

WAC 173-219-340 Disinfection process standards. (1) Disinfection process: Class A reclaimed water. The engineering report must demonstrate, to the satisfaction of the lead agency that the proposed disinfection method consistently provides the required level of adequate and reliable disinfection to help preserve the quality of water delivered to the use site. All Class A reclaimed water generation disinfection processes must, in combination with treatment processes following biological oxidation, result in a minimum of 4-log virus removal or inactivation. The disinfection process may use any or all of the following:

(a) **Chlorine.** Where chlorine is used as the disinfectant in the treatment process a minimum total chlorine residual of at least 1 mg/L, after a T_{10} contact time of at least thirty minutes, based on peak day design flow is required.

The lead agency may require additional protections including defined concentration (C), time (T), or chlorine concentration multiplied by (CT) values as needed to protect public health. The lead agency may require a tracer study to determine contact times.

(b) **Ultraviolet light.** The generator must design and install ultraviolet light disinfection processes that conform to recognized standards and engineering practices developed for use in reclaimed water facilities. Acceptable methods include the criteria in the most recent edition of:

(i) *Ultraviolet Disinfection, Guidelines for Drinking Water and Water Reuse, published by the National Water Research Institute (NWRI) in collaboration with the American Water Works Association Research Foundation (AWWARF).*

(ii) *Ecology's Criteria for Sewage Works Design (orange book).*

(iii) *Water Environment Federation MOP-8 Design of Municipal Wastewater Treatment Plants.*

(c) **Other disinfection methods.** Any other disinfection process proposed to the lead agency to meet the performance standard in this chapter must:

(i) Be in accordance with the most recent edition of *ecology's Criteria for Sewage Works Design (orange book).*

(ii) Demonstrate that the proposed process is equivalent to or better than chlorination or ultraviolet light treatment in this section.

(2) Validation of virus removal. For Class A reclaimed water, virus inactivation performance of the combined treatment processes following biological oxidation must be documented. Performance of the chosen disinfection method must be documented by using one of the following:

(a) **Chemical disinfection.** Where a chemical disinfection process is used, acceptable validation methods include:

(i) A challenge study or pilot facility demonstration specific to the project conditions.

(ii) A third-party challenge study or equipment verification study acceptable to the lead agency.

(iii) Design and operation limits from other regulatory programs applied to the production of reclaimed or recycled water equivalent to Class A reclaimed water as deemed acceptable by the lead agency.

(b) **Ultraviolet disinfection.** Where ultraviolet disinfection processes are used, validation must include an acceptable bioassay study conforming to the most recent edition of *Ultraviolet Disinfection,*

Guidelines for Drinking Water and Water Reuse, published by the National Water Research Institute (NWRI).

Third-party validation studies that have been performed in off-site qualified test facilities and in accordance with the NWRI/AWWARF guidelines are allowed if approved by the lead agency.

(c) Existing reclaimed water facilities must demonstrate compliance with the validation requirement:

(i) When a disinfection system is modified, replaced, or the facility expects an increase in hydraulic capacity.

(ii) With the application for permit renewal unless the lead agency issues an extension under WAC 173-219-040.

(3) Disinfection process: Class B reclaimed water. The engineering report must demonstrate, to the satisfaction of the lead agency that the proposed disinfection method consistently provides the required level of adequate and reliable disinfection to help preserve the quality of water delivered to the use site. All Class B reclaimed water generation disinfection processes must result in a minimum total chlorine residual of at least 1 mg/L, after a T₁₀ contact time of at least thirty minutes based on peak design day flow or a substantially equivalent alternative process approved by the lead agency.

[Statutory Authority: RCW 90.46.015. WSR 18-03-166 (Order 06-12), § 173-219-340, filed 1/23/18, effective 2/23/18.]