



**Summary of Substantive Changes  
between the 2017 and the 2018 editions of  
NSF/ANSI 53, “Drinking Water Treatment Units – Health Effects”**

**Presented to the IAPMO Standards Review Committee on August 12, 2019**

**General:** The changes to this standard should not have an impact on currently listed products. The substantive changes are:

- Removed inconsistent language across the standard and added clarifying language to show components or functions covered by other NSF standards (see Sections 1.2, 8.1.2, 8.2.3, 8.2.5, 8.3.2, and 8.4.3)
- Added an asbestos reduction protocol for batch treatment systems (see Sections 7.3.1.6.5 through 7.3.1.6.5.3 and 7.3.1.7.1)
- Added clarification to the product literature requirements for replacement components (see Section 8.3.1)
- Reduced performance requirements for perfluorooctanoic acid (PFOA) and perfluotoctane sulfonate (PFOS) for drinking water treatment devices that use carbon absorption (see Tables 7.1, 8.1 and Annex L)
- Added informational Annex M for revision to the evaluation of lead (see Annex M)

Section 1.2, Scope: Removed inconsistent language across the standard and added clarifying language to show components or functions covered by other NSF standards as follows:

**1.2 Scope**

*The point-of-use and point of-entry systems addressed by this Standard are designed to be used for the reduction of specific substances that may be present in drinking water (public or private) considered to be microbiologically safe and of known quality. Systems covered under this Standard are intended to reduce substances that are considered established or potential health hazards. They may be ~~microbiological~~, chemical or particulate (including filterable cysts) in nature. It is recognized that a system may be effective in controlling one or more of these contaminants, but systems are not required to control all. ~~Activated carbon filter-s~~Systems with manufacturer claims that include components or functions covered under other NSF or NSF/ANSI Standards or Criteria shall conform to the applicable requirements therein. Systems covered by this Standard are not intended to be used with drinking water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.*

*NOTE - Systems that are compliant with NSF/ANSI 55 Class A or other standards that cover technologies to treat microbiologically unsafe water (e.g., US EPA Guide Standard and Protocol for Testing Microbiological Water Purifiers or NSF P231) are examples of demonstrating adequate disinfection before or after the system.*



Section 7.3.1.6, Methods: Added an asbestos reduction protocol for batch treatment systems as follows:

**7.3.1.6.5 Batch treatment systems**

**7.3.1.6.5.1 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 volume per batch shall be the filling volume of the influent reservoir. The systems shall be operated up to 16 h per 24 h period, followed by an 8 h rest period.

**7.3.1.6.5.2 Systems without a manufacturer's recommended use pattern**

Two systems shall be conditioned by completely filling the raw water reservoir with the general test water specified in Section 7.3.1.4.1 without the asbestos fibers. The challenge water shall be allowed to filter until it reaches its natural level in the raw and treated water reservoirs. A filling cycle shall be established based on the time required for half the water to filter through the initial cycle. The filling schedules shall be maintained 16 h per 24 h period followed by an 8 h rest period. The systems shall be filled completely each cycle with a measured volume. Treated water shall be discarded as necessary.

NOTE - If the sample period occurs near the end of the 16 h of operation and the sample collection would extend beyond the 16 h period. the collection of the sample may be delayed until the start of the next 16 h period.

**7.3.1.6.5.3 Asbestos challenge procedure**

The asbestos challenge procedure shall be performed as follows:

- a) The asbestos suspension specified in Section 7.3.1.4.3 shall be added to the water just prior to the sample point. The asbestos suspension specified feed shall be 10 bed volumes, or one filling volume of the influent reservoir, whichever is greater.
- b) The test dust loading water, specified in Section 7.3.1.4.2, shall be used until the time required to complete one cycle has increased by 133% of the original cycle time.
- c) The asbestos challenge test water, specified in Section 7.3.1.4.3, shall be used for 10 bed volumes, or one filling volume of the influent reservoir, whichever is greater.
- d) The test dust loading water shall be used until the time required for one filling cycle has increased by 200% from the original cycle time.
- e) The asbestos challenge test water, specified in Section 7.3.1.4.3, shall be used for 10 bed volumes, or one filling volume of the influent reservoir, whichever is greater.
- f) The test dust loading water shall then be used until the time required for one filling cycle has increased by 400% from the original cycle time.
- g) The asbestos challenge test water, specified in Section 7.3.1.4.3, shall be used for 10 bed volumes, or one filling volume of the influent reservoir, whichever is greater.

**7.3.1.7.1 Batch treatment systems**

Influent and effluent samples shall be collected:

- at the beginning of the "on" portion of the second cycle, or passage of 10 bed volumes; and
- at the beginning of the "on" portion of the second cycle of challenge test water introduced when the original filling time of the system has increased by 133%, 200%, and 400%.



Section 8, Instruction and Information: Removed inconsistent language across the standard and added clarifying language to show components or functions covered by other NSF standards as follows:

**8.1.2** *Where applicable and appropriate, the following information shall also be included:*

– model number(s) of replacement components;

– rated capacity / rated service life in liters (gallons);

*NOTE - Each unique model designation shall claim a capacity no greater than the least reduction capacity that has been verified through testing to NSF/ANSI 42, NSF/ANSI 53, or NSF/ANSI 58 section for VOC reduction.*

– minimum working pressure in kPa (psig);

– minimum operating temperature in °C (°F);

– electrical requirements;

*statement for activated carbon systems: "Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system." Additional statement for activated carbon systems claiming cyst reduction: "Systems certified for cyst reduction may be used on disinfected waters that may contain filterable cysts";*

*[NOTE - Systems that are compliant with NSF/ANSI 55 Class A or other standards that cover technologies to treat microbiologically unsafe water \(e.g., US EPA Guide Standard and Protocol for Testing Microbiological Water Purifiers or NSF P231\) are examples of demonstrating adequate disinfection before or after the system.](#)*

**8.2.3** *Where applicable and appropriate, the following information shall also be included:*

– model number(s) of replacement components;

– electrical requirements;

– *statement for activated carbon systems: "Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system." Additional statement for activated carbon systems claiming cyst reduction: "Systems certified for cyst reduction may be used on disinfected waters that may contain filterable cysts";*

*NOTE 1 — Where the physical size of the system does not permit affixing the caution statement, the statement shall be prominently displayed in the literature accompanying the system.*

*[NOTE 2 — Systems that are compliant with NSF/ANSI 55 Class A or other standards that cover technologies to treat microbiologically unsafe water \(e.g., US EPA Guide Standard and Protocol for disinfection before or after the system.](#)*

– *statement for systems claiming VOC reduction: "Conforms to NSF/ANSI 53 for VOC reduction. See performance data sheet for individual contaminants and reduction performance";*

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**8.2.5** *Where applicable and appropriate, the following information shall also be included:*

– *rated capacity / rated service life in liters (gallons). If applicable rated capacity / rated service life in liters (gallons) is not included on the modular element data plate, a statement indicating that rated capacity / rated service life in liters (gallons) may be found on the performance data sheet shall be included;*

*NOTE — Each unique model number designation shall not claim a capacity or service life greater than the least reduction capacity or service life that has been verified through testing to NSF/ANSI 42 or 53.*

– *operating or exchange steps; and*



— statement for activated carbon systems: "Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system."

[NOTE — Systems that are compliant with NSF/ANSI 55 Class A or other standards that cover technologies to treat microbiologically unsafe water \(e.g., US EPA Guide Standard and Protocol for Testing Microbiological Water Purifiers or NSF P231\) are examples of demonstrating adequate disinfection before or after the system.](#)

Section 8.3, Replacement Components: Added clarification to the product literature requirements for replacement components as follows:

### **8.3 Replacement components**

8.3.1 The packaging of components specifically for replacement purposes shall be labeled with the following information:

- model number or name of component;
- model number [or series identification](#) of system(s) in which the component is to be; and
- name and address of manufacturer.

8.3.2 Where applicable, the following information shall also be stated:

- rated capacity / rated service life in liters (gallons);

*NOTE — Each unique model designation shall not claim a capacity or service life greater than the least reduction capacity or service life that has been verified through testing to NSF/ANSI 53.*

- operating or exchange steps;
- statement noting that the system(s) conform(s) to NSF/ANSI 53 for the specific performance claims as verified and substantiated by test data;

— statement for systems claiming VOC reduction: "Conforms to NSF/ANSI 53 for VOC reduction. See performance data sheet for individual contaminants and reduction performance";

*NOTE — Manufacturers may reference individual chemicals from Table 8.1 on labels, manuals, or promotional materials if such information conforms to the following:*

- percent reductions if specified are either less than or equal those specified in Table 7.4 or additional testing is completed to justify the claim for a higher percent reduction.

— reference to individual chemicals from Table 8.1 shall not imply that specific testing for the chemical was conducted if only the surrogate test was completed.

— statement for systems claiming pentavalent arsenic reduction: "Conforms to NSF/ANSI 53 for pentavalent arsenic reduction. See Performance Data Sheet and Arsenic Facts section for an explanation of reduction performance";

— statement for activated carbon systems: "Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system." Additional statement for activated carbon systems claiming cyst reduction: "Systems certified for cyst reduction may be used on disinfected waters that may contain filterable cysts";

*NOTE 1 — Where the physical size of the component does not permit affixing the caution statement, the statement shall be prominently displayed in the literature accompanying the system.*

[NOTE 2 — Systems that are compliant with NSF/ANSI 55 Class A or other standards that cover technologies to treat microbiologically unsafe water \(e.g., US EPA Guide Standard and Protocol for Testing Microbiological Water Purifiers or NSF P231\) are examples of demonstrating adequate disinfection before or after the system.](#)

— for systems used in bottled water plants, a statement noting the redundant filtration element sealing mechanism, such as 222 and 226 double o-ring seals;



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**8.4.3** Where applicable and appropriate, the following information shall also be included:

- model number of replacement component;
- electrical requirements;
- pressure drop of new system in kPa (psig) at rated flow (POE and bottled water systems only);
- minimum working pressure in kPa (psig);
- minimum operating temperature in °C (°F);
- statement for activated carbon systems: “Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.” Additional statement for activated carbon systems claiming cyst reductions: “Systems certified for cyst reduction may be used on disinfected waters that may contain filterable cysts”;

[NOTE — Systems that are compliant with NSF/ANSI 55 Class A or other standards that cover technologies to treat microbiologically unsafe water \(e.g., US EPA Guide Standard and Protocol for Testing Microbiological Water Purifiers or NSF P231\) are examples of demonstrating adequate disinfection before or after the system.](#)

- statement for pentavalent arsenic reduction systems: “This system has been tested for the treatment of water containing pentavalent arsenic (also known as As(V), As(+5), or arsenate) at concentrations of [0.050 mg/L or 0.30 mg/L] or less. This system reduces pentavalent arsenic, but may not reduce other forms of arsenic. This system is to be used on water supplies containing a detectable free chlorine residual or on water supplies that have been demonstrated to contain only pentavalent arsenic. Treatment with chloramine (combined chlorine) is not sufficient to ensure complete conversion of trivalent arsenic to pentavalent arsenic. Please see the Arsenic Facts section of the Performance Data Sheet for further information.”;

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Table 7.1 – Chemical reduction requirements: added new row and additional footnotes

Table 8.1 – Performance data sheet reduction claims: added new row

Annex L - Test method for PFOA (perfluorooctanoic acid) and PFOS (perfluorooctanesulfonate) in general test water by LC/MS/MS in electrospray negative ionization mode: New

Annex M - Revision to the evaluation of lead: New