567—43.7(455B) Lead and copper treatment techniques (TTs).

43.7(1) *Corrosion control treatment (CCT) for lead and copper control.*

a. Applicability. Systems shall complete the applicable CCT requirements by the deadlines specified in the following rules:

(1) Large systems serving more than 50,000 persons. A large system (serving greater than 50,000 persons) shall complete the CCT steps in 43.7(1)*"d,"* unless the system is deemed to have OCC under 43.7(1)*"b"*(2) or 43.7(1)*"b"*(3).

(2) Small and medium-size systems serving 50,000 or fewer persons. A small system (serving less than or equal to 3,300 persons) or a medium-size system (serving greater than 3,300 and less than or equal to 50,000 persons) shall complete the CCT steps in 43.7(1)*"e,"* unless the system has OCC under 43.7(1)*"b"*(1), 43.7(1)*"b"*(2), or 43.7(1)*"b"*(3).

b. Determination that a system has optimized corrosion control (OCC). A PWS has OCC and is not required to complete the applicable CCT steps in this subrule if the system satisfies one of the criteria in 43.7(1)*"b"*(1) through 43.7(1)*"b"*(3). Any system deemed to have OCC under this paragraph and that has treatment in place shall continue to operate and maintain optimal corrosion control treatment (OCCT) and meet any requirements that the department determines appropriate to ensure OCCT is maintained.

(1) A small or medium-size PWS has optimized CCT if the system meets the lead and copper ALs during each of two consecutive six-month monitoring periods, conducted in accordance with 567—paragraph 41.4(1)*"c."*

(2) Any PWS may be deemed to have optimized CCT if it demonstrates to the department's satisfaction that it has conducted activities equivalent to the corrosion control steps applicable to such system under this subrule. If the department makes this determination, it shall provide the PWS with written notice explaining the basis for its decision and shall specify the WQPs representing OCC in accordance with 43.7(2)*"f."* Systems deemed to have OCCT under this paragraph shall operate in compliance with the department-designated OWQPs in accordance with 43.7(1)*"g"* and continue to conduct lead and copper tap and WQP sampling in accordance with 567—paragraph 41.4(1)*"c"*(4)"3" and "4," respectively. A system shall provide the department with the following information to support a determination under this paragraph:

1. The results of all samples collected for each of the WQPs in 43.7(2)*"c"*(3);

2. A report explaining the test methods used by the system to evaluate the CCTs in 43.7(2)*"c"*(1), the results of all testing, and the basis for the system's selection of OCCT;

3. A report explaining how CCT was installed and how it is being maintained to ensure minimal lead and copper concentrations at consumers' taps; and

4. The results of tap water samples collected in accordance with 567—paragraph 41.4(1)*"c"* at least once every six months for one year after CCT has been installed.

(3) Any system has OCCT if it submits results of tap water monitoring conducted in accordance with 567—paragraph 41.4(1)*"c"* and source water monitoring conducted in accordance with 567—paragraph 41.4(1)*"e"* that demonstrate, for two consecutive six-month monitoring periods, that the difference between the 90th percentile tap water lead level computed under 567—subparagraph 41.4(1)*"b"*(3) and the highest source water lead concentration is less than the practical quantitation level for lead in 567—paragraph 41.4(1)*"g."* Pursuant to this paragraph:

1. Those systems whose highest source water lead level is below the method detection limit may also be deemed to have OCCT if the 90th percentile tap water lead level is less than or equal to the lead PQL for two consecutive six-month monitoring periods.

2. Any system deemed to have OCC shall continue lead and copper monitoring at the tap no less frequently than once every three calendar years using the reduced number of sites specified in 567—subparagraph 41.4(1)*"c"*(3) and collecting the samples at times and locations specified in 567—paragraph 41.4(1)*"c"*(4)"4," fourth bulleted paragraph.

3. Any system deemed to have OCC shall notify the department in writing of any upcoming long-term change in treatment or the addition of a new source, pursuant to 567—subparagraph 40.8(2)*"a"*(3). The department must review and approve the addition of a new source or long-term change in water treatment before it is implemented by the water system.

4. Unless a system meets the copper AL, it is not deemed to have OCCT and shall implement CCT pursuant to 43.7(1)*"b"*(3)"5."

5. Any system triggered into corrosion control because it is no longer deemed to have OCCT shall implement CCT in accordance with 43.7(1)*"e."* Any such large system shall adhere to the schedule specified in that 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 OCC.

c. Requirements to recommence corrosion control steps. Any small or medium-size system required to complete the corrosion control steps due to its exceedance of the lead or copper AL may cease completing the treatment steps when it meets both ALs during each of two consecutive monitoring periods conducted pursuant to 567—paragraph 41.4(1)*"c"* and submits the results to the department. If any such system thereafter exceeds the lead or copper AL during any monitoring period, it shall recommence completion of the applicable treatment steps, beginning with the first treatment step that was not previously completed in its entirety. The department may require a system to repeat previously completed steps when it determines the steps are necessary to properly implement the treatment requirements of this rule. The department will notify the system of such a determination in writing and explain the basis for its decision. The requirement for any small or medium-size system to implement CCT steps in accordance with 43.7(1) *"e"* (including systems deemed to have OCC under 43.7(1)*"b"*(1)) is triggered when any such system exceeds the lead or copper AL.

d. Treatment steps and deadlines for large systems. Except as provided in 43.7(1)*"b"*(2) or *"b"*(3), large systems shall complete the following CCT steps (described in the rules referenced below) by the indicated dates:

(1) Step 1. The system shall conduct initial monitoring pursuant to 567—paragraph 41.4(1)*"c"*(4)"1" and 567—subparagraph 41.4(1)*"d"*(2) during two consecutive six-month monitoring periods by January 1, 1993.

(2) Step 2. The system shall complete corrosion control studies pursuant to 43.7(2)*"c"* by July 1, 1994.

(3) Step 3. The department will designate OCCT within six months of receiving the corrosion control study results.

(4) Step 4. The system shall install OCCT by January 1, 1997.

(5) Step 5. The system shall complete follow-up sampling pursuant to 567—paragraph 41.4(1)*"c"*(4) "2" and 567—subparagraph 41.4(1)*"d"*(3) by January 1, 1998.

(6) Step 6. The department will review installation of treatment and designate OWQPs pursuant to 43.7(2)*"f"* by July 1, 1998.

(7) Step 7. The system shall operate in compliance with OWQPs delineated by the department and continue to conduct tap sampling.

e. Treatment steps and deadlines for small and medium-size systems. Except as provided in 43.7(2), small and medium-size systems shall complete the following CCT steps (described in the rules referenced below) by the indicated time periods:

(1) Step 1. A system shall conduct initial tap sampling pursuant to 567—paragraph 41.4(1)*"c"*(4)"1" and 567—subparagraph 41.4(1)*"d"*(2) until it either exceeds the lead or copper AL or becomes eligible for reduced monitoring under 567—paragraph 41.4(1)*"c"*(4)"4." A system exceeding the lead or copper AL shall recommend OCCT under 43.7(2)*"a"* within six months after the end of the monitoring period during which it exceeds one of the ALs.

(2) Step 2. Within 12 months after the end of the monitoring period during which a system exceeds the lead or copper AL, the department may require the system to perform corrosion control studies under 43.7(2)*"b."* If the system is not required to perform such studies, the department will specify OCCT under 43.7(2)*"d"* as follows: for medium-size systems, within 18 months after the end of the monitoring period during which such system exceeds the lead or copper AL, and, for small systems, within 24 months after the end of the monitoring period during which such system exceeds the lead or copper AL.

(3) Step 3. If a system is required to perform corrosion control studies under Step 2, it shall complete the studies (under 43.7(2)*"c"*) within 18 months after such studies are required to commence.

(4) Step 4. If the system has performed corrosion control studies under Step 2, the department will designate OCCT under 43.7(2)*"d"* within six months after completion of Step 3.

(5) Step 5. Systems shall install OCCT under 43.7(2)*"e"* within 24 months after such treatment is designated.

(6) Step 6. Systems shall complete follow-up sampling pursuant to 567—paragraph 41.4(1)*"c"*(4)"2" and 567—subparagraph 41.4(1)*"d"*(3) within 36 months after OCCT is designated.

(7) Step 7. The department will review a system's installation of treatment and designate OWQPs pursuant to 43.7(2)*"f"* within six months after completion of Step 6.

(8) Step 8. Systems shall operate in compliance with the department-designated OWQPs under 43.7(2)*"f"* (and continue to conduct tap sampling per 567—paragraphs 41.4(1)*"c"*(4)"3" and 41.4(1)*"d"*(4)).

43.7(2) *CCT requirements.* Each PWS shall complete the CCT requirements described below that are applicable to such systems under 43.7(1).

a. PWS recommendation. Based on the results of lead and copper tap monitoring and WQP monitoring, small and medium-size systems exceeding the lead or copper AL shall recommend installation of one or more of the CCTs in 43.7(2)*"c"* that the system believes constitute OCC. The department may require a system to conduct additional WQP monitoring in accordance with 567—subparagraph 41.4(1)*"d"*(2) to assist in reviewing the system's recommendation.

b. Department decision to require CCT studies (small and medium-size systems). The department may require any small or medium-size system that exceeds the lead or copper AL to perform corrosion control studies under 43.7(2)*"c"* to identify OCCT.

c. Performance of corrosion control studies.

(1) Any PWS performing corrosion control studies shall evaluate the effectiveness of each of the following treatments and, if appropriate, combinations of the following treatments to identify the OCCT: alkalinity and pH adjustment; calcium hardness adjustment; and phosphate or silicate-based corrosion inhibitor addition at a concentration sufficient to maintain an effective residual concentration in all test tap samples.

(2) PWSs shall evaluate each of the CCTs using either pipe rig/loop tests, metal coupon tests, partial-system tests, or analyses based on documented analogous treatments with other systems of similar size, water chemistry, and distribution system configuration.

(3) PWSs shall measure the following WQPs in any tests conducted under this paragraph before and after evaluating the CCTs listed above:

1. Lead;
2. Copper;
3. pH;
4. Alkalinity;
5. Calcium;
6. Conductivity;
7. Orthophosphate (when an inhibitor containing a phosphate compound is used);
8. Silicate (when an inhibitor containing a silicate compound is used); and
9. Water temperature.

(4) PWSs shall identify all chemical or physical constraints that limit or prohibit the use of a particular CCT and outline such constraints with data and documentation either showing that a particular CCT has adversely affected other water treatment processes when used by another system with comparable water quality characteristics; or demonstrating that the system has previously attempted to evaluate a particular CCT and has found that the treatment is ineffective or adversely affects other water quality treatment processes.

(5) Systems shall evaluate the effect of the chemicals used for CCT on other water quality treatment processes.

(6) Based on analysis of the data generated during each evaluation, a system shall recommend in writing to the department the treatment option that the corrosion control studies indicate constitutes OCCT

for that system. The system shall provide a rationale for its recommendation along with all supporting documentation required by this paragraph.

d. Department designation of OCCT.

(1) Based on consideration of available information including, where applicable, studies performed under 43.7(2)*"c"* and a system's recommended treatment alternative, the department will either approve the CCT option recommended by the PWS, or designate alternative treatment(s) from among those listed in 43.7(2)*"c."* The department will consider the effects that additional treatment will have on WQPs and on other water treatment processes.

(2) The department will notify a PWS of its decision on OCCT in writing and explain the basis for this determination. If the department requests additional information to aid its review, a PWS shall provide the information.

e. Installation of OCC. Each PWS shall properly install and operate throughout its distribution system the OCCT designated under 43.7(2)*"d."*

f. Department review of treatment and specification of optimal water quality control parameters (OWQPs).

(1) The department will evaluate the results of all lead and copper tap samples and WQP samples submitted by a PWS and determine whether the system has properly installed and operated the OCCT designated in 43.7(2)*"d."* After reviewing the sampling results, both before and after a system installs optimal treatment, the department will designate the following:

1. A minimum value or a range of values for pH measured at each SEP;
2. A minimum pH value, measured in all tap samples. Such value shall be equal to or greater than 7.0 unless meeting a pH level of 7.0 is not technologically feasible or is not necessary for the PWS to optimize corrosion control;
3. If a corrosion inhibitor is used, a minimum concentration or a range of concentrations for the inhibitor, measured at each SEP and in all tap samples, necessary to form a passivating film on the interior walls of the pipes of the distribution system;
4. If alkalinity is adjusted as part of OCCT, a minimum concentration or a range of concentrations for alkalinity, measured at each SEP and in all tap samples; or
5. If calcium carbonate stabilization is used as part of corrosion control, a minimum concentration or a range of concentrations for calcium, measured in all tap samples.

(2) The values for the applicable WQPs listed above shall be those reflecting OCCT for a PWS. The department may designate values for additional WQPs determined to reflect OCC for the system. The department will notify the system in writing of these determinations and explain the basis for its decisions.

g. Continued operation with OCC and WQP monitoring compliance determination. In accordance with this paragraph, all systems optimizing corrosion control shall continue to operate and maintain OCCT, including maintaining WQPs at or above minimum values or within ranges designated by the department under 43.7(2)*"f,"* for all samples collected under 567—subparagraphs 41.4(1)*"d"*(4) through *"d"*(6). Compliance with this paragraph shall be determined every six months, as specified in 567—subparagraph 41.4(1)*"d"*(4). A system is out of compliance with this paragraph for a six-month period if it has excursions for any department-specified parameter on more than nine days during the period. An excursion occurs when the daily value for one or more of the WQPs measured at a sampling location is below the minimum value or outside the department-designated range. The department has the discretion to invalidate results of obvious sampling errors from this calculation. Daily values for WQPs collected at a single sampling location are calculated as follows:

(1) On days when more than one measurement for the WQP is collected, the daily value shall be the average of all results collected during the day regardless of whether they are collected through continuous monitoring, grab sampling, or a combination of both.

(2) On days when only one measurement for the WQP is collected, the daily value shall be the result of that measurement.

(3) On days when no measurement is collected for the WQP, the daily value shall be the daily value calculated on the most recent day that the WQP was measured at the sample site.

h. Modification of department treatment decisions. A determination of the OCCT under 43.7(2)*"d"* or OWQPs under 43.7(2)*"f"* may be modified. A modification request from a PWS or other interested party shall be in writing, explain why the modification is appropriate, and provide supporting documentation. The department may modify its determination when it concludes that such change is necessary to ensure that a PWS continues to optimize CCT. A revised determination will be made in writing, set forth the new treatment requirements, explain the basis for the decision, and provide an implementation schedule for completing treatment modifications.

43.7(3) *Source water treatment requirements.* PWSs shall complete the applicable source water monitoring and treatment requirements, as described in the referenced portions of 43.7(3)*"b,"* and in 567—paragraphs 41.4(1)*"c"* and *"e,"* by the following deadlines.

a. Deadlines for completing source water treatment steps.

(1) Step 1. A PWS exceeding the lead or copper AL shall complete lead and copper source water monitoring under 567—subparagraph 41.4(1)*"e"*(2) and make a written treatment recommendation to the department no later than 180 days after the end of the monitoring period during which the lead or copper AL was exceeded.

(2) Step 2. The department will make a determination regarding source water treatment pursuant to 43.7(3)*"b"*(2) within six months after submission of monitoring results under Step 1.

(3) Step 3. If installation of source water treatment is required, the system shall install treatment pursuant to 43.7(3)*"b"*(3) within 24 months after completion of Step 2.

(4) Step 4. A PWS shall complete follow-up tap water monitoring under 567—paragraph 41.4(1)*"c"*(4)"2" and source water monitoring under 567—subparagraph 41.4(1)*"e"*(3) within 36 months after completion of Step 2.

(5) Step 5. The department will review the system's installation and operation of source water treatment and specify maximum permissible source water levels under 43.7(3)*"b"*(4) within six months after completion of Step 4.

(6) Step 6. A PWS shall operate in compliance with the maximum permissible lead and copper source water levels in 43.7(3)*"b"*(4) and continue source water monitoring pursuant to 567—subparagraph 41.4(1)*"e"*(4).

b. Description of treatment requirements.

(1) System treatment recommendation. Any system that exceeds the lead or copper AL shall recommend in writing to the department the installation and operation of one of the source water treatments in 43.7(3)*"b"*(2). A system may recommend that no treatment be installed based upon a demonstration that source water treatment is not necessary to minimize lead and copper levels at users' taps.

(2) Source water treatment determinations. The department will evaluate the results of all source water samples submitted by a PWS to determine whether source water treatment is necessary to minimize lead or copper levels in water delivered to users' taps. If the department determines that treatment is needed, it will require installation and operation of the source water treatment recommended by the PWS or require the installation and operation of another source water treatment from among the following: ion exchange, reverse osmosis, lime softening, or coagulation/filtration. If the department requests additional information to aid in its review, the PWS shall provide the information by the specified date. The department will notify the system in writing of its determination and set forth the basis for its decision.

(3) Source water treatment installation. PWSs shall properly install and operate the source water treatment designated by the department under 43.7(3)*"b"*(2).

(4) Department review and specification. The department will review a system's source water samples both before and after the installation of source water treatment and determine whether the system has properly installed and operated the designated treatment. After the review, the department will designate maximum permissible lead and copper concentrations for finished water entering the distribution system. Such levels shall reflect the contaminant removal capability of the treatment (properly operated and maintained). The department will notify the PWS in writing and explain the basis for its decision.

(5) Continued operation and maintenance. Each PWS shall maintain lead and copper levels below the maximum permissible concentrations designated by the department at each sampling point monitored in

accordance with 567—paragraph 41.4(1)*"e."* A system is out of compliance with this paragraph if the lead or copper level at any sampling point is greater than the maximum permissible designated concentration.

(6) Modification of decisions. The department may modify its determinations of the source water treatment or maximum permissible lead and copper concentrations made under subparagraphs (2) and (4) of this paragraph. A modification request from a PWS or other interested party shall be in writing, explain why the modification is appropriate, and provide supporting documentation. The department may modify its determination where it concludes that such change is necessary to ensure that a system continues to minimize lead and copper concentrations in source water. A revised determination will be made in writing, set forth the new treatment requirements, explain the basis for the decision, and provide an implementation schedule for completing treatment modifications.

43.7(4) *Lead service line replacement (LSLR) requirements.*

a. Applicability. PWSs that fail to meet the lead AL in tap samples taken pursuant to 567—paragraph 41.4(1)*"c"*(4)"2" after installing corrosion control or source water treatment (whichever sampling occurs later), shall replace lead service lines (LSLs) in accordance with this subrule. If a system is in violation of 43.7(1) and 43.7(3) for failure to install source water or CCT, the department may require the system to commence LSLR under this subrule after the date by which the system was required to conduct monitoring under 567—paragraph 41.4(1)*"c"*(4)"2" has passed.

b. LSLR schedule. A PWS shall replace annually at least seven percent of the initial number of LSLs in its distribution system. The initial number of LSLs is the number of lead lines in place at the time the replacement program begins. A system shall identify the initial number of LSLs in its distribution system, including an identification of the portion(s) owned by the system, based upon a materials evaluation, including the evaluation required under 567—subparagraph 41.4(1)*"c"*(1), and relevant legal authorities regarding the portion owned by the system.

(1) The first year of LSLR shall begin on the first day following the end of the monitoring period in which the AL was exceeded in tap sampling referenced in 43.7(4)*"a."* If monitoring is required annually or less frequently, the end of the monitoring period is September 30 of the calendar year in which the sampling occurs. If the department has established an alternate monitoring period, then the end of the monitoring period will be the last day of that period.

(2) Any system resuming an LSLR program after the cessation of its program as allowed by 43.7(4)*"g"* shall update its inventory of LSLs to include those sites that were previously determined not to require replacement through the sampling provision of 43.7(4)*"c."* The system will then divide the updated number of remaining LSLs by the number of remaining years in the program to determine the number of lines that must be replaced per year. Seven percent LSLR is based on a 15-year replacement program. For example, systems resuming LSLR after previously conducting two years of replacement would divide the updated inventory by 13.

(3) For those systems that have completed a 15-year LSLR program, the department will determine a schedule for replacing or retesting lines that were previously exempted through testing under 43.7(4)*"c"* from the replacement program when the system re-exceeds the AL.

c. Exemption to LSLR requirement. A PWS is not required to replace an individual LSL if the lead concentration in all service line samples from that line, taken pursuant to 567—paragraph 41.4(1)*"c"*(2) "3," is less than or equal to 0.015 mg/L.

d. LSLR requirements. A PWS shall replace that portion of the LSL that it owns. In cases where a system does not own the entire LSL, it shall notify the owner of the line, or the owner's authorized agent, that it will replace the portion of the service line that it owns and shall offer to replace the owner's portion of the line. A system is not required to bear the cost of replacing the privately owned portion of the line, nor is it required to replace the privately owned portion of the line where the line owner chooses not to pay the cost of replacement, or where replacing the privately owned portion would be precluded by state, local, or common law. A system that does not replace the entire length of the service line shall complete the following tasks:

(1) Resident notification. At least 45 days prior to commencing with the partial replacement of a LSL, a PWS shall provide to the resident(s) of all buildings served by the line notice explaining that the resident(s) may experience a temporary increase of lead levels in their drinking water, along with guidance

on measures consumers may take to minimize their lead exposure. The department may allow a system to provide this notice less than 45 days prior to commencing partial LSLR where such replacement is in conjunction with emergency repairs. In addition, a system shall inform the resident(s) served by the line that the system will, at its expense, collect a lead sample from each service line that is representative of the water in the line, as prescribed by 567—paragraph 41.4(1)*"c"*(2)"3," within 72 hours after the completion of the partial service line replacement. The system shall collect the sample and report the analysis results to the owner and the resident(s) served by the line within three business days of receiving the results. Mailed notices postmarked within three business days of receiving the results shall be considered "on time."

(2) Notification methods. The PWS shall provide the information required by 43.7(4)*"d"*(1) to the residents of individual dwellings by mail or by other department-approved methods. In instances where multifamily dwellings are served by the line, a system shall have the option to post the information at a conspicuous location.

e. LSLR schedule. The department may require a PWS to replace LSLs on a shorter schedule than that required by this subrule, taking into account the number of LSLs in the system, where such a shorter replacement schedule is feasible. The department will make this determination in writing and notify the system of its finding within six months after the system is triggered into LSLR based on monitoring referenced in 43.7(4)*"a."*

f. Cessation of LSLR. Any PWS may cease replacing LSLs when first draw samples collected pursuant to 567—paragraph 41.4(1)*"c"*(2)"2" meet the lead AL during each of two consecutive monitoring periods and the system submits the results. If the first draw tap samples collected in any such system thereafter exceed the lead AL, the system shall recommence replacing LSLs, as detailed in 43.7(4)*"b."*

g. LSLR reporting requirements. To demonstrate compliance with 43.7(4)*"a"* through *"d,"* a system shall report the information in 567—paragraph 40.8(2)*"e."*

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