Appendix

Disinfection Treatment Sufficiency Determination

This rule specifies the minimum log inactivation or removal of Giardia lamblia, Cryptospordium, and viruses in water obtained from a surface water source, in whole or in part. A treatment technique is required in lieu of a maximum contaminant level for Cryptosporidium, Giardia lamblia viruses, heterotrophic plate count bacteria, Legionella, and turbidity.

The effectiveness of disinfection increases with increasing concentration of the disinfectant and with increasing time the disinfectant is in the water. A measure of the effectiveness of disinfection at the peak hourly flow rate, CT, is obtained by multiplying the lowest daily residual disinfectant concentration, C, by the lowest daily disinfectant contact time, T.

The value of C in milligrams per liter is determined at the entry to the distribution system and/or, if approved by the director, before the first customer. The value of T in minutes is based on the disinfectant contact time available for the disinfectant to work from the point where the disinfectant is added to the point where C is measured. Only filtered water flow shall be used in the required CT calculations to meet the minimum log inactivation in table A of this rule, regardless of the disinfectant used. For systems using chlorine dioxide or ozone to comply with additional Cryptosporidium treatment requirements in paragraph (E) of rule 3745-81-67 of the Administrative Code, unfiltered water flow may be used ~~in the required CT calculations if approved by the director.~~to achieve the additional treatment credit if approved by the director. Values of T shall be determined from:

(a) Acceptable tracer studies; or

(b) The lowest daily water volume divided by the peak flow; and

(c) An approved effective volume factor as determined by the director.

For a typical day in many public water systems, the value of a single determination of C multiplied by its associated T will give an actual CT which is larger than the required CT. However, in other cases, it may be appropriate to determine the value of C at more than one point of the water treatment flow, with the T associated with each C being estimated from the previous measurement point or the previous addition of disinfectant, whichever is closer. If more than one disinfectant concentration point is used, the products of each C and its associated T are added and the sum of these products is the actual CT to compare with the appropriate value of the required CT for specified conditions and log inactivation. Any disinfection after the last determination of C is not included in the actual CT value.

On each day if the actual CT is greater than or equal to the required CT, then the public water system is considered to be satisfying this rule's treatment technique requirements for disinfection. On each day if the actual CT is less than the required CT, then the water treatment plant is in violation of this rule.