

### **3745-81-87 Control of lead and copper; monitoring requirements for water quality parameters.**

All large public water systems shall monitor water quality parameters in addition to lead and copper in accordance with this rule. All small and medium public water systems that exceed the lead or copper action level shall monitor water quality parameters in addition to lead and copper in accordance with this rule. For performing the analyses of water quality parameters set forth in this rule, laboratories are exempt from the requirements of rule 3745-89-02 of the Administrative Code. The requirements of this rule are summarized in the table at the end of this rule.

#### **(A) General requirements.**

##### **(1) Sample collection methods.**

- (a) Tap samples shall be representative of water quality throughout the distribution system taking into account the number of persons served, the different sources of water, the different treatment methods employed by the public water system, and seasonal variability. Tap sampling under this rule is not required to be conducted at taps targeted for lead and copper sampling under paragraph (A) of rule 3745-81-86 of the Administrative Code.
- (b) Samples collected at the entry points to the distribution system shall be from locations representative of each water source after treatment. If a public water system draws water from more than one water source and the sources are combined before distribution, the system shall monitor at each sampling point during periods of normal operating conditions, that is, when water is representative of all sources being used.

##### **(2) Number of samples.**

- (a) Public water systems shall collect two tap samples for applicable water quality parameters during each monitoring period specified under paragraphs (B) to (E) of this rule from the following number of sites.

System size (number of people served)	Number of sites for water quality parameters
> 100,000	25
10,001 - 100,000	10
3,301 - 10,000	3
501 - 3,300	2
101 - 500	1
< 101	1

- (b) Except as provided in paragraph (C)(3) of this rule, public water systems shall collect two samples for each applicable water quality parameter at each entry point to the distribution system during each monitoring period specified in paragraph (B) of this rule. During each monitoring period specified in paragraphs (C) to (E) of this rule, systems shall collect one sample for each applicable water quality parameter at each entry point to the distribution system.

- (B) Initial sampling. All large public water systems shall measure the applicable water quality parameters as specified below at taps and at each entry point to the distribution system during each six-month period specified in paragraph (D)(1) of rule 3745-81-86 of the Administrative Code. All small and medium public water systems shall measure the applicable water quality parameters at the locations specified below during

each six month monitoring period specified in paragraph (D)(1) of rule 3745-81-86 of the Administrative Code during which the system exceeds the lead or copper action level.

(1) At taps, measure the following:

- (a) pH.
- (b) Alkalinity.
- (c) Orthophosphate, when an inhibitor containing a phosphate compound is used.
- (d) Silica, when an inhibitor containing a silicate compound is used.
- (e) Calcium.
- (f) Conductivity.
- (g) Water temperature.

(2) At each entry point to the distribution system: all of the applicable parameters listed in paragraph (B)(1) of this rule.

(C) Monitoring after installation of corrosion control. Any large public water system which installs optimal corrosion control treatment pursuant to paragraph (D)(4) of rule 3745-81-81 of the Administrative Code shall measure the water quality parameters at the locations and frequencies specified in paragraphs (C)(1) and (C)(2) of this rule during each six-month monitoring period specified in paragraph (D)(2)(a) of rule 3745-81-86 of the Administrative Code. Any small or medium public water system which installs optimal corrosion control treatment shall conduct water quality parameter monitoring specified in paragraphs (C)(1) and (C)(2) of this rule during each six-month monitoring period specified in paragraph (D)(2)(b) of rule 3745-81-86 of the Administrative Code.

(1) At taps, two samples for the following:

- (a) pH.
- (b) Alkalinity.
- (c) Orthophosphate, when an inhibitor containing a phosphate compound is used.
- (d) Silica, when an inhibitor containing a silicate compound is used.
- (e) Calcium, when calcium carbonate stabilization is used as part of corrosion control.

(2) Except as provided in paragraph (C)(3) of this rule, at each entry point to the distribution system, at least one sample no less frequently than every two weeks for the following:

- (a) pH.
- (b) Alkalinity concentration when alkalinity is adjusted as part of optimal corrosion control. A reading of the dosage rate of the chemical used to adjust alkalinity shall also be included.
- (c) The concentration of orthophosphate or silica, whichever is applicable, when a corrosion inhibitor is used as part of optimal corrosion control. A reading of the dosage rate of the inhibitor used shall also be included.

(3) Any ground water system can limit entry point sampling described in paragraph (C)(2) of this rule to those entry points that are representative of water quality and treatment conditions throughout the system. If water from untreated ground water sources mixes with water from treated water sources, the public water system shall monitor for water quality parameters both at representative entry points receiving treatment and representative entry points receiving no treatment. Prior to the start of monitoring under this paragraph, the public water system shall provide to the director written information on seasonal variability, sufficient to demonstrate that the sites are representative of water quality and treatment conditions throughout the system.

(D) Monitoring after the director specifies water quality parameter values for optimal corrosion control. After the director specifies the values for applicable water quality control parameters reflecting optimal corrosion control treatment under paragraph (F) of rule 3745-81-82 of the Administrative Code, all large public water systems shall measure the applicable water quality parameters in accordance with paragraph (C) of this rule and determine compliance with the requirements of paragraph (G) of rule 3745-81-82 of the Administrative Code for every six-month period to begin on either January first or July first, whichever comes first, after the director specifies the optimal values under paragraph (F) of rule 3745-81-82 of the Administrative Code.

Any small or medium public water system shall conduct such monitoring during each six-month period specified in this paragraph. For any such small or medium public water system that is subject to a reduced monitoring frequency pursuant to paragraph (D)(4) of rule 3745-81-86 of the Administrative Code, at the time of the action level exceedance, the start of the applicable six-month period under this paragraph shall coincide with the start of the applicable monitoring period under paragraph (D)(4) of rule 3745-81-86 of the Administrative Code. Compliance with director-designated optimal water quality parameter values shall be determined as specified under paragraph (G) of rule 3745-81-82 of the Administrative Code.

Upon the determination of an action level exceedance, any public water system that is subject to a reduced monitoring frequency pursuant to paragraph (D)(4) of rule 3745-81-86 of the Administrative Code shall report applicable water quality parameters in accordance with this rule within thirty days or by the end of the water quality parameter monitoring period, whichever is sooner.

(E) Reduced monitoring.

(1) Any public water system that maintains the range of values for the water quality parameters reflecting optimal corrosion control treatment during each of two consecutive six-month monitoring periods under paragraph (D) of this rule shall continue monitoring at the entry points to the distribution system as specified in paragraph (C)(2) of this rule. Such system may monitor with two tap samples for applicable water quality parameters from each of the following reduced number of sites during each six-month monitoring period. A water system monitoring from a reduced number of sites prior to the effective date of this rule may continue with the reduced number of monitoring sites except as modified by paragraph (E)(5) of this rule.

System size (number of people served)	Reduced number of sites for water quality parameters
> 100,000	10
10,001 - 100,000	7
3,301 - 10,000	3
501 - 3,300	2

101 - 500	1
< 101	1

- (2) Reduced annual water quality parameter monitoring. In order to reduce the monitoring frequency to annual monitoring of the number of tap samples for applicable water quality parameters, the water system shall submit a request to the director for approval. This request shall demonstrate the system maintains the ranges of values for the water quality parameters reflecting optimal corrosion control treatment specified by the director under paragraph (F) of rule 3745-81-82 of the Administrative Code during three consecutive years of monitoring. If approved by the director, this sampling begins during the calendar year immediately following the end of the monitoring period in which the third consecutive year of six-month monitoring occurs.
- (3) Reduced triennial water quality parameter monitoring. As of the effective date of this rule, no water systems are eligible to continue to conduct or reduce to triennial monitoring of the number of tap samples for applicable water quality parameters specified in paragraph (E)(1) of this rule without meeting criteria in paragraph (E)(3)(a) or (E)(3)(b) of this rule and receiving written approval from the director. Any water systems that did not receive approval from the director and were conducting triennial monitoring prior to the effective date of this rule, shall conduct water quality parameter monitoring, at a minimum, annually.
- (a) In order to conduct triennial monitoring of the number of tap samples for applicable water quality parameters, the water system shall demonstrate the system maintains the range of values for the water quality parameters reflecting optimal corrosion control treatment specified by the director under paragraph (F) of rule 3745-81-82 of the Administrative Code during three consecutive years of annual monitoring. If approved by the director, this 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.
- (b) In order to conduct triennial monitoring of the number of tap samples for applicable water quality parameters specified in paragraph (E)(1) of this rule, the water system shall demonstrate during two consecutive monitoring periods that its tap water lead level at the ninetieth percentile is less than or equal to the practical quantitation limit (PQL) for lead specified in paragraph (B)(2) of rule 3745-81-89 of the Administrative Code, that its tap water copper level at the ninetieth percentile is less than or equal to 0.65 milligrams per liter in paragraph (C)(2) of rule 3745-81-80 of the Administrative Code, and that it has maintained the range of values for the water quality parameters reflecting optimal corrosion control treatment specified by the director under paragraph (F) of rule 3745-81-82 of the Administrative Code. If approved by the director, triennial monitoring shall be done no later than every third calendar year.
- (4) A public water system that conducts monitoring annually shall collect samples evenly throughout the year so as to reflect seasonal variability.
- (5) Any public water system subject to annual or triennial monitoring that fails to operate at or above the minimum value or within the range of values for the water quality parameters specified by the director under paragraph (F) of rule 3745-81-82 of the Administrative Code for more than nine days in any six-month period specified in paragraph (G) of rule 3745-81-82 of the Administrative Code shall resume tap water sampling in accordance with the number and frequency requirements in paragraph (D) of this rule. Such a system may resume annual monitoring for water quality parameters at the tap at the reduced number of sites specified in paragraph (E)(1) of this rule after it has completed two subsequent consecutive six-month rounds of monitoring that meet the criteria of that paragraph or may resume

triennial monitoring for water quality parameters at the tap at the reduced number of sites after it demonstrates through subsequent rounds of monitoring that it meets the criteria of either paragraph (E)(2) or (E)(3) of this rule.

- (F) Additional monitoring by public water systems. The results of any monitoring conducted in addition to the minimum requirements of this rule shall be considered by the system and the director in making any determinations, i.e., determining concentrations of water quality parameters, under this rule or rule 3745-81-82 of the Administrative Code.

Summary of Monitoring Requirements for Water Quality Parameters <sup>1</sup>

Monitoring Period	Parameters	Location	Frequency
Initial monitoring.	pH, alkalinity, orthophosphate or silica <sup>2</sup> , calcium, conductivity, temperature.	Taps and at entry point(s) to distribution system.	Every 6 months.
After installation of corrosion control.	pH, alkalinity, orthophosphate or silica <sup>2</sup> , calcium <sup>3</sup> .	Taps.	Every 6 months.
	pH, alkalinity dosage rate and concentration (if alkalinity adjusted as part of corrosion control), inhibitor dosage rate <sup>4</sup> and orthophosphate or silica <sup>2</sup> .	Entry point(s) to distribution system <sup>5</sup> .	No less frequently than every two weeks.
After director specifies parameter values for optimal corrosion control.	pH, alkalinity, orthophosphate or silica <sup>2</sup> , calcium <sup>3</sup> .	Taps.	Every 6 months.
	pH, alkalinity dosage rate and concentration (if alkalinity adjusted as part of corrosion control), inhibitor dosage rate <sup>4</sup> and orthophosphate or silica <sup>2</sup> .	Entry point(s) to distribution system <sup>5</sup> .	No less frequently than every two weeks.
Reduced monitoring.	pH, alkalinity, orthophosphate or silica <sup>2</sup> , calcium <sup>3</sup> .	Taps.	Every 6 months, annually <sup>6</sup> or every 3 years <sup>7</sup> ; reduced

Summary of Monitoring Requirements for Water Quality Parameters <sup>1</sup>

			number of sites.
	pH, alkalinity dosage rate and concentration (if alkalinity adjusted as part of corrosion control), inhibitor dosage rate <sup>4</sup> and orthophosphate or silica <sup>2</sup> .	Entry point(s) to distribution system <sup>5</sup> .	No less frequently than every two weeks.

<sup>1</sup> Table is for illustrative purposes; consult the text of this rule for precise regulatory requirements.

<sup>2</sup> Orthophosphate shall be measured only when an inhibitor containing a phosphate compound is used. Silica shall be measured only when an inhibitor containing silicate compound is used.

<sup>3</sup> Calcium shall be measured only when calcium carbonate stabilization is used as part of corrosion control.

<sup>4</sup> Inhibitor dosage rates (orthophosphate or silica) shall be measured only when an inhibitor is used.

<sup>5</sup> Ground water systems may limit monitoring to representative locations throughout the public water system.

<sup>6</sup> Water systems may reduce frequency of monitoring for water quality parameters at the tap from every six months to annually if the system meets the requirements in paragraph (E)(2) of this rule.

<sup>7</sup> Water systems may further reduce the frequency of monitoring for water quality parameters at the tap from annually to once every three years if the system meets the requirements in paragraph (E)(2) or (E)(3) of this rule.

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