

Continuous disinfection and cyst reduction filtration.

- (A) All private water systems using continuous disinfection shall conform to the requirements of this rule.
- (B) The following private water systems shall be provided with continuous disinfection, as provided in this rule:
 - (1) Ponds;
 - (2) Springs;
 - (3) Cisterns;
 - (4) Wells constructed with less than fifteen feet of casing constructed in compliance with this chapter;
 - (5) Drive point wells regardless of depth, unless the requirements of paragraph (C)(6)(c) of rule 3701-28-10 of the Administrative Code are met;
 - (6) Wells constructed with less than twenty-five feet but no less than fifteen feet of casing constructed in compliance with this chapter, unless the requirements of paragraph (C)(6)(c) of rule 3701-28-10 of the Administrative Code are met;
 - (7) Wells with fifteen or more feet of casing that have been determined to be contaminated with bacteria that exceed the maximum contaminant level in paragraph (J) of rule 3701-28-04 of the Administrative Code shall be required to be provided with continuous disinfection if the construction of the well is determined to be in satisfactory compliance with this chapter and the aquifer is known or suspected of being contaminated with bacteria that cause the well water to exceed the maximum contaminant level in paragraph (J) of rule 3701-28-04 of the Administrative Code.
- (C) Except private water systems utilizing ultraviolet light for continuous disinfection and pond filtration systems, which shall comply with the continuous filtration requirements of paragraph (A) of rule 3701-28-14 of the Administrative Code, the following private water systems shall be provided with additional cyst reduction filtration that meets ANSI/NSF standard 53 or an equivalent standard as provided in this rule. For private water systems which utilize ultraviolet light for continuous disinfection an absolute five micron filter shall be provided for the following systems in accordance with paragraph (H) of this rule:
 - (1) Springs;
 - (2) Cisterns;
 - (3) Wells constructed with fifteen feet or less of casing in compliance with this chapter.
- (D) Private water systems utilizing cyst reduction filtration shall meet the following requirements in addition to the requirements in paragraph (C) of this rule:

- (1) The cyst reduction filters shall be installed to ensure a minimum flow rate of no less than ten gallons per minute. Multiple cyst reduction filters used in order to ensure the minimum or greater flow rate shall be installed in parallel;
 - (2) Each cyst reduction filter housing shall be clearly labeled with the size in absolute microns of the required cyst reduction replacement filter.
- (E) Where continuous disinfection is required pursuant to this chapter the means of disinfection shall be measurable and it shall conform to the following requirements:
- (1) All chemical disinfectants shall be readily available;
 - (2) The residual of the chemical disinfectant shall be measurable by the user;
 - (3) Ultraviolet light disinfection system dosage shall be measured as microwatts per second per centimeter squared or equivalent millijoule. One millijoule equals one thousand microwatt seconds per centimeter squared; and
 - (4) Disinfection and filter systems shall be designed to meet the peak water use demands of the users or meet the maximum flow capability of the pump used.
- (F) Disinfectants shall be applied prior to the water storage tank or retention tank to obtain the contact time required for the specific disinfectant used.
- (1) Disinfectant solution reservoir tanks that use chlorine or iodine shall have a label applied by the contractor installing the system that states in bold one half inch lettering the warning "failure to maintain the solution in the tank at concentrations sufficient to ensure continuous disinfection of the household water supply increases the possible health risk to the users".
 - (2) A disinfection system contact tank shall conform to the following:
 - (a) The contractor installing the system shall apply a label that identifies the component as the "retention tank for the disinfection system".
 - (b) For one, two, or three family dwellings the disinfection system contact tank shall be a minimum of one hundred and twenty gallons per household being served and be designed to reduce short-circuiting of the disinfection solution through the contact tank. A contact tank less than one hundred twenty gallons can be used if the tank design ensures adequate contact time and is approved by the department.
 - (c) In the case of buildings with private water systems serving up to twenty-four people or having more than three service connections, the system contact tank shall be of adequate size to ensure at least eight minutes of contact when used at peak demand and be designed to reduce short-circuiting of the disinfection solution through the contact tank.

- (d) A contact tank is not required to be installed when chlorination or iodination is being used to maintain a chemical residual in the distribution lines immediately following continuous disinfection by ultraviolet light or ozone that are installed in accordance with this rule.
- (G) If chlorination is the means of disinfection, it shall conform to the following requirements:
- (1) Sufficient chlorine shall be added to satisfy the demand;
 - (2) The Ct value (contact time multiplied by the free chlorine residual in milligrams per liter) for disinfection shall be four or greater; and
 - (3) The free chlorine residual in the water piping system shall be a minimum of four tenths milligrams per liter after eight minutes of contact.
- (H) If an ultraviolet light (UV) system is used as the primary means of disinfection it shall meet all of the requirements of ANSI/NSF standard 55 for class A ultraviolet light treatment systems and shall be installed in accordance with the manufacturer's requirements. Ultraviolet light systems that meet only ANSI/NSF standard 55 class B shall not be used for continuous disinfection of private water systems. An ultraviolet light system used as the primary means of disinfection shall also meet the following criteria:
- (1) It shall be installed with an automatic shut-off device or warning device for instances where the UV device is not functioning to insure proper disinfection of the household water supply;
 - (2) The influent water shall be pre-treated to meet all water quality parameters required by the manufacturer of the UV unit or as required under NSF standard 55 class A, including, but not limited to, hardness, iron, manganese, TDS, and turbidity in order to ensure optimal disinfection. The UV unit shall be installed after any equipment used to soften the water or to remove iron or manganese or to improve clarity;
 - (3) An absolute filter size of no larger than five microns shall be installed in accordance with NSF standard 55 class A prior to treatment of the water by the ultraviolet equipment;
 - (4) Where a private water system provides water to more than one dwelling or service connection, including all multi-family buildings, and ultraviolet is used as the primary means of disinfection then either:
 - (a) Continuous disinfection shall be installed to maintain a chlorine residual of at least two-tenths milligrams per liter in the water distribution lines or;
 - (b) A NSF standard 55 class A UV device shall be installed in each dwelling after each service connection.
- (I) If iodination is the means of disinfection, it shall conform to the following requirements:

- (1) Sufficient iodine shall be added to satisfy the demand;
 - (2) The Ct value (contact time multiplied by the free iodine residual) for disinfection shall be ten; and
 - (3) The free iodine residual in the water piping system shall be between five-tenths and one milligram per liter.
- (J) If ozonation is the means of disinfection it shall be generated on site by corona arc discharge and conform to the following requirements:
- (1) Sufficient ozone shall be added to satisfy the demand and the Ct value shall be no less than 0.6 at pH seven and five degrees Celsius (Ct equals residual ozone concentration multiplied by the contact time);
 - (2) The water contact shall be achieved by the means of a combination of a venturi nozzle and cyclonic bubble diffuser or by a means accepted by the department.
 - (3) Ozone must have a minimum detectable residual of 0.1 milligram per unit after six minutes of contact;
 - (4) Ozone generators shall have air drawn through the system under a vacuum in order to prevent ozone gas leakage into the house;
 - (5) Ozone generators shall have air flow meters installed before the ozone generation chamber to insure proper air flow and to help detect down stream injection tubing cracks or breaks;
 - (6) All ozone generation chambers shall be constructed of stainless steel or of a material of equivalent resistance to destruction from ozone;
 - (7) Ozone generators shall have corona arc indicating lights.

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