TO BE RESCINDED

3745-81-78 **Optimization of distribution systems for control of disinfection byproducts.**

(A) Applicability. All consecutive community public water systems that receive water from public water systems that use sources of water designated as surface water according to rule 3745-81-76 of the Administrative Code and distribute water that has been treated with any combination of chlorine, chloramines, chlorine dioxide and/or ozone but do not treat their water with any of these chemicals shall monitor for TTHM and HAA5 according to this rule. Beginning on the applicable compliance date identified in paragraph (D)(1) of rule 3745-81-24 of the Administrative Code, these systems will no longer have to comply with this rule and shall comply with rules 3745-81-12 and 3745-81-24 of the Administrative Code.

(B) Definition. For purposes of this rule, optimization of distribution system operation is defined as:

(1) Reduction of TTHM to below 0.080 mg/l and HAA5 to below 0.060 mg/l as a running annual average as determined according to paragraph (E) of this rule;

(2) A significant reduction in the running annual averages of TTHM and HAA5. The reduction shall be determined by comparing the running annual averages from the first four quarters of monitoring to running annual averages determined by subsequent monitoring conducted according to this rule; or

(3) Demonstration of the implementation of an approved optimization plan.

(C) Monitoring requirements.

(1) Monitoring required by this rule shall be done using analytical procedures listed in rule 3745-81-27 of the Administrative Code, which are acceptable for monitoring TTHM and HAA5, and analyzed by laboratories certified to perform such analyses according to rule 3745-89-03 of the Administrative Code.

(2) Routine monitoring: public water systems specified in paragraph (A) of this rule shall conduct routine monitoring for TTHM and HAA5 according to the following table:

Population served by the public water system	Routine monitoring frequency	Sample location in the distribution system

10,000 or more persons (consecutive systems not treating with a disinfectant).	Four water samples per quarter per treatment plant or bulk supplier.	At least twenty-five per cent of all samples collected each quarter at locations representing maximum residence time. Remaining samples taken at locations representative of at least average residence time in the distribution system and representing the entire distribution system, taking into account number of persons served, different sources of water, and different treatment methods.
Fewer than 10,000 persons.	One water sample per quarter per treatment plant or bulk supplier.	Location(s) representing maximum residence time.

(3) Reduced monitoring. Public water systems specified in paragraph (A)(2) of this rule may reduce monitoring according to the following table:

Type of public water system	Conditions for reduced monitoring	Reduced monitoring frequency
10,000 or more persons (Consecutive systems not treating with a disinfectant)	TTHM running annual average $\leq$ 0.040 mg/l and HAA5 running annual average $\leq$ 0.030 mg/l.	One sample per bulk supplier per quarter at distribution system locations reflecting maximum residence time.
Fewer than 10,000 persons (Consecutive systems not treating with a disinfectant)	TTHM running annual average $\leq$ 0.040 mg/l and HAA5 running annual average $\leq$ 0.030 mg/l.	One sample per bulk supplier per year at distribution system locations reflecting maximum residence time during the month of warmest water temperature.

(a) Public water systems on a reduced monitoring schedule may remain on that reduced schedule as long as the average of all samples taken in the year (for public water systems which must monitor quarterly) or the result of the sample (for public water systems which must monitor no more frequently than annually) is no more than 0.060 mg/l and 0.045 mg/l for TTHMs and HAA5, respectively. Public water systems that do

not meet these levels shall resume monitoring at the frequency identified in paragraph (C)(1) of this rule (routine monitoring) in the quarter immediately following the quarter in which the public water system exceeds either 0.060 mg/l and 0.045 mg/l for TTHM and HAA5, respectively.

(b) The director may return a public water system to routine monitoring at the director's discretion.

(c) All samples taken and analyzed under the provisions of this rule must be included in determining compliance with the annual running average for TTHMs and HAA5, even if that number is greater than the minimum required.

(4) Public water systems shall take all samples during normal operating conditions. For each quarterly interval, all samples for each public water system shall be collected within a twenty-four hour period. This requirement may be waived in the event of any unforseen, temporary or uncontrollable circumstances. Failure to monitor according to this rule is a monitoring violation.

(D) Reporting requirements. Public water systems monitoring for TTHM and HAA5 according to this rule shall ensure that the analytical results are reported to the director according to the requirements specified in rules 3745-89-08 and 3745-81-61 of the Administrative Code.

(E) For TTHMs and HAA5 the director will calculate a running annual arithmetic average, computed quarterly, of quarterly arithmetic averages of all samples collected by the public water system as prescribed by paragraph (C) of this rule.

(F) Trigger for optimization. The requirements of paragraph (G) of this rule apply to those public water systems described in paragraph (A)(1) of this rule. If the running annual arithmetic average of quarterly averages covering any consecutive four-quarter period exceeds 0.080 mg/l for TTHMs or 0.060 mg/l for HAA5, public water systems shall operate their distribution system in a manner that will minimize the level of TTHM and HAA5 present in the system by optimizing operation of their distribution systems.

(G) Optimization requirements.

(1) Water systems that are required to optimize their distribution systems by paragraph (F) of this rule shall do so according to a written plan submitted to the director. The plan shall be submitted within six months of exceeding the

levels specified in paragraph (F) of this rule. Water systems shall complete distribution optimization as soon as practical, but no later than thirty-six months following the date of exceeding the level specified in paragraph (F) of this rule. Failure to optimize according to this rule is a treatment technique violation.

(2) Plans for optimizing a distribution system shall include but not be limited to the following.

(a) Optimal replacement of water in storage tanks. Replacement of at least twenty-five per cent of water is recommended on a daily basis;

(b) Calculations or modeling to determine water age, identification of deficiencies in the distribution system, an evaluation of options for improvements and corrections, and consultation with the director on the feasibility of implementing the improvements and corrections. Improvements and corrections considered may include the installation of additional water lines, looping and modifying flow through adjustment of valves;

(c) Planned flushing program;

(d) If multiple water sources are used, varying the source or percentage of the source used based on the potential to form disinfection byproducts; and

(e) A schedule indicating when operational improvements and capital improvements will be completed.

(H) The director shall review and approve the written distribution optimization plan.

Effective:

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

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Certification

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Date

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