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 point(s) 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~~; and~~.

(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~~; and~~.

(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~~; and~~.

(c) ~~Orthophosphate~~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.

(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 ~~point(s)~~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.

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 frequency of water quality parameter monitoring.

(a) Any public water system that 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 monitoring may reduce the frequency with which it monitors the number of tap samples for applicable water quality parameters specified in paragraph (E)(1) of this rule from every six months to annually. 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. Any public water system that 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 may reduce the frequency with which it monitors the number of tap samples for applicable water quality parameters specified in paragraph (E)(1) of this rule from annually to every three years. 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) A public water system may reduce the frequency with which it collects tap samples for applicable water quality parameters specified in paragraph (E)(1) of this rule to every three years if it demonstrates 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. Monitoring conducted every three years shall be done no later than every third calendar year.

(3) A public water system that conducts monitoring annually shall collect samples evenly throughout the year so as to reflect seasonal variability.

(4) Any public water system subject to reduced monitoring frequency 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)(a) or (E)(2)(b) 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.

STRIKE OLD

Summary of Monitoring Requirements for Water Quality Parameters [1]

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

Summary of Monitoring Requirements for Water Quality Parameters [1]

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

[1] Table is for illustrative purposes; consult the text of this rule for precise regulatory requirements.

[2] 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.

[3] Calcium shall be measured only when calcium carbonate stabilization is used as part of corrosion control.

[4] Inhibitor dosage rates (orthophosphate or silica) shall be measured only when an inhibitor is used.

[5] Ground water systems may limit monitoring to representative locations throughout the public water system.

[6] Water systems may reduce frequency of monitoring for water quality parameters at the tap from every six months to annually if they have maintained the range of values for water quality parameters reflecting optimal corrosion control during the three consecutive years of monitoring.

[7] Water systems may further reduce the frequency of monitoring for water quality parameters at the tap from annually to once every three years if they have maintained the range of values for water quality parameters reflecting optimal corrosion control during three consecutive years of annual monitoring. Water systems may accelerate to triennial monitoring for water quality parameters at the tap if they have maintained ninetieth percentile lead levels less than or equal to 0.005 milligrams per liter, ninetieth percentile copper lead levels less than or equal to 0.65 milligrams per liter, and the range of water quality parameters designated by the director under paragraph (F) of rule 3745-81-82 of the Administrative Code as representing optimal corrosion control during two consecutive six-month monitoring periods.

Effective:

Five Year Review (FYR) Dates: 11/17/2014

_____

Certification

_____

Date

Promulgated Under:	119.03
Statutory Authority:	6109.04
Rule Amplifies:	6109.4
Prior Effective Dates:	09/13/93, 10/17/03, 07/24/09