



**Summary of Substantive Changes  
between the 2014 and the 2015 editions of  
NSF/ANSI 53 “Drinking Water Treatment Units - Health Effects”**

**Presented to the IAPMO Standards Review Committee on May 16, 2015**

**General:** The changes to this standard may have an impact on currently listed products. The substantive changes are:

- Added additional requirements for multiple, sequential treatment technologies (see Section 1.4 and Annex I)
- Clarified the number of test samples needed for products that have a very low holding volume, reduced the volume of exposure water required and specified a maximum number of samples to be exposed for small volume fittings that occur infrequently in the path of the water (see Section 4.2.3)
- Increased the hydrostatic pressure test limits for a number of pressure vessel systems and added a hydrostatic pressure test limit and cyclic pressure test for valves and controls (see Table 5)
- Clarified the sampling point for cyst reduction claims testing (see Section 7.3.2.1.1)
- Added use pattern requirements for testing nonplumbed pour-through-type batch treatment systems in the case that no manufacturer’s recommended use pattern is given (see Sections 7.2.1.7.3, 7.2.2.7.3, 7.2.3.7.3, 7.2.5.7.3, 7.4.1.1.6.3, 7.4.2.7.3, 7.4.3.7.3, and 7.4.4.7.3)

Section 1, General: Added additional requirements for multiple, sequential treatment technologies as follows:

[1.4 Treatment train](#)

[A system that contains multiple, sequential treatment technologies for a performance claim under this Standard shall meet the applicable requirements as described in Annex G.](#)

Section 4.2.3, System exposure procedure: Clarified the number of test samples needed for products that have a very low holding volume, reduced the volume of exposure water required and specified a maximum number of samples to be exposed for small volume fittings that occur infrequently in the path of the water as follows:

[4.2.3.3 A minimum sample volume of 2 L shall be collected at each sample point. If the water-holding volume of the product is greater than 2 L, the entire volume shall be collected in a suitable collection vessel, and a 2-L subsample obtained from this volume. If the water-holding volume of the product is less than 2 L, sufficient products shall be exposed to provide the required 2 L volume of extractant water.. The maximum number of samples exposed shall not exceed 16 with 125 mL of extractant water drawn from each sample. If the components with a water-holding volume that is less than 250 mL and is able to be identified as one that will only occur once in the flow path of dispensed treated water \(such as diverters, faucets, RO shutoff valves, or specialty components\) then a volume of 250 mL shall be drawn from each sample using a maximum number of 8 samples..](#)



Table 5, Structural integrity testing requirements: Increased the potential hydrostatic pressure test limits, from 2.4 to 3 X maximum working pressure, for a number of pressure vessel systems and added a hydrostatic pressure test limit and cyclic pressure test for valves and controls as follows:

Hydrostatic pressure test; Second column in table:

~~2,070 kPa (300 psig) or 2.4 x maximum working pressure, whichever is greater~~  
3 x maximum working pressure or 2,070 kPa (300 psig)

Valves and Controls; Last row in table:

3 x maximum working pressure or 2,070 kPa (300 psig)

Section 7.3.2.1.1, Live *Cryptosporidium parvum* oocyst reduction claim: Clarified the sampling point for cyst reduction claims testing as follows:

*The system shall reduce the number of live *Cryptosporidium parvum* oocysts from an influent challenge of at least 50,000 (5 x 10<sup>4</sup>) oocysts per liter by at least 99.95% at every individual unit effluent sample point when tested in accordance with 7.3.2.1. The *Cryptosporidium parvum* oocysts shall...*

Sections 7.2.1.7, Methods (Also Sections 7.2.2.7.3, 7.2.3.7.3, 7.2.5.7.3, 7.4.1.1.6.3, 7.4.2.7.3, 7.4.3.7.3, and 7.4.4.7.3): Added use pattern requirements for testing nonplumbed pour-through-type batch treatment systems in the case that no manufacturer’s recommended use pattern is given as follows:

7.2.1.7.3 Nonplumbed pour-through-type batch treatment systems

~~Two systems shall be tested using the appropriate challenge and influent water after establishment of the manufacturer's recommended use pattern, with automatic cycling. If there is not a recommended use pattern, the systems shall be operated on the basis of four times the bed volume per batch. The cycle shall include a rest period of 15 to 60 s between batches, timed from the cessation of streamed flow. If the effluent reservoir capacity is equal or greater than two times the volume of the influent reservoir, multiple successive influent reservoir fills shall be performed until the remaining volume in the effluent reservoir is less than the influent reservoir volume. The resulting volume for each filling of the effluent reservoir shall be the batch volume. If the volume of the effluent reservoir is less than two times the volume of the influent reservoir, the batch volume shall be the influent reservoir volume..~~

Example:

Influent volume [L]	Effluent volume [L]	Batch [L]
1.0	1.8	1.0
1.2	2.5	2.4
1.4	4.0	2.8

7.2.1.7.3.1 Systems with a manufacturer’s recommended use pattern

Two systems shall be tested using the appropriate influent challenge water using the manufacturer’s use pattern. The use pattern shall include information about the rest period between the fillings. The rest period after the influent reservoir has drained given by the manufacturer shall not exceed 75 min and include a tolerance of at least +/-15 min. The systems shall be operated up to 16 h per 24-h period, followed by an 8-h rest period. Exceptions to the rest period are permissible for laboratory operational needs (e.g., water preparation, equipment malfunctions).

7.2.1.7.3.2 Systems without a manufacturer’s recommended use pattern

Two systems shall be tested using the appropriate influent challenge water. The systems shall be operated up to 16 h per 24-h period, followed by an 8-h rest period. The test cycle shall include a rest



*period of 30 to 90 min after the influent reservoir has drained. The total volume per day shall be limited to 10 batches. Exceptions to the rest period are permissible for laboratory operational needs (e.g., water preparation, equipment malfunctions).*

The following normative annex was added

*Annex I*

*Evaluation methods for systems with multiple technologies - treatment train*



The following normative annex was added

[Annex I](#)

[Evaluation methods for systems with multiple technologies - treatment train](#)