

NSF/ANSI 53 – 2007a

# Drinking water treatment units — Health effects

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**NSF International Standard/  
American National Standard**

NSF/ANSI 53 – 2007a



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**NSF/ANSI 53 – 2007a**

NSF International Standard/  
American National Standard  
for Drinking Water Treatment Units —

**Drinking water treatment units –  
Health effects**

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## Foreword<sup>2</sup>

The purpose of this Standard is to establish minimum requirements for materials, design and construction, and performance of drinking water treatment systems that are designed to reduce specific health-related contaminants in public or private water supplies. NSF/ANSI 53 specifies minimum product literature requirements that manufacturers must provide to authorized representatives and owners.

This edition of the Standard contains the following revisions:

### Issue 57

The revisions made in this issue enable point-of-entry drinking water treatment systems to be covered by NSF/ANSI 61 and to use this one materials safety standard as the only test protocol for point-of-entry (POE) drinking water treatment units. 6.9, Rated pressure drop, has been updated to apply to POE systems with and without built-in-flow control. The definitions for point-of-entry and point-of-use systems have also been updated.

### Issue 58

This issue revises the requirements for filter media. The filter media requirement has been changed so that conformance is demonstrated by a lack of visible evidence of media migration in samples collected at the completion of a mechanical filtration test for products making mechanical reduction claims. For systems that do not make mechanical filtration claims, any evidence of visible media migration detected in the course of contaminant reduction testing constitutes a failure for filter media. Visible evidence of media migration consists of visible detection of particles, and then confirmation that the particles are sufficient to represent a failure by confirming retention on a 100-mesh sieve.

### Issue 59

The revision made in this issue establishes sample sizes for mechanical reduction tests for 7.3.1, Asbestos reduction testing of 1 L, and 7.3.3, Turbidity reduction testing of 250 mL.

### Issue 61

The revision made in this issue updates the pass/fail criteria levels in Tables 1 and 2 for cyclohexanone, methyl ethyl ketone, carbon disulfide, diethyl phthalate, di-n-butyl phthalate, butyl benzyl phthalate, naphthalene, acetone, and 1,4-dioxane to match the levels in NSF/ANSI 61.

### Issue 64

The revision made in this issue clarifies that the active agent levels from two units will be evaluated against levels of toxicological significance in 6.12, Active agents and additives, and will not be evaluated during extraction testing.

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<sup>2</sup> The information contained in this Foreword is not part of this American National Standard (ANS) and has not been processed in accordance with ANSI's requirements for an ANS. Therefore, this Foreword may contain material that has not been subjected to public review or a consensus process. In addition, it does not contain requirements necessary for conformance to the Standard.

## Issue 67

The revision made in this issue adds USEPA method 524.2 to Table 1 for the analysis of volatile organic compounds and carbon disulfide and to Table 2 for the analysis of acetone, cyclohexanone, tetrahydrofuran, and methyl ethyl ketone. It also adds USEPA method 525.2 to Table 2 for the analysis of phthalates and polynuclear aromatic hydrocarbons. This proposed revision also includes language to ensure, when the GC/MS method (method 625) is used, that an adequate analytical library has been developed.

An editorial change has been made to 7.4.3 Lead reduction testing. Extraneous language has been removed from 7.4.3.8.

This Standard was developed by the NSF Joint Committee on Drinking Water Treatment Units using the consensus process described by the American National Standards Institute.

Suggestions for improvement of this Standard are welcome. Comments should be sent to Chair, Joint Committee on Drinking Water Treatment Units, c/o NSF International, Standards Department, P. O. Box 130140, Ann Arbor, Michigan 48113-0140, USA.

## NSF/ANSI Standard for Drinking Water Treatment Units —

# Drinking water treatment units — Health effects

## 1 General

### 1.1 Purpose

It is the purpose of this Standard to establish minimum requirements for materials, design and construction, and performance of point-of-use and point-of-entry drinking water treatment systems that are designed to reduce specific health-related contaminants in public or private water supplies. Such systems include point-of-entry drinking water treatment systems used to treat all or part of the water at the inlet to a residential facility or a bottled water production facility, and includes the material and components used in these systems. This Standard also specifies the minimum product literature and labeling information that a manufacturer shall supply to authorized representatives and system owners, as well as the minimum service-related obligations that the manufacturer shall extend to system owners.

### 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). These substances 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 systems covered by this Standard are not intended to be used with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.

### 1.3 Minimum requirements

A system as defined in this standard shall meet the applicable requirements of 4, 5, 6, and 8, plus at least one performance claim as described in 7.

A component as defined in this standard shall meet the requirements of 4 and 8. If the component is pressure-bearing, it shall also meet the applicable requirements of 5.

A commercial modular system as defined in this standard shall meet the applicable requirements of 4, 5, 6, and 8, plus at least one performance claim as described in 7. Manifolds of commercial modular systems shall meet the requirements of 4, 5 (if pressure bearing), and 8, and shall be evaluated as stand-alone components. Manifolds shall have a minimum internal diameter such that the water velocity in the manifold will not exceed 3 m (10 ft) per second (which can be calculated based upon the system flow rate and the manifold internal diameter). Individual modular elements evaluated as a manifold and modular element combination shall meet the applicable requirements of 4, 5, 6, and 8, plus at least one performance claim as described in 7.