**Section 611.1015 Requirements for Microbial Toolbox Components: Microbial Toolbox Options for Meeting Cryptosporidium Treatment Requirements**

a) Treatment Credits

1) A supplier receives the applicable of the treatment credits set forth in subsection (b) by meeting the conditions for microbial toolbox options described in Sections 611.1016 through 611.1020. The supplier applies these treatment credits to meet the applicable treatment requirements set forth in Section 611.1011 or Section 611.1012.

2) An unfiltered system supplier is eligible for treatment credits for the microbial toolbox options described in Section 611.1020 only.

b) Subsections (b)(1) through (b)(5) summarize options in the microbial toolbox.

1) Source Protection and Management Toolbox Options

A) Watershed Control Program. 0.5-log credit for Agency-approved program comprising required elements, annual program status report to Agency, and regular watershed survey. An unfiltered system supplier is not eligible for credit. Specific criteria are set forth in Section 611.1016(a).

B) Alternative source or intake management: No prescribed credit. A supplier may conduct simultaneous monitoring for treatment bin classification at alternative intake locations or under alternative intake management strategies. Specific criteria are set forth in Section 611.1016(b).

2) Pre-Filtration Toolbox Options

A) Presedimentation Basin with Coagulation. 0.5-log credit during any month that presedimentation basins achieve a monthly mean reduction of 0.5-log or greater in turbidity or alternative Agency-approved performance criteria. To be eligible, basins must be operated continuously with coagulant addition and all plant flow must pass through basins. Specific criteria are set forth in Section 611.1017(a).

B) Two-stage Lime Softening. 0.5-log credit for two-stage softening if chemical addition and hardness precipitation occur in both stages. All plant flow must pass through both stages. Single-stage softening is credited as equivalent to conventional treatment. Specific criteria are set forth in Section 611.1017(b).

C) Bank Filtration. 0.5-log credit for 25-foot setback or 1.0-log credit for 50-foot setback; the aquifer must be unconsolidated sand containing at least ten percent fines and average turbidity in the wells must be less than 1 NTU. A supplier using wells followed by filtration when conducting source water monitoring must sample the well to determine bin classification and is not eligible for additional credit. Specific criteria are set forth in Section 611.1017(c).

3) Treatment Performance Toolbox Options

A) Combined Filter Performance. 0.5-log credit for combined filter effluent turbidity less than or equal to 0.15 NTU in at least 95 percent of measurements each month. Specific criteria are set forth in Section 611.1018(a).

B) Individual Filter Performance. 0.5-log credit (in addition to 0.5-log combined filter performance credit) if individual filter effluent turbidity is less than or equal to 0.15 NTU in at least 95 percent of samples each month in each filter and is never greater than 0.3 NTU in two consecutive measurements in any filter. Specific criteria are set forth in Section 611.1018(b).

C) Demonstration of Performance. Credit awarded to unit process or treatment train based on a demonstration to the Agency with an Agency-approved protocol. Specific criteria are set forth in Section 611.1018(c).

4) Additional Filtration Toolbox Options

A) Bag or Cartridge Filters (individual filters). Up to 2-log credit based on the removal efficiency demonstrated during challenge testing with a 1.0-log factor of safety. Specific criteria are set forth in Section 611.1019(a).

B) Bag or Cartridge Filters (in series). Up to 2.5-log credit based on the removal efficiency demonstrated during challenge testing with a 0.5-log factor of safety. Specific criteria are set forth in Section 611.1019(a).

C) Membrane Filtration. Log credit equivalent to removal efficiency demonstrated in challenge test for device if supported by direct integrity testing. Specific criteria are set forth in Section 611.1019(b).

D) Second Stage Filtration. 0.5-log credit for second separate granular media filtration stage if treatment train includes coagulation prior to first filter. Specific criteria are set forth in Section 611.1019(c).

E) Slow Sand Filters. 2.5-log credit as a secondary filtration step or 3.0-log credit as a primary filtration process. No prior chlorination for either option. Specific criteria are set forth in Section 611.1019(d).

5) Inactivation Toolbox Options

A) Chlorine Dioxide. Log credit based on measured CT in relation to CT table. Specific criteria are set forth in Section 611.1020(b).

B) Ozone. Log credit based on measured CT in relation to CT table. Specific criteria are set forth in Section 611.1020(b).

C) UV. Log credit based on validated UV dose in relation to UV dose table; reactor validation testing required to establish UV dose and associated operating conditions. Specific criteria are set forth in Section 611.1020(d).

BOARD NOTE: This Section derives from 40 CFR 141.715.

(Source: Amended at 47 Ill. Reg. 16486, effective November 2, 2023)