

# ANSI/NSF Standards for Drinking Water Treatment Units

These standards represent only some of the many standards established by NSF for domestic drinking water systems.

## Standard 42: Aesthetic Effects

This standard primarily deals with Chlorine removal, appearance and Taste and Odor claims.

### Chlorine

A chlorine reduction claim means the system reduces the concentration of chlorine in the water. This category is broken down into classes that represent a certain level of Chlorine removal.

Class I - 75% or greater Chlorine reduction

Class II - 50% - 74% Chlorine reduction

Class III - 25% - 49% Chlorine reduction

### Particulates

A performance claim for Particulate removal means the system removes particles of a certain size based on the following classes:

Class I - Reduces 85% of particles 0.5 to < 1 microns in size

Class II - Reduces 85% of particles 1 to < 5 microns in size

Class III - Reduces 85% of particles 5 to < 15 microns in size

Class IV - Reduces 85% of particles 15 to < 30 microns in size

Class V - Reduces 85% of particles 30 to < 50 microns in size

Class VI - Reduces 85% of particles equal to or greater than 50 microns in size

## Standard 53: Health Effects

This standard is concerned with contaminants that may pose a health risk such as:

Lead

Volatile Organic Compounds (V.O.C.'s)

Inorganic Chemicals

Cysts

Radon

Turbidity

Pesticides and Herbicides

Trihalomethanes (THM's)

Volatile Organic Chemicals (V.O.C.'s)

A performance claim for V.O.C. reduction means the system reduces the concentration of all of the following contaminants. Some of these chemicals can be tested individually for performance claims.

Alachlor

1,2-Dichloropropane

Styrene

Atrazine

cis-1,3-Dichloropropylene

1,1,2,2-Tetrachloroethane

Benzene

Dinoseb

Tetrachloroethylene

Carbofuran

Endrin

Toluene

Carbon Tetrachloride

Ethylbenzene

1,2,4-Trichlorobenzene

Chlorobenzene

Ethylene Dibromide (EDB)

1,1,1-Trichloroethane

Dibromochloropropane (DBCP)

Heptachlor

1,1,2-Trichloroethane o-Dichlorobenzene

Heptachlor Epoxide

Trichloroethylene

p-Dichlorobenzene

Hexachlorobutadiene

Trihalomethanes (THMs)

1,1-Dichloroethane  
Hexachlorocyclopentadiene  
m-Xylene  
1,2-Dichloroethane  
Lindane  
o-Xylene  
trans-1,2-Dichloroethylene  
Methoxychlor  
p-Xylene  
1,1-Dichloroethylene  
Pentachlorophenol  
2,4-D  
cis-1,2-Dichloroethylene  
Simazine  
2,4,5-TP(silvex)

### **Cysts**

A performance claim for cysts indicates the system reduces the concentration of parasitic cysts by at least 99.95%. The cysts included in this claim are Cryptosporidium, Giardia, Toxoplasma and Entamoeba.

### **Turbidity**

A claim for turbidity reduction means the system removes fine particulate matter that makes water appear cloudy to a level below the U.S. EPA Maximum Contaminant Level.

### **Lead**

A performance claim for lead reduction demonstrates the system's ability to reduce the concentration of lead below the U.S. EPA Maximum Contaminant Level.

## **California Department of Health Services Certification Program for Drinking Water Systems**

The California Department of Health Services certifies all residential water treatment devices sold in the state that make health claims. Water filter systems that claim to reduce, filter or treat any chemical or compound that the state or federal government has determined presents a health concern in drinking water must be certified to be sold in California. Examples of health benefit claims include a device's ability to reduce or filter lead and other heavy metals, bacteria, cysts, nitrates, organic chemicals and pesticides. Most testing for certification is done according to protocols that are part of the NSF International Standards. The testing establishes that the water treatment device provides sufficient reduction of contaminants to warrant certification. Testing also determines that the materials used to construct the system will not contribute harmful contaminants to the treated water. The manufacturer must comply with product labeling and consumer information requirements before a device can be certified. A product data sheet is provided for each product and includes:

Rated Service Life

General Use Conditions

Model or Part Numbers for Replacement Elements

Maximum and Minimum Operating Temperatures

Maximum and Minimum operating Pressure

Cost of Replacement Elements

Types of Contaminants Tested and Listed on Certificates

**VOCs (Volatile Organic Compounds)<sup>1</sup>**

Alachlor Atrazine Benzene  
Bromodichloromethane<sup>2</sup> Bromoform<sup>2</sup> Carbofuran  
Carbon Tetrachloride Chlorobenzene Chloroform<sup>2</sup>  
2,4-D DBCP Chlorodibromomethane<sup>2</sup>  
o-Dichlorobenzene p-Dichlorobenzene 1,1,-Dichloroethane  
1,2-Dichloroethane trans-1,2-Dichloroethylene 1,1-Dichloroethylene  
cis-1,2-Dichloroethylene 1,2-Dichloropropane cis-1,3-Dichloropropylene  
Dinoseb EDB (ethylene dibromide) Endrin  
Ethylbenzene Heptachlor Heptachlor Epoxide  
Hexachlorocyclopentadiene Hexachlorobutadiene Lindane  
Methoxychlor Pentachlorophenol Simazine  
Styrene 2,4,5-TP (Silvex) Tetrachloroethylene  
1,1,1,2-Tetrachloroethane Toluene 1,2,4-Trichlorobenzene  
1,1,1-Trichloroethane 1,1,2-Trichloroethane Trichloroethylene  
m-Xylene o-Xylene p-Xylene

1. Based on testing with chloroform surrogate per Section of NSF Standard 53 (revised March 1994).
2. Organic chemicals referred to as Trihalomethanes, Total Trihalomethanes, TTHMs and THMs.

### **Other Organics<sup>3</sup>**

Chlordane Trihalomethanes (THMs):  
1,2,3-Trichlorobenzene Bromodichloromethane  
PCBs Bromoform  
m-Dichlorobenzene Chloroform  
Toxaphene Dibromodichloromethane  
MTBE

3. Some manufacturers chose to test for a few specific organic contaminants and for THMs.

### **Microbiological Contaminants and Turbidity**

Bacteria  
Turbidity  
Cysts (protozoan)  
Virus

### **Inorganic and Radiological Contaminants**

Arsenic Lead  
Asbestos Mercury  
Barium Nickel  
Cadmium Nitrate  
Hexavalent Chromium Nitrite  
Trivalent Chromium Radium 226/228  
Copper Selenium  
Fluoride Silver<sup>4</sup>

4. No longer a primary drinking water standard (MCL) but does appear on some certificates