead/copper action levels with these values.

(d) Effective Corrosion Inhibitor Residual--A concentration of corrosion inhibitor sufficient to form a passivating film on the interior walls of a pipe.

(e) First draw sample--A one liter sample of tap water which has been standing in plumbing piping for at least six hours prior to collection and is collected without flushing the tap. Samples shall be taken from residential housing from a cold water kitchen or bathroom tap or from a non-residential building collected at a tap used for water consumption.

(f) Large water system--A public water system serving 50,000 or more persons.

(g) Lead Service line--A water service line made of lead connecting the water main to a building inlet. This service line includes all fittings attached or connected to it.

(h) Medium size water system--A public water system that serves greater than 3,300 population and less than 50,000 population.

(i) Optimal corrosion control treatment--Treatment of the water that minimizes the lead and copper concentrations at users taps while ensuring that the treatment does not cause non-compliance with other established drinking water standards.

(j) Service line sample--A one liter sample of water which has been standing in a lead service line for at least six hours.

(k) Single family structure--A building constructed as a single family residence that is currently used as either a residence or a place of business.

(l) Small water system--A public water system that serves 3,300 population or less.

Author: Joe Alan Power

Statutory Authority: Code of Ala. 1975, §§22-23-33, 22-22A-5, 22-22A-6.

History: Adopted: September 23, 1992. Effective: November 9, 1992.

335-7-11-.02 Applicability.

The regulations established by this chapter apply to all community and NTNC water systems. All water systems shall establish water treatment techniques to produce a nonaggressive water to minimize the exposure to its consumers of lead and copper which may be present in the materials of construction, both in the water system and in customer plumbing. Additional steps may be necessary to minimize exposure to lead and copper by replacing water distribution piping and appertenances.

Author: Joe Alan Power

Statutory Authority: Code of Ala. 1975, §§22-23-33, 22-22A-5, 22-22A-6.

History: Adopted: September 23, 1992. Effective: November 9, 1992.

335-7-11-.03 Compliance With Lead And Copper Levels.

All water systems shall determine a lead and copper action level based on the monitoring requirements established in this chapter. A system is considered in compliance if the lead action level is equal to or less than the lead compliance limit (0.015 mg/l) and the copper level is equal to or less than the copper compliance limit (1.3 mg/l). This action level shall be determined using all monitoring at the selected sites, not just the minimum shown in Table 11-1.

Author: Joe Alan Power

Statutory Authority: Code of Ala. 1975, §§22-23-33, 22-22A-5, 22-22A-6.

History: Adopted: September 23, 1992; effective November 9, 1992.

335-7-11-.04 Initial Monitoring To Establish Action Levels.

(1) All new community and NTNC water systems shall monitor for lead and copper at the number of established monitoring sites for two consecutive six-month monitoring periods starting the first six-month period the system is in operation.

(2) Any community and NTNC water system that exceeds a lead or copper action level shall monitor for lead and copper at the number of established monitoring sites during at least two consecutive six-month compliance periods.

(3) Any water system which has demonstrated satisfactory action levels and maintains the range of values for the water quality control parameters reflecting optimal corrosion control treatment

specified by the Department during two consecutive six-month monitoring periods may reduce monitoring sites and frequency of monitoring to once per year if it receives written approval from the Department. The number of initial and reduced monitoring sites is shown in Table 11-1. The reduced monitoring shall begin during the calendar year immediately following the end of the second consecutive six-month monitoring period.

(4) A community or NTNC water system that significantly changes the source of its drinking water, its treatment to control the corrosivity of the water or if the source water quality significantly changes, may be required by the Department to conduct initial monitoring under this rule.

Author: Joe Alan Power, Dennis D. Harrison

Statutory Authority: Code of Ala. 1975, §§22-23-33, 22-22A-5, 22-22A-6.

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335-7-11-.05 Repeat Monitoring Requirements.

(1) Systems monitoring on a yearly basis shall use the number of reduced monitoring sites shown in Table 11-1. All monitoring must be taken from previous sites and must be collected during June, July, August, or September of that year unless the water system receives written approval from the Department for an alternative monitoring period.

(2) After three consecutive years of demonstrating satisfactory action levels, a small or medium water system may reduce monitoring to once every three years.

(3) After three consecutive years of demonstrating satisfactory action levels and maintaining the range of values for the water quality control parameters reflecting optimal corrosion control treatment specified by the Department, any water system may reduce monitoring sites and frequency of monitoring to once every three years with written approval from the Department.

(4) A system with a 90th percentile level less than or equal to .005 mg/L for lead and 0.65 mg/L for copper for two consecutive six-month periods may reduce monitoring to once every three years.

(5) Any system exceeding a lead or copper compliance limit shall increase monitoring consistent with the initial monitoring compliance requirements. Monitoring must be collected from the initial sites and monitoring must take place during six-month

compliance cycles (January - June or July - December) until compliance is achieved. Monitoring shall begin with the next available compliance cycle after the exceedance occurred. If optimum corrosion control treatment or source water treatment is initiated by the system, monitoring during six-month compliance cycles must continue for two six-month periods after the treatment has been installed demonstrating compliance with the compliance limits.

(6) Any system that fails to operate at or above the minimum value or within the range of values for the water quality parameters specified by the Department for more than nine days in any six-month period shall increase monitoring consistent with the initial monitoring compliance requirements. Monitoring must be conducted utilizing the initial monitoring sites and monitoring must take place during six-month compliance cycles (January - June or July - December) until compliance is achieved. Monitoring shall begin with the next available compliance cycle after the exceedance occurred.

(7) A system may be allowed to monitor during months other than June, July, August and September. The alternate monitoring period shall be no longer than four months in duration when the highest lead levels are likely to occur. Systems monitoring annually must conduct their next round of monitoring during a time period that ends no later than 21 months after the previous round of monitoring. Systems monitoring every three years must conduct their next round of monitoring during a time period that ends no later than 45 months after the previous round of monitoring.

Author: Joe Alan Power

Statutory Authority: Code of Ala. 1975, §§22-22A-5, 22-22A-6, 22-23-33.

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335-7-11-.06 Number Of Lead-Copper Monitoring Sites.

Water systems shall collect at least one sample during each monitoring period from the number of sites established by Table 11-1. A system conducting reduced monitoring under this rule shall collect at least one sample from the number of sites specified in the Reduced Monitoring Sites column below. 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 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 minimum number of sample

sites list in Table 11-1. Under no circumstance can a water system reduce the minimum number of samples below 5 per monitoring period.

Table 11-1

LEAD/COPPER MONITORING SITES

System size (population)	Initial monitoring Sites	Reduced monitoring Sites
greater than 100,000	100	50
10,001-100,000	60	30
3,301-10,000	40	20
501-3,300	20	10
101-500	10	5
less than 100	5	5

Author: Joe Alan Power.

Statutory Authority: Code of Ala. 1975, §§22-23-33, 22-22A-5, 22-22A-6.

History: Adopted: September 23, 1992; effective November 9, 1992.

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335-7-11-.07 Monitoring Site Selection.

Only monitoring conducted utilizing acceptable sites can be used to determine compliance with this chapter. Water systems shall complete a materials evaluation of its distribution system to identify targeted sample sites. Sufficient sample sites shall be selected to allow an availability of acceptable sites and thus allow monitoring based on the number of samples required in Table 11-1.

(a) Monitoring sites for Community systems--Community water systems must conduct all lead and copper monitoring utilizing tier one sites or document the lack of sufficient sites and conduct the remaining monitoring from tier two sites. Water systems with insufficient tier one and two sites may utilize tier three sites. A community water system with insufficient tier one, two or three sites shall monitor utilizing replacement sites throughout the distribution system. A replacement site is a site in which the plumbing materials used at that site would be commonly found at other sites served by the water system but not conforming to tier one, two or three requirements.

1. Any water system whose distribution system contains lead service lines shall conduct at least 50% of the monitoring from these sites during each monitoring period. Monitoring shall be conducted from the lead

service line. Should a sufficient number of sites be unavailable to provide 50% of the required monitoring, written documentation is necessary to demonstrate why the system was unable to locate a sufficient number of such sites.

2. Tier one sites--These sites include single family structures containing lead pipe or plumbing, are served by a lead service line, or contain copper pipes with lead solder and were constructed after 1982.

3. Tier two sites--These sites include buildings and multiple family residences containing lead pipe or plumbing, are served by a lead service line, or contain copper pipes with lead solder and were constructed after 1982.

4. Tier three sites--These sites include single family structures containing copper pipes with lead solder which were constructed prior to 1983.

(b) Monitoring sites for NTNC water systems--NTNC systems shall conduct all lead and copper monitoring from tier one sites. Systems with insufficient tier one sites may use tier two sites and those systems consisting of fewer structures than required sites may collect more than one sample at a structure, but from different spigots which consist of building containing copper pipes with lead solder installed before 1983. A NTNC water system with insufficient tier one or two sites shall conduct the remaining monitoring from replacement sites throughout the distribution system. A replacement site is a site in which the plumbing materials used at that site would be commonly found at other sites served by the water system but not conforming to tier one or two requirements.

1. Tier One Sites--These sites include buildings with lead pipes or plumbing, are served by a lead service line or contain copper pipes with lead solder constructed after 1982.

2. Tier two sites--These sites include buildings with copper pipes and lead solder constructed before 1983.

(c) Lead service line samples--Any water system whose distribution system contains lead service lines shall conduct 50% of the monitoring from sites served by a lead service line each monitoring period. If a sufficient number of sites served by a lead service line cannot be identified, all identified sites shall be monitored.

Author: Joe Alan Power

Statutory Authority: Code of Ala. 1975, §§22-23-33, 22-22A-5, 22-22A-6.

History: Adopted: September 23, 1992; effective November 9, 1992.
Amended: Filed February 6, 2002; effective March 13, 2002.

335-7-11-.08 Lead/Copper Monitoring Collection Procedures.

Tap and service line monitoring shall be collected in accordance with the following:

(a) Tap monitoring for lead and copper shall be first draw and one liter in volume. The water shall stand motionless in the plumbing system for at least six hours prior to collection. Collection shall be from the cold water kitchen tap or bathroom sink tap from tier 1 sites or from an interior tap typically used for obtaining water for consumption from tier 2 and tier 3 sites. Monitoring may be conducted by the resident after proper instructions and procedures have been provided by the water system. Follow up tap monitoring shall be conducted from the same sites. Should a site no longer be available, an alternate acceptable site may be selected which is in reasonable proximity of the original site. Taps used for monitoring may not include faucets that have point of use or treatment devices installed.

(b) Service line monitoring shall be one liter in volume and have remained in the lead service line for at least six hours prior to collection. Service line monitoring may be collected directly by tapping into the lead service line, or by flushing the volume of water between the tap and the lead service line until either the calculated amount of water between the tap and the service line has been discharged or for single family residences until there is a significant change in temperature which would indicate the water available was standing in the lead service line.

(c) Water systems with insufficient taps that can supply first draw samples may apply to the state in writing to substitute non -first-draw samples. These systems must collect as many of the samples as possible from first-draw taps and identify the monitoring times and locations that would likely result in the longest standing times for the remaining samples. Non-first-draw samples shall be one liter in volume and collected from an interior tap from which water is typically drawn for consumption.

Author: Joe Alan Power

Statutory Authority: Code of Ala. 1975, §§22-23-33, 22-22A-5, 22-22A-6.

History: Adopted: September 23, 1992; effective November 9, 1992.
Amended: Filed February 6, 2002; effective March 13, 2002.

335-7-11-.09 Invalidation Of Lead Or Copper Tap Water Samples.

A sample invalidated under this rule does not count toward 90th percentile levels or toward meeting minimum monitoring requirements.

(a) A sample may be invalidated for one of the following reasons.

1. The laboratory establishes that improper sample analysis caused erroneous results.
2. The State determines that the sample was taken from a site that did not meet the site selection criteria of this rule.
3. The sample container was damaged in transit.
4. There is substantial reason to believe that the sample was subject to tampering.

(b) The system must report the results of all samples to the State and all supporting documentation for samples the system believes should be invalidated.

(c) The water system must collect replacement samples for any samples invalidated under this rule if, after the invalidation of one or more samples, the system has not collected the minimum number of samples. Any such replacement samples must be taken as soon as possible, but no later than 20 days after the date the State invalidates the sample or by the end of the applicable monitoring period, whichever occurs later. Replacement samples taken after the end of the applicable monitoring period shall not also be used to meet the monitoring requirements of a subsequent monitoring 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 monitoring during the monitoring period.

Author: Thomas S. DeLoach, Dennis D. Harrison

Statutory Authority: Code of Ala. 1975, §§22-23-33, 22-22A-5, 22-22A-6.

History: New Rule: Filed February 6, 2002; effective March 13, 2002. **Amended:** Filed December 18, 2007; effective January 22, 2008.

335-7-11-.10 Monitoring Waivers.

A small system that meets the requirements of this rule may apply to the state to reduce the frequency of monitoring for lead and copper to once every nine years.

(a) The system must submit a materials survey showing the system is free of lead and copper containing materials as detailed below.

1. It contains no plastic pipes which contain lead plasticizers, or plastic service lines which contain lead plasticizers; and
2. It is free of lead service lines, lead pipes, lead soldered pipe joints, and leaded brass or bronze alloy fittings and fixtures, unless such fittings and fixtures meet the NSF Standard 61 Section 9.
3. The system contains no copper pipes or copper service lines.

(b) The system must have completed at least one six-month round of standard tap water monitoring for lead and copper demonstrating that the 90th percentile levels for all rounds of monitoring conducted since the system became free of all lead-containing and copper-containing materials were less than or equal to .005 mg/L for lead and 0.65 mg/L for copper.

(c) A system that has been granted a waiver must monitor for lead and copper at the reduced number of monitoring sites specified in Table 11-1 every nine years. The system must also submit a materials survey along with the monitoring results.

(d) A system must return to monitoring for lead and copper at least every three years if the system no longer meets the materials criteria, has a 90th percentile level for lead greater than .005 mg/L or a 90th percentile level for copper greater than .065 mg/L.

(e) The system shall notify the Department within 60 days after determining the system is no longer free of materials that contain lead or copper.

(4) Any water system with a waiver shall notify the Department, in writing, of any upcoming long-term change in treatment or addition of a new source.

Author: Thomas S. DeLoach, Dennis D. Harrison

Statutory Authority: Code of Ala. 1975, §§22-23-33, 22-22A-5, 22-22A-6.

History: **New Rule:** Filed February 6, 2002; effective March 13, 2002. **Amended:** Filed April 25, 2003; effective May 30, 2003. **Amended:** Filed December 18, 2007; effective January 22, 2008. **Amended:** Filed April 26, 2009; effective May 26, 2009. **Amended:** Filed December 20, 2016; effective February 3, 2017.

335-7-11-.11 Action Level Non-Compliance.

Any water system with an action level exceeding the compliance limit for lead or copper shall complete the following requirements in the manner and by the deadline established by these regulations:

(a) Water systems must install and maintain adequate corrosion control treatment equipment to ensure that the lead/copper compliance limit can be met. The Department may require that an in-depth study be completed to determine the optimum corrosion control process for the system.

(b) Systems installing corrosion control treatment requirements shall monitor the parameters at the frequency established by these regulations. All parameters established must be reported on the monthly operation data reports by the 10th of the following month. Exceedance of the established values which indicate optimum corrosion control is considered a treatment technique violation.

(c) The lead and copper level in the source water serving the areas exceeding the compliance limit must be monitored to determine compliance with the primary drinking water standards in Chapter 335-7-2. The source must be taken out of service and provided with satisfactory treatment, approved by the Department, to reduce the lead or copper level to meet these drinking water standards.

(d) A system that fails to meet the lead/copper compliance limit after the installation of corrosion control shall develop a program to replace lead service lines. All lead service lines in the system shall be identified and at least 7% replaced on an annual basis. More rapid replacement may be required by the department.

(e) Systems which exceed the lead compliance limit shall deliver public educational materials according to the methods specified in the regulations. The language used in this public education notice must include specific language contained in the Appendix C.

Author: Joe Alan Power, Dennis D. Harrison

Statutory Authority: Code of Ala. 1975, §§22-23-33, 22-22A-5, 22-22A-6.

History: Adopted: September 23, 1992; effective November 9, 1992.
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335-7-11-.12 Corrosion Control Treatment Requirement.

Any water system which has been deemed to have optimized corrosion control and has corrosion control treatment in place shall continue to operate and maintain treatment to ensure that optimal corrosion control is maintained.

(a) All water systems with an action level which exceeds a lead or copper compliance limit and any new drinking water source proposed for use after the effective date of these regulations shall install and properly operate optimum corrosion control processes continuously to reduce the potential for lead or copper exposure by the consumers. Within six months of exceeding the compliance limit a system shall provide a detailed report indicating the process and equipment to be used to provide corrosion control treatment. Installation and start up of the equipment must be completed within 24 months of approval of the Department. A corrosion control treatment study may be required by the Department to determine the optimum process to be installed. Those systems practicing corrosion control in their treatment process prior to the effective date of these regulations and acceptable to the Department may have the treatment study requirements waived. Systems required to perform a corrosion control treatment study shall complete the study and submit its results along with a proposal for the process to be used to the Department within 12 months of exceeding a compliance limit. This report must include a proposed construction schedule for installation of the equipment. This project must be completed no more than 24 months after the study submittal. All systems installing corrosion control treatment processes shall monitor initial site during the next two consecutive six-month compliance periods.

(b) The water in a water system is considered to meet optimum corrosion control when the distribution system:

1. Water quality parameters reflected on the Baylis Curve indicates no incrusting or corrosion will occur, or
2. The Langelier Index of the water is between -1.0 to +2,
3. The Ryznar Index is between 7 and 11,

4. A phosphate or silicate corrosion inhibitor is continuously applied at the manufacturer/supplier recommended level resulting in minimum complaints, or
5. The Calcium Carbonate Precipitation Potential (CCPP) is maintained between 4-10 mg/l, and
6. The water continuously meets the lead and copper compliance limits.

(c) Any water system may be considered to optimize corrosion control treatment if it demonstrates that it has conducted activities equivalent to the corrosion control steps outlined in this rule. Water systems deemed to have optimized corrosion control under this subparagraph shall operate in compliance with the State-designated optimal water quality control parameters and continue to conduct lead and copper tap and water quality parameter monitoring as required by these regulations. The system shall provide to the Department:

1. The results of all monitoring for each of the water quality parameters listed in 335-7-11-.13(c);
2. A report explaining the test methods used by the water system to evaluate the corrosion control treatments listed in 335-7-11-13(a), the results of all tests conducted and the basis for the system's selection of optimal corrosion control treatment;
3. A report explaining how corrosion control has been installed and how it is being maintained to ensure minimal lead and copper concentrations at consumer's taps; and
4. The information from tap water monitoring conducted in accordance with 335-7-11-.07 above the compliance limit.

(d) Any water system is deemed to have optimized corrosion control if it submits results of tap water monitoring conducted in accordance with 335-7-11-.08 and source water monitoring in accordance with 335-7-11-.15 that demonstrates for two consecutive six-month monitoring periods that the difference between the 90th percentile tap water level computed under 335-7-11-.03 and the highest source water lead concentration is less than 0.005 mg/l.

1. Those systems whose highest source water lead level is below the Method Detection Limit may also be deemed to have optimized corrosion control under this subparagraph if the 90th percentile tap water lead level is less than or equal to 0.005 mg/l for two consecutive 6-month monitoring periods.

2. Any water system deemed to have optimized corrosion control in accordance with this subparagraph shall continue to monitor for lead and copper at the tap no less frequently than once every three calendar years using the reduced number of monitoring sites and conducting the monitoring at times and locations specified in these regulations.

3. Any water system deemed to have optimized corrosion control shall notify the Department in writing pursuant of any change in treatment or the addition of a new source. Any new source or long-term change in water treatment shall have written approval from the Department before being placed into service or implemented. The system may be required to conduct additional monitoring or to take other action to ensure that the system maintains minimal levels of corrosion in the distribution system.

4. Any system triggered into corrosion control because it is no longer deemed to have optimized corrosion control under this subparagraph shall implement corrosion control treatment in accordance with the deadlines in the regulations. Large systems shall adhere to the schedule specified in the paragraph for medium size systems; with the time periods for completing each step being triggered by the date the system is no longer deemed to have optimized corrosion control under this paragraph.

Author: Joe Alan Power, Dennis D. Harrison

Statutory Authority: Code of Ala. 1975, §§22-23-33, 22-22A-5, 22-22A-6.

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335-7-11-.13 Corrosion Control Study.

Systems proposing to use a new source or exceeding the lead and copper compliance limit may be required to conduct and submit a corrosion control study to determine the optimum corrosion control process to minimize exposure of lead and copper to the consumers.

(a) Any water system performing a corrosion control study shall evaluate the effectiveness of each of the following treatment processes and if appropriate, any combination of these processes:

1. alkalinity and pH adjustment,

2. calcium hardness adjustment, and

3. the addition of a phosphate or silicate based corrosion inhibitor at a concentration to maintain an effective residual in the distribution system.

(b) The study shall use either a pipe-loop test, metal coupon test, partial system test, or analysis based on documented treatment activities from other water systems with similar water chemistry, similar system size, and same distribution system configuration.

(c) The following water quality parameters shall be measured during the test conducted to allow proper evaluation of the processes:

1. Lead
2. Copper
3. pH
4. Total alkalinity
5. Calcium
6. Conductivity
7. Orthophosphate (when a phosphate inhibitor is evaluated)
8. Silicate (when a silicate compound is evaluated)
9. Water temperature

(d) The study shall identify all chemical or physical constraints that may limit or prohibit the use of a particular corrosion treatment method, identify any previously used corrosion control treatment that was found ineffective, or adversely affected any treatment processes, shall evaluate the effect of the proposed chemicals to be used on the water quality treatment processes demonstrating adequate corrosion control, and shall provide a recommendation of the proposed process to be installed.

(e) Information to be included with the recommended process shall include cost of the proposed installation, equipment to be used including model number and brand, chemical to be added including proposed concentration rate, NSF approval document, and availability information on the chemical and a construction schedule demonstrating the equipment can be operational within 24 months of the study submittal. After review of the recommended process, the Department will

determine the optimum corrosion control process and the water quality parameter values. Lead and copper monitoring shall continue each six-month compliance period from the date the parameter values are set.

Author: Joe Alan Power

Statutory Authority: Code of Ala. 1975, §§22-23-33, 22-22A-5, 22-22A-6.

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Amended: Filed February 6, 2002; effective March 13, 2002.

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335-7-11-.14 Corrosion Control Parameter Monitoring Requirements.

(1) All large water systems and water systems utilizing a corrosion control process to meet the requirements established under rule 335-7-11-.12 shall begin monitoring within ten days of process activation.

(2) Monitoring parameters will be determined for each specific water system and may include requirements for monitoring pH, alkalinity, orthophosphate, silica, calcium, conductivity, water temperature, and other parameters designated by the Department. Compliance may be demonstrated by monitoring the treated water from each individual source for designated parameters on a daily and weekly basis or by establishing distribution system locations and monitoring during six-month monitoring periods (January - June or July - December). Compliance monitoring shall begin with the next full six-month period.

(a) Systems using the Baylis Curve may demonstrate proper corrosion control by monitoring the treated water from each water source on a daily basis for pH and total alkalinity. Should the system utilize the Langelier Index or Ryznar Index for evaluating the corrosive level of the water, the treated water from each source must be monitored for pH and alkalinity daily and calcium, water temperature, and hardness on a weekly basis. Should an orthophosphate or silicate inhibitor be used, the system shall monitor pH on a daily basis and the phosphate or silicate level on a weekly basis for each treatment facility.

(b) With the approval of the Department, a system may select representative sites throughout the distribution system, taking into consideration the number of different sources of water, different treatment methods, seasonal variability, and density of service. The number of sites must be no less than those designated in Table 11-2.

Table 11-2

Water Quality Monitoring

System Size (population)	Number of sites
greater than 100,000	25
10,001-100,000	10
3301-10,000	3
501-3300	2
25-500	1

(c) Two samples shall be obtained from each of the designated sites and two samples shall be obtained from each entry point from a treatment facility operating under normal conditions and analyzed for pH, alkalinity, orthophosphate, (when a phosphate compound is used), silica (when a silicate compound is used), calcium, conductivity, and water temperature. These samples shall be collected each six-month monitoring period and reported by the 10th of the following month after samples are collected.

(d) All systems optimizing corrosion control shall continue to operate and maintain optimal corrosion control treatment, including maintaining water quality parameters at or above minimum values or within ranges designated by the State for all monitoring conducted. Compliance with the requirements of this subparagraph shall be determined every six months. A water system is out of compliance for a six-month period if it has excursions for any State-specified parameter on more than nine days during the period. An excursion occurs whenever the daily value for one or more of the water quality parameters measured at a monitoring location is below the minimum value or outside the range designated by the State. Daily values are calculated as follows:

1. On days when more than one measurement for the water quality parameter is collected at the monitoring location, the daily value shall be the average of all results collected during the day regardless of whether they are collected through continuous monitoring, grab monitoring, or a combination of both.
2. On days when only one measurement for the water quality parameter is collected at the monitoring location, the daily value shall be the result of that measurement.
3. On days when no measurement is collected for the water quality parameter at the monitoring location, the daily value shall be the daily value calculated on the most recent day on which the water quality parameter was measured at the site.

(3) The water system shall maintain water quality parameter values within the ranges established by the Department to demonstrate production of satisfactory water. Should an analysis indicate a value outside the established level, immediate steps shall be taken to adjust the treatment process and conduct additional monitoring within 24 hours to verify compliance with acceptable value(s). Analysis of corrosion control parameters shall be conducted using analytical methods established by EPA.

(4) Any small or medium-sized systems shall conduct water quality parameter monitoring according to the requirements of this rule when the water system exceeds the lead or copper action level.

(5) Any water system that maintains the range of values for the water quality parameters reflecting optimal corrosion control treatment during three consecutive years of monitoring may reduce the frequency of monitoring to once per year if it receives written approval from the Department. The reduced monitoring shall begin during the calendar year immediately following the end of the monitoring period in which the third consecutive year of six-month monitoring occurs. Any water system that maintains the range of values for the water quality parameters reflecting optimal corrosion control treatment during three consecutive years of annual monitoring may reduce the frequency of monitoring to every three years if it receives written approval from the Department. The sampling begins no later than the third calendar year following the end of the monitoring period in which the third consecutive year of monitoring occurs.

Author: Joe Alan Power, Dennis D. Harrison

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335-7-11-.15

Source Water Monitoring And Treatment.

Any system which exceeds the lead or copper compliance limit must analyze the treated water for the contaminant using the same methodology and location as required for inorganic contaminants in each source used by the system. This analysis must be completed within 180 days after the date of the initial exceedance. During the analysis, if a level exceeds 0.015 mg/l lead or 1 mg/l copper, then the system must perform confirmation monitoring within seven days. The value of the initial and all confirmation monitoring will be averaged. Treatment modifications must be installed which will result in the finished water meeting the lead and copper action levels based on monitoring throughout the distribution system, as specified in rule 335-7-11-.03. Modifications to the

treatment process must be approved and permitted by the Department in accordance with rule 335-7-4-.03. Unless the Department gives written approval of the modifications, the source must be taken out of service within sixty days of the Department determining that treatment modifications are required and remain out of service until the treatment modifications are installed. Prior to reactivation of the source, monitoring of the treated water shall demonstrate compliance with drinking water standards and a second set of lead and copper monitoring conducted within six months of returning to service. All initial sites for lead and copper shall be monitored for the next two six-month compliance periods.

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335-7-11-.16 Lead Service Line Replacement.

(1) Systems which exceed the compliance limit for lead after installation or modification of corrosion control processes or source water treatment and which contain lead service lines shall identify the number and location of lead service lines and develop and implement a removal action plan.

(a) This plan shall identify the number of lines, including an identification of the portion owned by the system, general distribution locations, cost of replacement, proposed disposal site for removed lines, and a time schedule for removal.

(b) This plan shall be provided within six months of exceeding the compliance limit and shall be implemented within twelve months of the end of the monitoring period in which the exceedance occurred. If the monitoring frequency is annual or less, the end of the monitoring period is September 30 of the year in which the sampling occurred.

(c) The plan shall provide for full replacement of all services lines, except those excluded in the following subparagraphs, within 15 years.

1. At least 7% of the initial number of lead service lines shall be replaced annually. Lead service lines which have demonstrated to meet the compliance limit for lead through service line monitoring can be excluded from the process. The state may require a water system to replace more than 7% of the lead service lines annually.

2. The plan shall demonstrate the legal ownership of service lines and if the water system does not control or own the entire lead service line up to the building, it shall include provisions to notify the customer of its existence and offer to replace that service line for a fair and equitable cost.

3. The process of replacing service lines may cease when the system can demonstrate through two consecutive monitoring periods that first draw samples collected from lead service lines are meeting the compliance limit due to enhanced corrosion control activity.

4. A water system that does not replace the entire length of the service line shall comply with the following:

(i) At least 45 days prior to commencing with the partial replacement of a lead service line, the water system shall provide notice to the residents of all buildings served by the line explaining that they may experience a temporary increase of lead levels in their drinking water, along with guidance on measures consumers can take to minimize their exposure to lead. The Department may allow the water system to provide this notice less than 45 days prior to commencing partial lead service line replacement where such replacement is done in conjunction with emergency repairs. In addition, the water system shall inform the residents served by the line that the system will, at the system's expense, collect a sample for a lead analysis from each partially-replaced lead service line within 72 hours after the completion of the partial replacement of the service line. The system shall collect the sample and report the results of the analysis to the owner and the residents served by the line within three business days of receiving the results. Mailed notices post-marked within three business days of receiving the results shall be considered "on time."

(ii) The water system shall provide the information required by this rule to the residents of individual dwellings by mail or by other methods approved by the Department. In instances where multi-family dwellings are served by the line, the water system shall have the option to post the information at a conspicuous location.

(2) The process of replacing service lines may cease when the system can demonstrate through two consecutive monitoring periods that first tap draw monitoring conducted from lead service lines are meeting the compliance limit due to enhanced corrosion control activity. If first draw tap monitoring in any such system

thereafter exceeds the lead action level, the system shall recommence replacing lead service lines as required by this rule.

(3) A water system resuming a lead service line replacement program after the cessation of its lead service line replacement program shall update its inventory of lead service lines to include those sites that were previously determined not to require replacement under subparagraph (1)(c)1.

(a) The lead service line replacement program shall be completed within 15 years. The 15 years shall include any previous time allowed under this rule.

(b) If a system has completed a 15 year replacement program, any exceedance of the action level will require the system to consult with the Department to determine a retesting or replacement schedule for the remaining lead service lines in the system.

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335-7-11-.17 Public Education Requirement.

(1) Water systems shall provide each customer with the results of any lead and copper monitoring conducted at the customer's tap. These results shall be provided to the customers within 30 days of receipt of the results by the water system.

(a) In addition to the results, the water system shall provide an explanation of the health effects of lead, steps consumers can take to reduce exposure to lead, the water system's contact information, maximum contaminate level goal (MCLG), the action level (AL) for lead and the definition of MCLG and AL.

(b) The notice to the consumer shall be mailed or provided by an alternate method approved by the Department. Non-transient non-community water systems may post the results on a bulletin board in the facility that is readily accessible by all employees.

(c) Notice shall be provided to customers who do not receive a water bill.

(2) Any water system with a lead action level that exceeds the compliance limit shall provide public education materials containing the required language located in paragraph (3) below to the consumers within sixty days of the end of the monitoring period unless the system is being required to meet the repeat public education requirements of this rule. In communities where a significant proportion of the population speaks a language other than English, this material shall be in the appropriate language. This information shall include specific guidance as presented and use the language in subparagraph (c) above. Systems may delete information pertaining to lead service lines, upon approval of the Department, if no lead service lines exist anywhere in the water system service area. Public education language may be modified regarding building permit record availability and consumer access to these records, if approved by the Department. Systems may also continue to utilize pre-printed materials that meet the public education language requirements.

(3) A water system that exceeds the lead action level shall deliver the following public education materials in accordance with paragraph (4) of this rule.

(a) Content of written public education materials.

1. Community and non-transient non-community water systems shall include the following elements in printed materials (brochures and pamphlets) in the same order as listed below. The information in paragraphs (i) and (ii) below shall be included exactly as written except for the text in brackets, where the information shall be water system specific.

(i) IMPORTANT INFORMATION ABOUT LEAD IN YOUR DRINKING WATER. [INSERT NAME OF WATER SYSTEM] found elevated levels of lead in drinking water in some homes/buildings. Lead can cause serious health problems, especially for pregnant women and young children. Please read this information closely to see what you can do to reduce lead in your drinking water.

(ii) Health effects of lead. Lead can cause serious health problems if too much enters your body from drinking water or other sources. It can cause damage to the brain and kidneys, and can interfere with the production of red blood cells that carry oxygen to all parts of your body. The greatest risk of lead exposure is to infants, young children and pregnant women. Scientists have linked the effects of lead on the brain with lowered IQ in children. Adults with kidney problems and high blood pressure can be affected by low levels of lead more than healthy adults. Lead is stored in the bones, and it can be released later in life. During pregnancy, the child

receives lead from the mother's bones, which may affect brain development.

(iii) Sources of lead.

(I) Explain what lead is.

(II) Explain possible sources of lead in drinking water and how lead enters drinking water. Include information on home/building plumbing materials and service lines that may contain lead.

(III) Discuss other important sources of lead exposure in addition to drinking water (e.g. paints).

(iv) Discuss the steps the consumer can take to reduce their exposure to lead in drinking water.

(I) Encourage running the water to flush out the lead.

(II) Explain concerns with using hot water from the tap and specifically caution against the use of hot water for preparing baby formula.

(III) Explain that boiling water does not reduce lead levels.

(IV) Discuss other options consumers can take to reduce exposure to lead in drinking water, such as alternative sources or treatment of water.

(V) Suggest that parents have their child's blood tested for lead.

(v) Explain why there are elevated levels of lead in the system's drinking water (if known) and what the water system is doing to reduce the lead levels in homes/buildings in this area.

(vi) Include information on where additional assistance may be obtained. The language which follows is suggested: For more information, call us at [INSERT PHONE NUMBER] or visit our website at [INSERT WEBSITE ADDRESS HERE] if applicable. For more information on reducing lead exposure around your home/building and the health effects of lead, visit EPA's website at <http://www.epa.gov/lead> or contact your health care provider.

2. Any additional information presented by a water system shall be consistent with the information above and be in

plain language that can be understood by the general public.

3. Any information provided to the public under this rule shall have prior written approval by the Department.

(b) Community water systems shall also discuss lead in plumbing components, the difference between low lead and lead free, and how the consumers can get their water tested.

(4) Delivery of public education materials.

(a) Public water systems servicing a large proportion of non-English speaking consumers shall include information in the educational material in the appropriate languages(s) regarding the importance of the notice or contain a telephone number or address where persons served may contact the water system to obtain a translated copy of the public education materials or to request assistance in the appropriate language.

(b) Community water systems that exceed the lead action level that is not already conducting public education shall conduct public education within 60 days of the end of the monitoring period in which the exceedance occurred. The end of the monitoring period for systems that are monitoring no greater than annually shall be September 30 of the year in which the exceedance occurred or if the Department has established an alternative monitoring schedule, the last day of that period.

1. Printed materials meeting the content requirements of this rule shall be provided to all bill paying customers and all other organizations and entities as required by this rule.

2. The water system shall contact consumers who are most at risk by delivering educational materials that meet the content of this rule to local public health agencies even if they are not located within the water system's service area, along with an informational notice that encourages distribution to all the organization's potentially affected customers or community water system's users.

(i) The water system shall contact the local public health agencies by phone or in person.

(ii) The water system shall provide the required public educational materials to all organizations provided by the local public health agencies that target the affected populations. This list may include organizations inside or outside of the water system's service area.

(iii) The water system shall request the following list of organizations from public health agencies, including ones not in the water system's service area, and provide these organizations with the educational materials required under this rule along with an informational notice that encourages distribution to all potentially affected customers or users.

(I) Licensed childcare centers.

(II) Public and private preschools.

(III) Obstetricians-Gynecologists and Midwives.

3. The water system shall contact customers who are most at risk by delivering materials to the following organizations that are located in the water system's service area along with an informational notice that encourages distribution to all the organization's potentially affected customers or community water system's users:

(i) Public and private schools or school boards;

(ii) Women, Infants and Children (WIC) and Head Start Programs;

(iii) Public and private hospitals and medical clinics;

(iv) Pediatricians;

(v) Family planning clinics; and,

(vi) Local welfare agencies.

(c) Each quarter that the water system has exceeded the lead action level, the water system shall provide public notice to each customer. The water system shall include the following information in subparagraph (c)1. below (exactly as written) on at least one water bill each quarter.

1. [INSERT NAME OF WATER SYSTEM HERE] found high levels of lead in drinking water in some homes. Lead can cause serious health problems. For more information please call [INSERT NAME OF WATER SYSTEM HERE] [or visit (INSERT NAME OF WEBSITE HERE)].

2. Systems unable to include the statement in paragraph (i) above on its water bill shall consult with the Department for other approved methods of delivery.

(d) Systems with a population greater than 100,000 shall post all required public education material on the water system's publicly accessible website and provide the address to the Department.

(e) Water systems shall submit a press release to all newspapers, television and radio stations that service the water system's service area.

(f) In addition to the public notification and educational materials required above, the water system shall select and implement at least three activities from one or more of the categories below. The selection of activities and educational content shall be approved by the Department prior to implementation.

1. Public Service Announcements.
2. Paid advertisements.
3. Public Area Information Displays.
4. E-mails to customers.
5. Public Meetings.
6. Household Deliveries.
7. Targeted Individual Customer Contact.
8. Direct material distribution to all multi-family homes and institutions.
9. Other methods as approved by the Department.

(5) A community water system that continues to exceed the action level shall repeat the activities in paragraph (4) above as follows:

(a) A community water system shall repeat the tasks contained in subparagraphs (4) (b) and (4) (f) every 12 months.

(b) A community water system shall repeat the tasks contained in subparagraph (4) (c) with each billing cycle.

(c) A community water system serving a population greater than 100,000 shall maintain on a publically accessible website a copy of all public educational material required under paragraph (3) until the water system no longer exceeds the action level.

(d) A community water system shall repeat the tasks contained in subparagraph (4)(e) twice every 12 months on a schedule approved by the Department.

(6) A non-transient non-community water system shall deliver the public education materials specified in paragraph (3) of this rule within 60 days after the end of the monitoring period unless it is already providing public education as required under this rule. The end of the monitoring period for a system that is monitoring no greater than annually shall be September 30 of the year in which the sampling occurred or the last day of an alternative monitoring schedule. The distribution of public educational materials shall be as follows:

(a) Post informational posters on lead in drinking water in a public place or common area in of the buildings served by the system.

(b) Informational pamphlets and/or brochures on lead in drinking water shall be distributed to each person served by the water system.

(c) The public educational materials shall be distributed as required in this rule at least once each year in which the system exceeds the lead action level.

(7) A community water system serving a population less than 3,301 people may limit certain aspects of its public education program as follows:

(a) At least one of the activities under subparagraph (4)(f) shall be implemented instead of the three required in subparagraph (4)(f).

(b) The water system may limit the distribution of public education materials required under subparagraph (4)(b)2. to facilities and organizations served by the system that are most likely to be visited regularly by pregnant women and children.

(c) The water system may request to have the requirements of subparagraph (4)(e) waived provided the system distributes notices to every household served by the system.

(8) A community water system which is a facility such as a prison or hospital where the population is not capable of or is prevented from making improvements to plumbing or installing point of use treatment devices or is a system that provides water as part of the cost of services and does not charge separately for water consumption may request in writing to only use the text specified in paragraph (3) of this rule and provide notification according to paragraph (6) of this rule.

(9) A water system may discontinue delivery of public educational materials if the system has met the lead action level during the most recent six-month monitoring period conducted in accordance with this section. Public education shall resume, in accordance with this section, if the water system exceeds the lead action level during any monitoring period.

(10) A water system that fails to meet the lead action level on the basis of tap samples collected under this rule shall offer to sample the tap water of any customer who requests it. The water system is not required to pay for collecting or analyzing the sample, nor is the system required to collect and analyze the sample itself.

Author: Joe Alan Power, Dennis D. Harrison

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335-7-11-.18 Reporting Requirements.

(1) Tap Water Monitoring. All water systems shall provide the results of all tap water monitoring for lead and copper and for all water quality parameter samples by the 10th of the month following the end of the compliance period. The end of the compliance period is the last date that samples can be collected during the monitoring period.

(a) Included shall be information regarding the tap, the tier level of the site, identification as a non first draw sample and length of standing time, documentation for all tap water lead and copper monitoring that the system requests invalidation, and an explanation for any site which was not monitored during the previous monitoring period or why sites may have changed.

1. Systems with lead service lines not providing 50% of the monitoring from these sites will provide a letter demonstrating why it was unable to locate a sufficient number of each site. Values shall be placed in descending order with the highest value first and the 90th percentile value either circled or labeled.

2. All systems utilizing non first draw samples shall provide the Department prior to the first monitoring period after these regulations become effective the

locations and standing times of all such monitoring. Systems applying for or systems that have been granted a waiver shall provide a certification that the system's distribution and plumbing materials are lead and copper free. A water system that has been granted a waiver and later determines the system's materials are no longer lead or copper free shall provide the basis of that determination and a corrective action plan to remove those materials within 60 days of the determination.

(b) Source Water Monitoring. The lead/copper results from source water required to be monitored shall be provided by the 10th of the month following the analysis.

(c) Corrosion Control Treatment. Systems with an approved corrosion control treatment system on the effective date of these regulations will continue to provide monthly monitoring reports providing the required information. These reports must be received by the 10th of the following month. For systems required to establish optimized corrosion control, daily and weekly analysis may be provided on the monthly operation reports which must be submitted by the 10th of the following month. For systems monitoring during a six-month compliance cycle, the analysis must be provided by the 10th of the month following the analysis.

(d) Lead Service Line Replacement. Systems required to replace service lines shall provide yearly information by December 31 regarding the number and location of service lines replaced, the number remaining, the location and lead concentration of any lead service line monitoring, and any proposed modification to the lead service line removal plan.

(2) Record Keeping of Reporting Requirements. All systems shall retain in its office or on its premises original records of all monitoring data, analysis, reports, surveys, letters, evaluations, schedules, state determinations and other information reflecting activities to demonstrate compliance with the lead and copper requirements of this Department. These records shall be retained for no less than 12 years.

(3) Any water system proposing the addition of a new source or any long-term change in water treatment shall submit a written report to the Department on how the change or source addition will affect the system's ability to comply with the lead and copper action levels and water quality parameter monitoring before implementing changes in treatment (or treatment processes) or using a new source.

(a) Examples of long-term water treatment changes include the addition of a new treatment process or modification of an existing treatment process.

(b) Examples of modifications include switching secondary disinfectants, switching coagulants and switching corrosion inhibitor products.

(c) Long term changes can include dose changes to existing chemicals if the system is planning long-term changes to its finished water pH or residual inhibitor concentration. Long-term treatment changes would not include chemical dose fluctuations associated with daily raw water quality changes.

(4) Within 12 months after the end of the monitoring period in which the water system exceeded the lead action level, the water system shall submit the following written documentation to the Department.

(a) Material evaluation conducted as required in rule 335-7-11-.07.

(b) A list of all lead service line locations in the distribution system at the time the exceedance occurred.

(c) Schedule for replacing at least 7 percent of the initial lead service lines annually.

(5) Within 12 months after the end of the monitoring period in which the water system exceeded the lead action level and every 12 months thereafter, the water system shall demonstrate in writing either:

(a) The water system has replaced in the previous 12 months at least 7 percent (or as required by the Department) of the initial lead service lines or

(b) The water system has replaced at least 7 percent (or as required by the Department) of the initial lead service lines and/or demonstrated through monitoring that that at least 7 percent (or as required by the Department) of the initial lead service lines no longer exceeds the lead action level.

(6) The annual report submitted to the Department under this rule shall contain at a minimum the following information:

(a) Number of lead service lines scheduled to be replaced during the previous year of the system's lead service line replacement program.

(b) The location of each full or partial lead service line replaced with an indicator if the replacement was a full or partial replacement.

(c) If measured, the lead concentration of any lead service line. The water system shall also report the analytical method used and the date of the sample.

(d) The schedule of lead service lines to be replaced in the upcoming year along with the latest monitoring results for these locations.

(7) Any water system that collects lead service line samples following a partial lead service line replacement shall report the results to the Department within the first ten days of the month in which the water system receives the laboratory results.

(8) Public Education Program Reporting Requirements.

(a) Any water system that is subject to the public education requirements of this chapter shall, within ten days after the end of each period in which the system was required to perform public education send written documentation to the Department that contains:

1. A demonstration that the water system has delivered the public education materials that met the content and delivery requirements of this chapter.

2. A list of all the newspapers, radio stations, television stations, and facilities and organizations to which the system delivered public education materials to during the period in which the water system was required to perform public education tasks.

(b) Each water system shall mail a sample copy of the consumer notification of tap results to the Department along with a certification that the notification has been distributed in a manner consistent with this chapter. The sample copy and certification shall be submitted to the Department within 3 months following the end of the monitoring period.

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