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3745-81-82 **Control of lead and copper; description of corrosion control treatment requirements.**

Each public water system shall complete the corrosion control treatment requirements described below which are applicable to such system under rule 3745-81-81 of the Administrative Code.

- (A) Small public water system recommendation regarding corrosion control treatment. Based upon the results of lead and copper tap monitoring and water quality parameter monitoring, small water systems exceeding the lead or copper action level shall recommend installation of and submit plans for one or more of the corrosion control treatments listed in paragraph (C)(1) of this rule which the system believes constitute optimal corrosion control for that system. The director may require the small system to conduct additional water quality parameter monitoring in accordance with paragraph (B) of rule 3745-81-87 of the Administrative Code to assist the director in reviewing the system's recommendation.

- (B) Studies of corrosion control treatment by small and medium-~~size~~ systems. The director may require any small system that exceeds the lead or copper action level to perform corrosion control studies under paragraph (C) of this rule to identify optimal corrosion control treatment for the system. ~~The director shall notify any~~Any medium-~~size~~ system that exceeds the lead or copper action level ~~to~~shall perform corrosion control studies under paragraph (C) of this rule in order to identify optimal corrosion control treatment for the system.

- (C) Performance of corrosion control studies.
 - (1) Any public water system 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 optimal corrosion treatment for that system:
 - (a) Alkalinity and pH adjustment;
 - (b) Calcium hardness adjustment; and
 - (c) The addition of a phosphate- or silicate-based corrosion inhibitor at a concentration sufficient to maintain an effective residual concentration in all test tap samples.

 - (2) The water system shall evaluate each of the corrosion control treatments 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.

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- (3) The water system shall measure the following water quality parameters in any tests conducted under this paragraph before and after evaluating the corrosion control treatments listed above:
 - (a) Lead;
 - (b) Copper;
 - (c) pH;
 - (d) Alkalinity;
 - (e) Calcium;
 - (f) Conductivity;
 - (g) Orthophosphate (when an inhibitor containing a phosphate compound is used);
 - (h) Silicate (when an inhibitor containing a silicate compound is used); and
 - (i) Water temperature.
- (4) The water system shall identify all chemical or physical constraints that limit or prohibit the use of a particular corrosion control treatment and document such constraints with at least one of the following:
 - (a) Data and documentation showing that a particular corrosion control treatment has adversely affected other water treatment processes when used by another water system with comparable water quality characteristics; and/or
 - (b) Data and documentation demonstrating that the water system has previously attempted to evaluate a particular corrosion control treatment and has found that the treatment is ineffective or adversely affects other water quality treatment processes.
- (5) The water system shall evaluate the effect of the chemicals used for corrosion control treatment on other water quality treatment processes.
- (6) On the basis of an analysis of the data generated during each evaluation, the water system shall recommend to the director in writing the treatment option that the corrosion control studies indicate constitutes optimal corrosion control treatment for that system, and submit approvable plans therefor in accordance with Chapter 3745-91 of the Administrative Code. The water system shall

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provide a rationale for its recommendation along with all supporting documentation specified in paragraphs (C)(1) to (C)(5) of this rule.

- (D) [State Director](#) approval of optimal corrosion control treatment plans.
- (1) Based upon consideration of available information, including, where applicable, studies performed under paragraph (C) of this rule and a system's recommended treatment alternative, the director shall review the corrosion control treatment plan submitted by the system. When reviewing the submitted optimal treatment plan the director shall consider the effects that additional corrosion control treatment will have on water quality parameters and on other water quality treatment processes.
 - (2) The director shall notify the system of the decision on the optimal corrosion control treatment plan in writing and explain the basis for this determination. If the director requests additional information to aid the review, the water system shall provide the information.
- (E) Installation of optimal corrosion control. Each [public water](#) system shall properly install and operate throughout its distribution system the optimal corrosion control treatment approved by the director under paragraph (D) of this rule.
- (F) [State Director](#) review of treatment and specification of optimal water quality control parameters. The director shall evaluate the results of all lead and copper tap monitoring and water quality parameter monitoring submitted by the [public](#) water system and determine whether the system has properly installed and operated the optimal corrosion control treatment plan approved by the director in paragraph (D) of this rule. Upon reviewing the results of tap water and water quality parameter monitoring by the system, both before and after the system installs optimal corrosion control treatment, the director shall specify values for the applicable water quality control parameters listed in paragraphs (F)(1) to (F)(5) of this rule to reflect optimal corrosion control treatment for the system. The director may specify values for additional water quality control parameters determined by the director to reflect optimal corrosion control for the system. The director shall notify the system in writing of these determinations and explain the basis for ~~his~~[the](#) decisions. Common water quality control parameters include:
- (1) A minimum value or a range of values for pH measured at each entry point to the distribution system;
 - (2) A minimum value for pH measured in all tap samples taken for water quality parameter determinations. Such value shall be equal to or greater than 7.0, unless the director determines that meeting a pH level of 7.0 is not technologically feasible or is not necessary for the system to optimize corrosion control;

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- (3) If a corrosion inhibitor is used, a minimum concentration or a range of concentrations for the inhibitor, measured at each entry point to the distribution system and in all tap samples, that the director determines is 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 optimal corrosion control treatment, a minimum concentration or a range of concentrations for alkalinity, measured at each entry point to the distribution system and in all tap samples; and
 - (5) If calcium carbonate stabilization is used as part of corrosion control, a minimum concentration or range of concentrations for calcium, measured in all tap samples.
- (G) Continued operation and monitoring. All [public water](#) 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 director under paragraph (F) of this rule, in accordance with this paragraph for all samples collected under paragraphs (D) to (F) of rule 3745-81-87 of the Administrative Code. Compliance with the requirements of this paragraph shall be determined every six months, as specified under paragraph (D) of rule 3745-81-87 of the Administrative Code. A water system is out of compliance with the requirements of this paragraph for a six-month period if it has excursions for any director-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 the sampling location is below the minimum value or outside the range designated by the director. Daily values are calculated as follows. The director has discretion to delete results of obvious sampling errors from this calculation.
- (1) On days when more than one measurement for the water quality parameter is collected at the sampling 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 sampling, or a combination of both.
 - (2) On days when only one measurement for the water quality parameter is collected at the sampling 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 sampling 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.
- (H) Modification of the director's treatment decisions. Upon ~~the director's own initiative~~ or in response to a request by a [public water system](#), the director may modify ~~the approval of the optimal corrosion control treatment plans under paragraph (D) of this rule or optimal water quality control parameters under paragraph (F) of this rule~~. A request for modification by a system ~~shall~~ be in writing, explain why the

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modification is appropriate, and provide supporting documentation. The director may modify the approval where ~~the~~ director concludes that such change is necessary to ensure that the system continues to optimize corrosion control treatment. A revised approval shall be made in writing, set forth the new treatment requirements, explain the basis for the director's decision, and provide an implementation schedule for completing the treatment modifications.