Verifying Standard Compliance for Products and Components used in Private Water System Construction

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Sanitarian Program Specialist

Ohio Department of Health

What are Standards?

- Written definition, limit, or rule, approved and monitored for compliance by an authoritative agency or professional or recognized body as a minimum acceptable benchmark.
- Technical specifications that set the characteristics of a product such as levels of quality, performance, safety, or dimensions.
- Standards may include or deal exclusively with terminology, symbols, testing and methods, packaging, or labeling requirements as they apply to a product.
- Once established, standards are very difficult to change or dislodge.

Standards in the OAC Chapter 3701-28

- NSF 14, 51, 53, 55, 60, 61
- API Specs 5L, 5C, 10A
- ASME B16.4, B16.9, B16.12, B16.28
- ASSE 1013, 1015, 1024, 1057
- ASTM A53, A106, A269, A312, A500, A589, B42, B43, B75, B88, B163, B251, B302, B447, C150, C913, C923, D1785, D2239, D2241, D2464, D2466, D2467, D2609, D2672, D2737, D2846, F437, F438, F439, F441, F442, F480, F876, F877, F1807, F1960, F2080
- AWWA C110, C115, C116, C153
- CSA B137

Compliance

Adheres to the requirement of the standard

A manufacturer's claim of product compliance with a standard does not necessarily mean that it is in fact compliant with the standard?

Certification

Proof of compliance with a standard through physical evaluation and testing by a independent third party to certify that the product conforms with all the requirements of the standard.

Standards and Testing Organizations

American National Standards Institute

American Society for Testing and Materials

American Society of Mechanical Engineers

American Water Works Association

CSA Group formerly known as Canadian Standards Association

NSF International formerly known as National Sanitation Foundation

Water Systems Council

NSF International

http://www.nsf.org/

The NSF Mark

These marks assure that the product has been tested by NSF International.

NSF International

- Founded in 1944 as the National Sanitation Foundation.
- Changed name to NSF International in 1990.
- An independent, accredited organization, that develop standards, and test and certify products and systems.
- Develop public health standards and certificate on programs that help protect the world's food, water, consumer products and environment.
- Their mission is to protect and improve global human health.

Main Standards in PWS Rules

ANSI/NSF 61

ANSI/NSF 60

ANSI/NSF 53

ANSI/NSF 55

ANSI/NSF 61

This standard establishes the minimum health effects requirements for the chemical contaminants and impurities that are indirectly imparted to drinking water from products, components, and materials used in drinking water systems.

ANSI/NSF 61

The products and materials of focus:

- Process media (e.g., carbon, sand),
- Protective materials (e.g., coatings, linings, liners),
- Joining and sealing materials (e.g., solvent cements, welding materials, gaskets),
- Pipes and related products (e.g., pipes, tanks, fittings),
- Mechanical devices used in treatment/transmission/distribution systems (e.g., valves, chlorinators, separation membranes, point-of-entry drinking water treatment systems), and
- Mechanical plumbing devices (e.g., faucets, endpoint control valves).

ANSI/NSF 60

This Standard establishes minimum health effects requirements for the chemicals, the chemical contaminants, and the impurities that are directly added to drinking water from drinking water treatment chemicals.

This Standard also contains health effects requirements for chemical products that are directly added to water but are not intended to be present in the finished water.

ANSI/NSF 60

Chemicals covered, but not limited to:

- Coagulation and flocculation chemicals
- Softening
- Precipitation
- Sequestering
- pH adjustment
- Corrosion/scale control
- Disinfection and oxidation
- Miscellaneous treatment chemical and water supply chemicals

ANSI/NSF 53

This Standard establishes 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..

These substances are considered established or potential health hazards that may be

- Microbiological,
- Chemical, or
- Particulate (including filterable cysts) by nature.

ANSI/NSF 55

- Standard establishes the minimum requirements for the reduction of microorganisms using ultraviolet radiation (UV).
- Standard covers UV microbiological water treatments systems and components for point-of-use and point-of-entry applications.
- Two Classifications
  - Class A
  - Class B

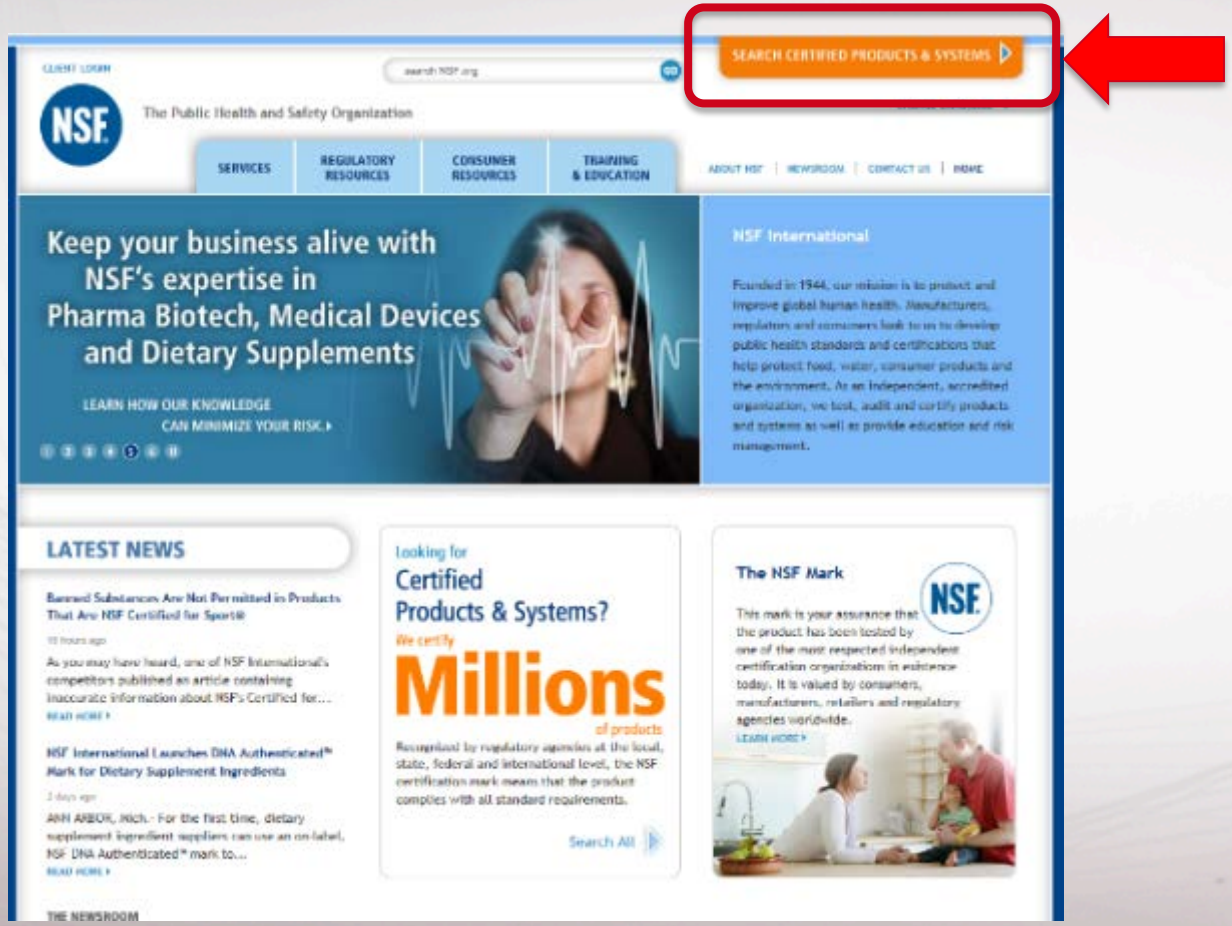
Class A UV

- Designed to inactivate and/or remove microorganisms, including bacteria, viruses, *Cryptosporidium* oocysts, and *Giardia* cysts from contaminated water.
- Intended to be installed on visually clear water (not colored, cloudy, or turbid).
- Shall be equipped with a UV sensor that indicates when the UV irradiance is below the minimum required by the Standard. Therefore, the means to indicate the ineffective operation must have one or more of the following:
  - Visual alarm
  - Audible alarm, or
  - System the terminates discharge of water.

Class B UV

- Designed for supplemental treatment of bactericidal treatment of disinfected drinking water that has been tested and deemed acceptable for human consumption by state or local health agencies.
- Designed to reduce normally occurring nonpathogenic nuisance microorganisms only.
- Shall Not
  - Be intended for the disinfection of microbiologically unsafe water.
  - Make microbiological health effect claims, or individual or general cyst claims.
- Not required to equip sensors, alarms or a shut-off system.

NSF International



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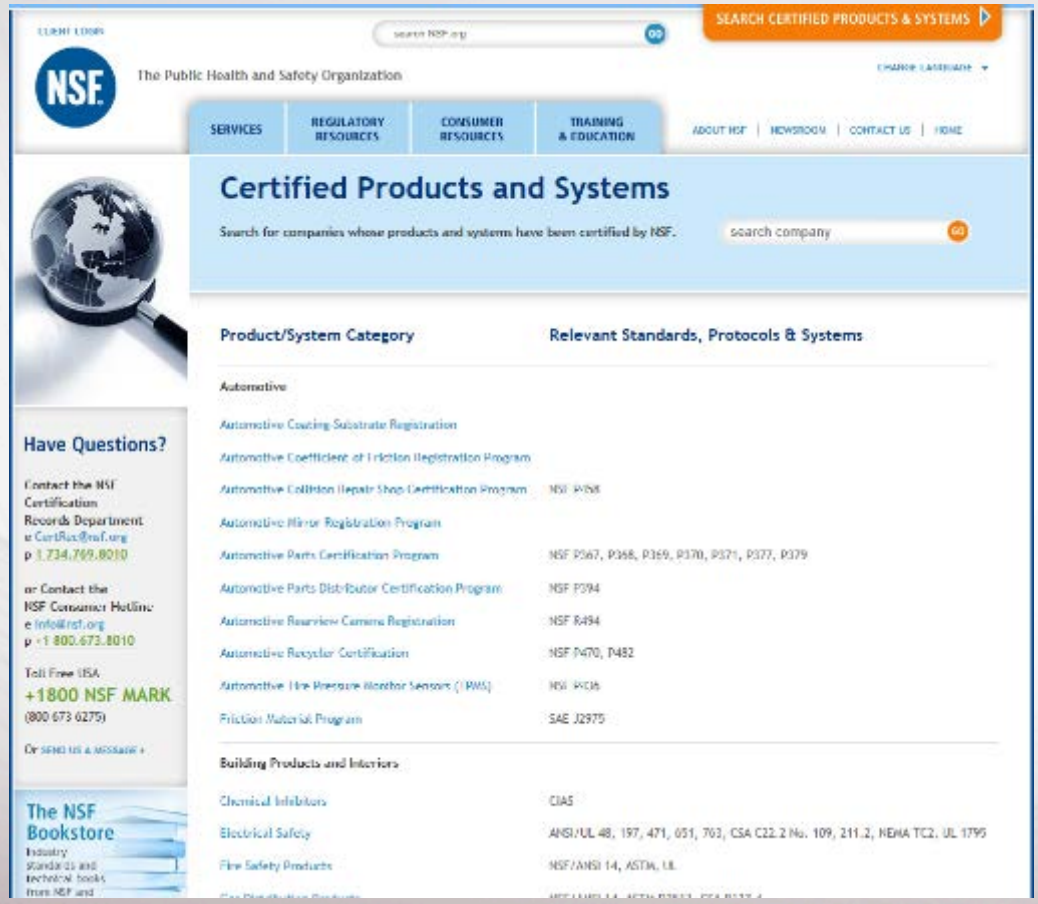
Certified Products and Systems



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Water and Wastewater

Water and Wastewater	
Anti-Scald and Temperature Control Devices	TMV2, TMV3, DTC
Bottled Waters and Beverages	
Drinking Water System Components	NSF/ANSI 61
Drinking Water Treatment Chemicals	NSF/ANSI 60
Drinking Water Treatment Units	NSF/ANSI 42, 44, 53, 55, 58, 62, 177, 401, NSF P231, P473, P477, NSF/JWPA P72, CSA B483.1, INMETRO ABNT/NBR 16098
Fabricated Ductile Iron Pipe	AWWA C115, C606
Lead Content Certification	NSF/ANSI 372

NSF/ANSI 61

NSF/ANSI 60

NSF/ANSI 42, 44, 53, 55, 58, 62, 177, 401, NSF P231, P473, P477, NSF/JWPA P72, CSA B483.1, INMETRO ABNT/NBR 16098

Example Search

Sterilene

Sterilene web site

BENEFITS:

- NSF 60 Certified
- 55% available chlorine
- Granular but easy to mix, even in cold water
- No premixing to control pH
- No corrosive fumes so no corrosion in your trucks
- No shelf life limitations..... lasts forever
- Easy to use

Ohio Department of Health

Verification of Certification

Water and Wastewater	
Anti-Scald and Temperature Control Devices	TMV2, TMV3, DTC
Bottled Waters and Beverages	
Drinking Water System Components	NSF/ANSI 61
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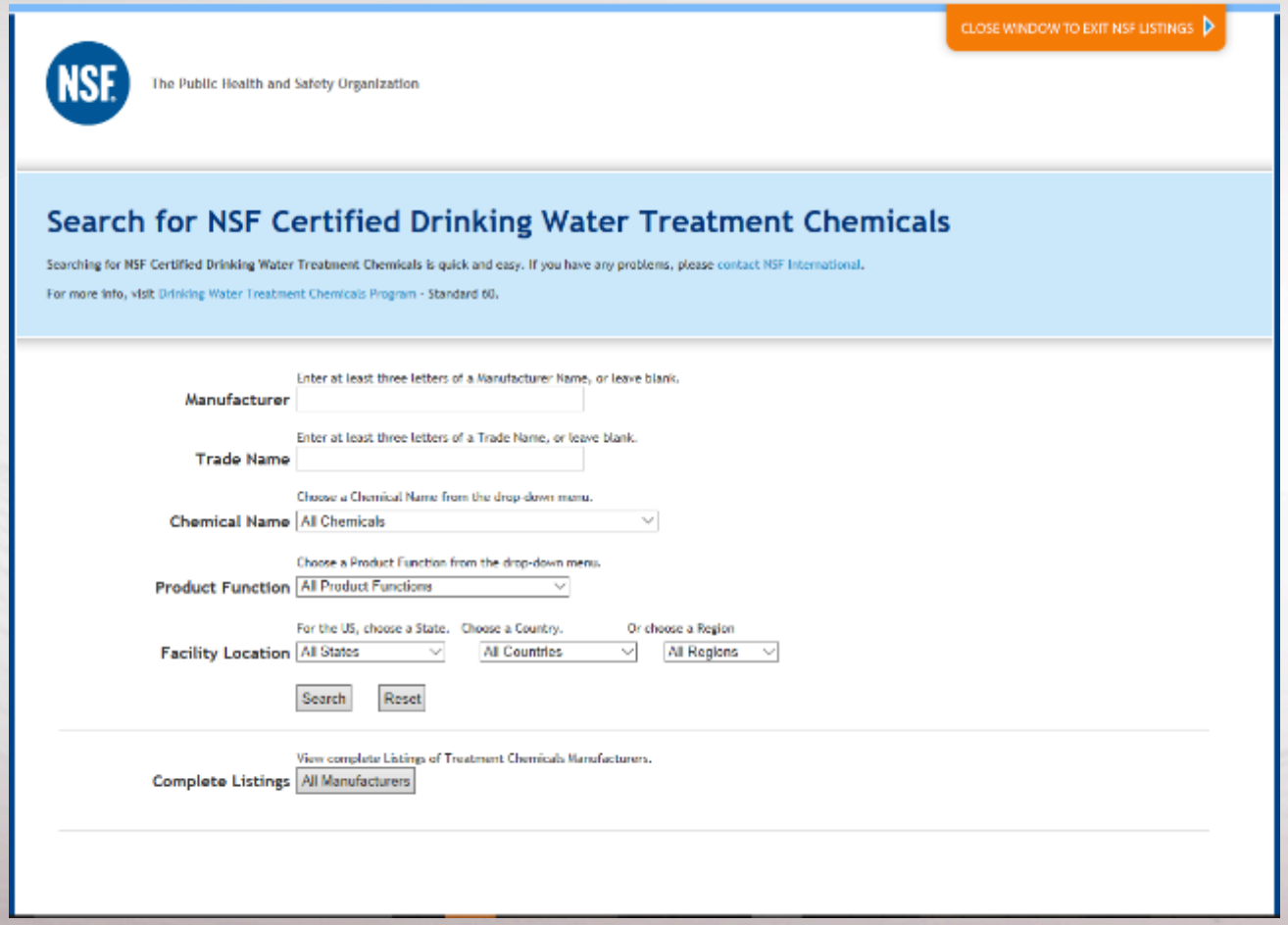
Fabricated Ductile Iron Pipe	AWWA C115, C606
Lead Content Certification	NSF/ANSI 372
Onsite Wastewater Inspectors	
OQC Registration	Origine e Qualità Controllata
Plumbing System Components	NSF/ANSI 14, 24, 358, NSF 468, NSF P374, ASTM, ASME, CSA, IAPMO, ASSE, AWWA
Public Drinking Water Equipment Performance	NSF/ANSI 419
Recreational Water Facility Products	NSF/ANSI 50, APSP, ASME, ASTM, IAPMO
Wastewater Treatment Units	NSF/ANSI 40, 41, 46, 245, 350, P157, CAN/BNQ 3680-600, ISO 11143
Water Fittings, System Components and Materials	NSF REG4

Standard 60 page



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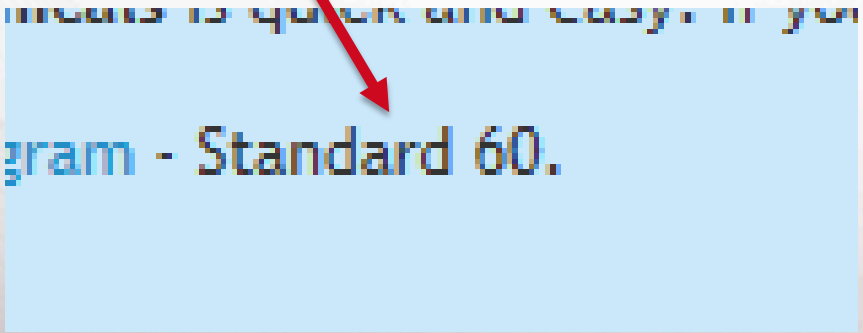
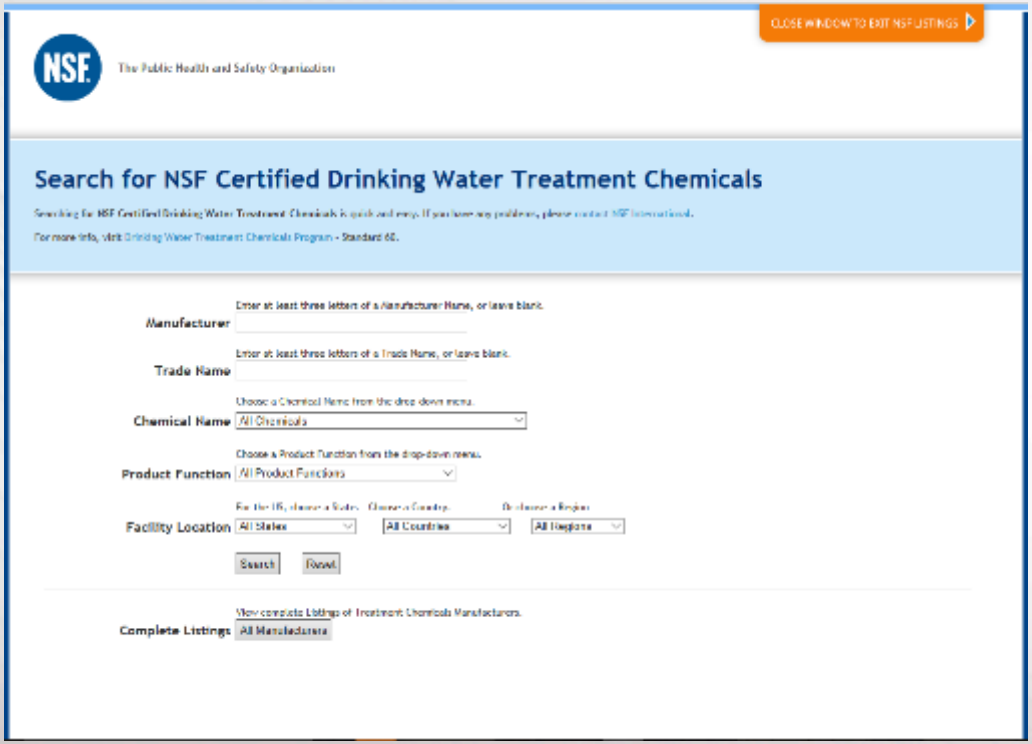
Finding a Certified Product

Search for NSF Certified Drinking Water Treatment Chemicals

Searching for **NSF Certified Drinking Water Treatment Chemicals** is quick and easy. If you have any problems, please contact NSF International.

For more info, visit Drinking Water Treatment Chemicals Program - Standard 60.





Options for Search:

- Manufacturer
- Trade Name
- Chemical Name
- Product Function
- Facility Location

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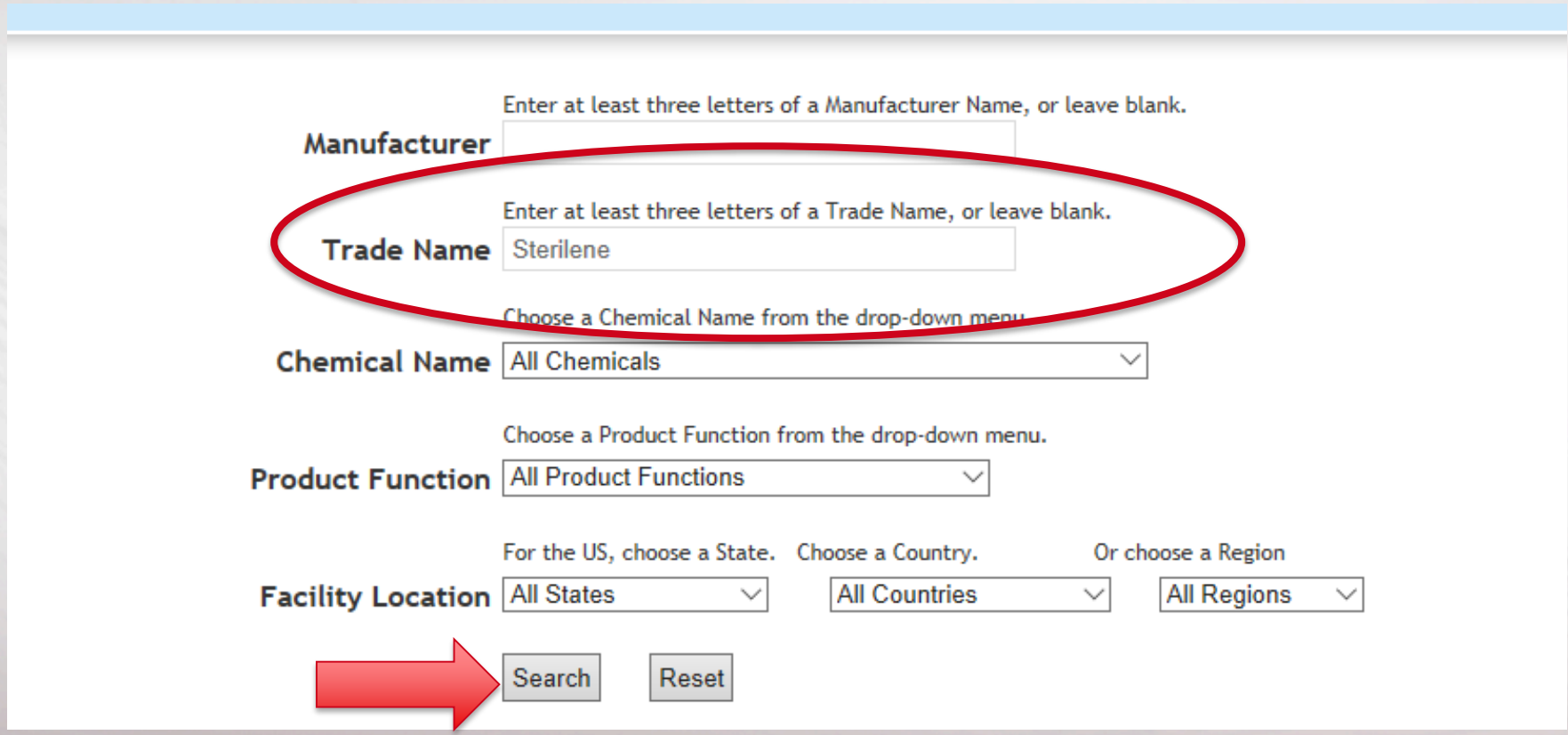
Searching by Trade Name



Certification Results

NSF/ANSI 60
Drinking Water Treatment Chemicals - Health Effects

Jet-Lube, LLC

930 Whitmore Drive
Rockwall, TX 75087
United States
952-474-4657
Visit this company's website

Facility : Fenton, MO

Sodium Dichloroisocyanurate

Trade Designation	*Product Function*	*Max Use*
Sterilene[2] [CL]	Well Cleaning Aid	NA

[2] The well is to be pumped until chlorine test strips indicate zero chlorine residual.
[CL] The residual levels of chlorine (hypochlorite ion and hypochlorous acid), chlorine dioxide, chlorate ion, chloramine and disinfection by-products shall be monitored in the finished drinking water to ensure compliance to all applicable regulations.

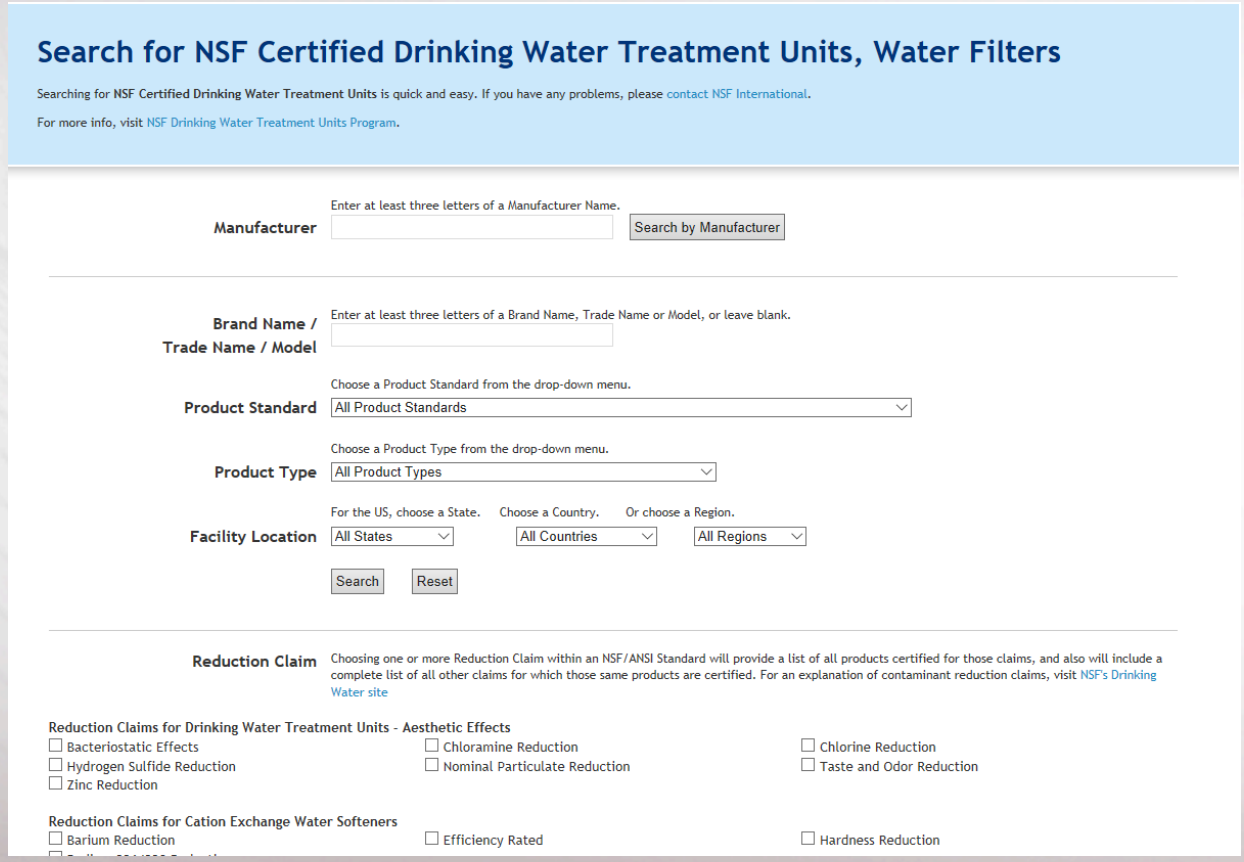
Number of matching Manufacturers is 1
Number of matching Products is 1
Processing time was 0 seconds

Example 2 – NSF 55

Search for Class A UV Systems

Water and Wastewater	
Anti-Scald and Temperature Control Devices	TMV2, TMV3, DTC
Bottled Waters and Beverages	
Drinking Water System Components	NSF/ANSI 61
Drinking Water Treatment Chemicals	NSF/ANSI 60
Drinking Water Treatment Units	NSF/ANSI 42, 44, 53, 55, 58, 62, 177, 401, NSF P231, P473, P477, NSF/JWPA P72, CSA B483.1, INMETRO ABNT/NBR 16098
Fabricated Ductile Iron Pipe	AWWA C115, C606
Lead Content Certification	NSF/ANSI 372
Onsite Wastewater Inspectors	
OQC Registration	Origine e Qualità Controllata
Plumbing System Components	NSF/ANSI 14, 24, 358, NSF 468, NSF P374, ASTM, ASME, CSA, IAPMO, ASSE, AWWA
Public Drinking Water Equipment Performance	NSF/ANSI 419
Recreational Water Facility Products	NSF/ANSI 50, APSP, ASME, ASTM, IAPMO
Wastewater Treatment Units	NSF/ANSI 40, 41, 46, 245, 350, P157, CAN/BNQ 3680-600, ISO 11143
Water Fittings, System Components and Materials	NSF REG4

Search Page



Options:

- Manufacturer
- Brand name/ Trade name/ Model
- Product Standard
- Product Type
- Facility Location
- Reduction Claim

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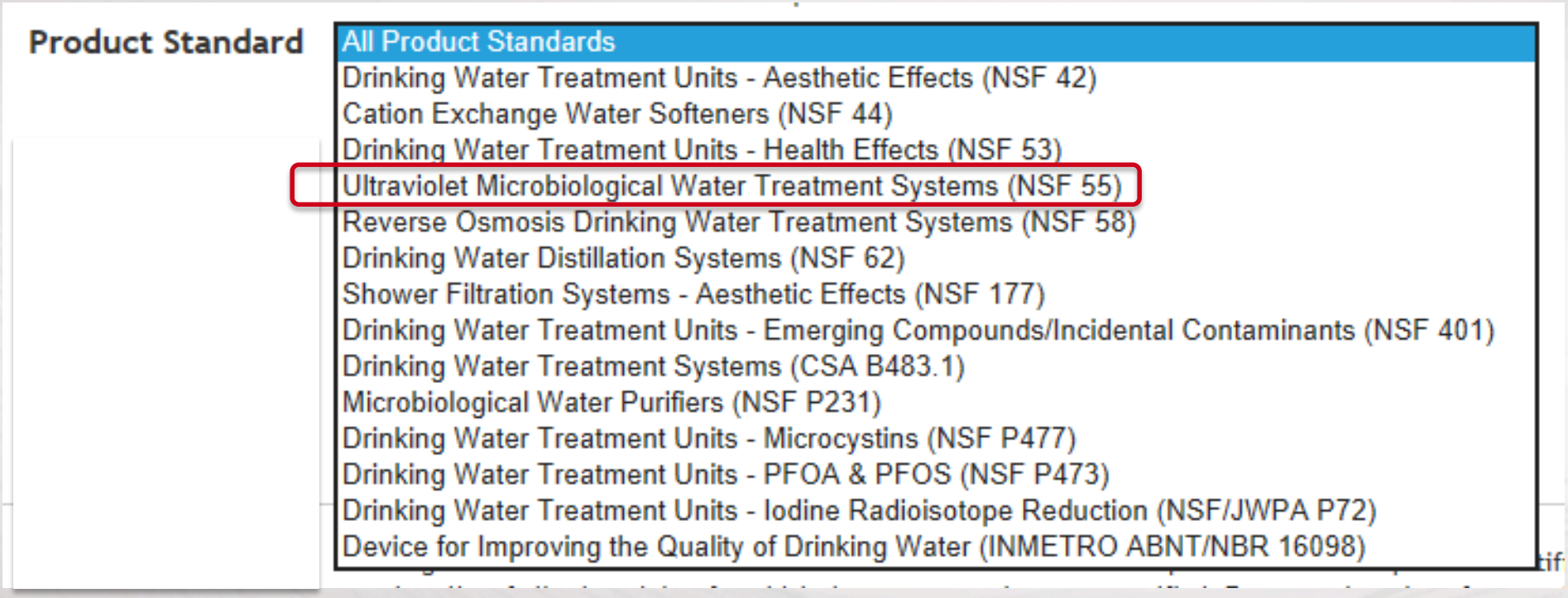
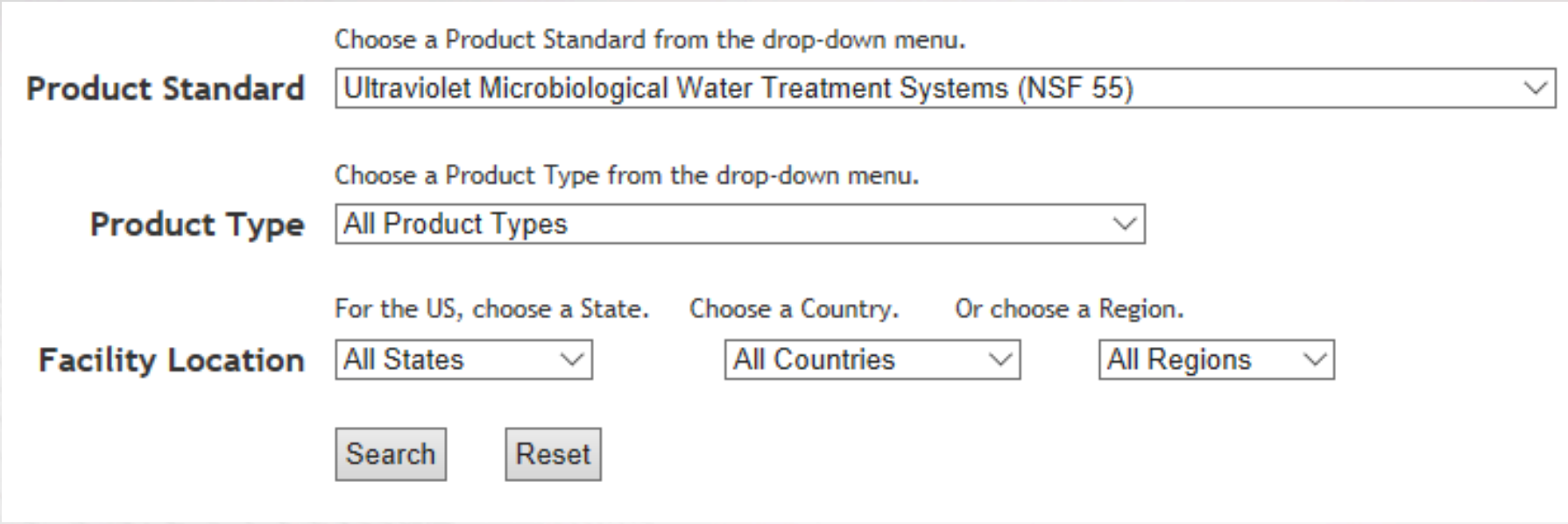
Product Standard



Search NSF 55



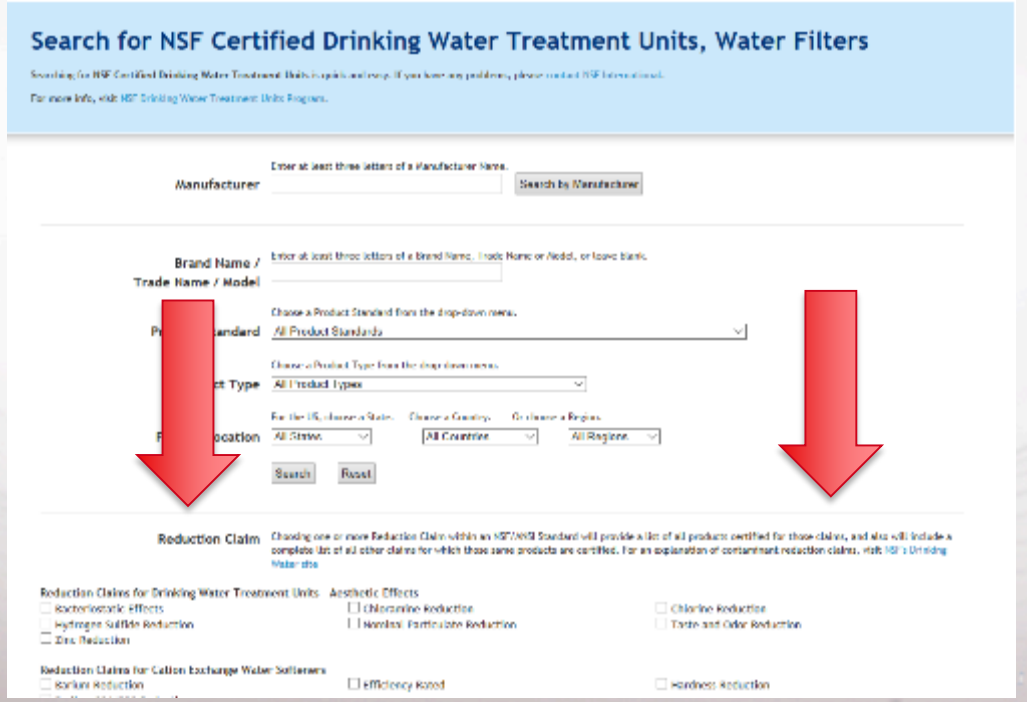
Results

Both Class A and Class B UV Systems

Narrow Search

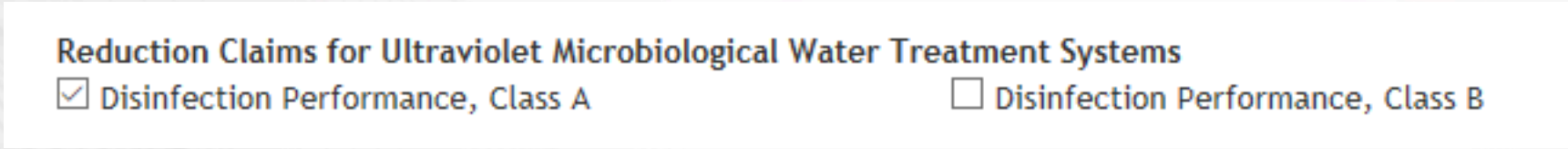
So, what do we do to only see Class A UV Systems?

Go back to the Search page and then go to the Reduction Claim Section



Search the Reduction Claim

Find the Reduction Claim for UV Microbiological Water Treatment Systems



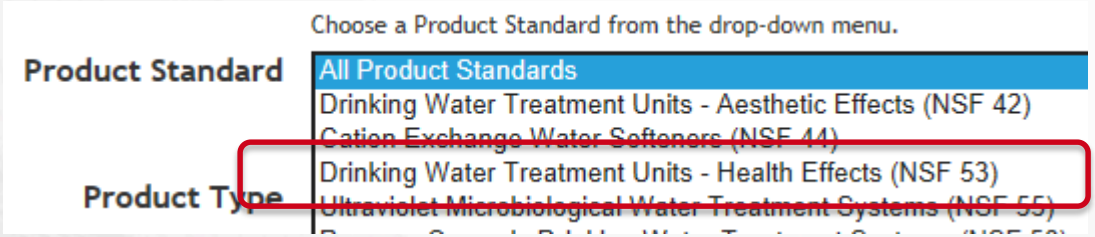
Check Disinfection Performance, Class A

Click Search

Results – Only Class A UV Systems

Example 3 – Cyst Reduction Filters

Like the UV, we are searching in the Drinking Water Treatment Units Section. But, this time the search is for **NSF 53**



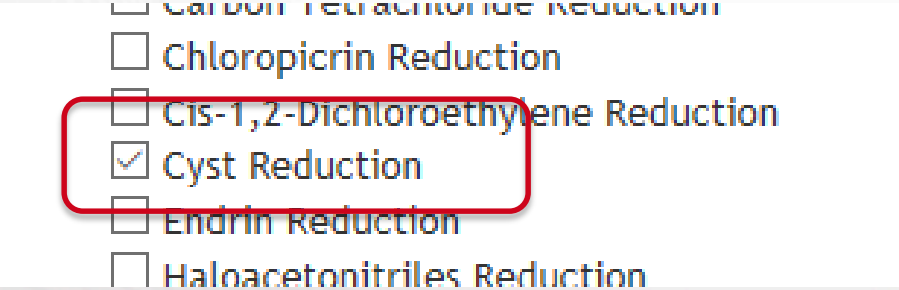
Results: Shows all units meeting Standard 53. Notice that some may not claim Cyst Reduction.

Narrowing the Results

Narrow the Search by going to the Reduction Claim Section.

Go to Reduction Claims for Drinking Water Treatment Units – Health Effects.

Check Cyst Reduction and Click Search



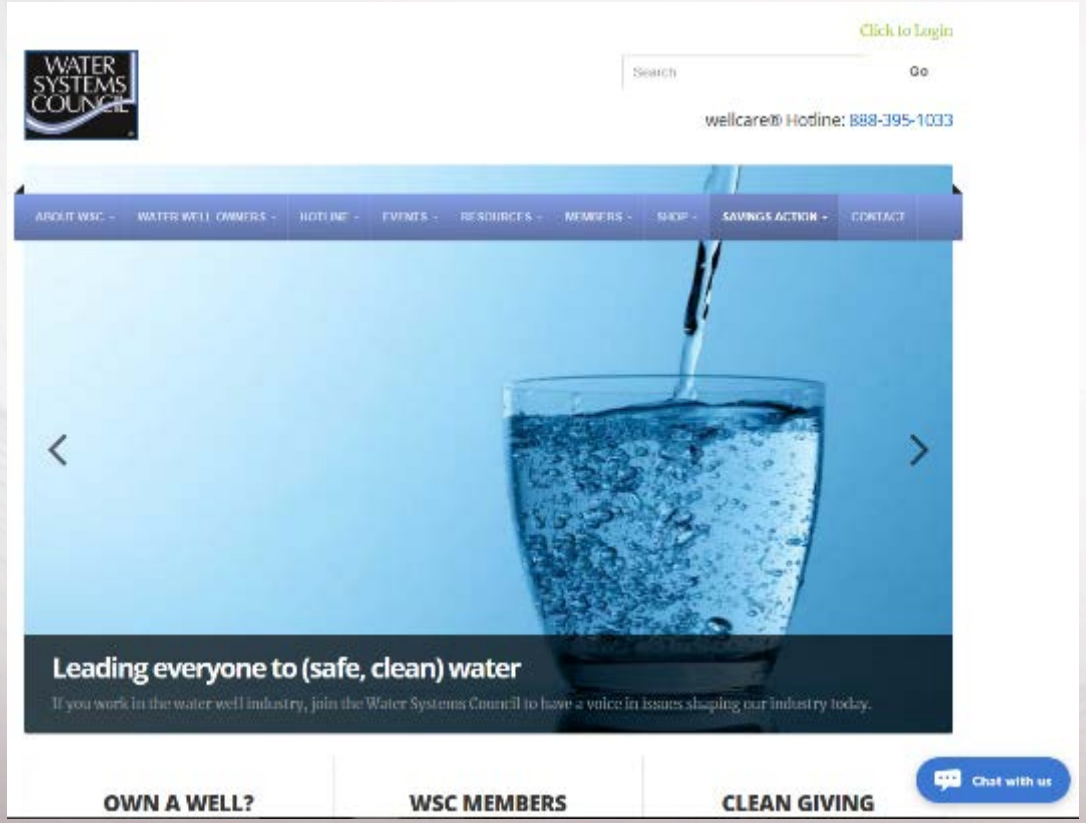
Results: Only shows those units that have a claim for Cyst Reduction.

Result Claims

- Only shows those units that have a claim for Cyst Reduction.
- Some units may have multiple claims.
- Also shows the flow rate in gallon/minute.
- Does not show the micron size.
- As required in OAC Chapter 3701-28, the PWS Contractor must submit documentation showing the filter size as required by rule.

Water Systems Council

https://www.watersystemscouncil.org/



Ohio Department of Health

About Water Systems Council

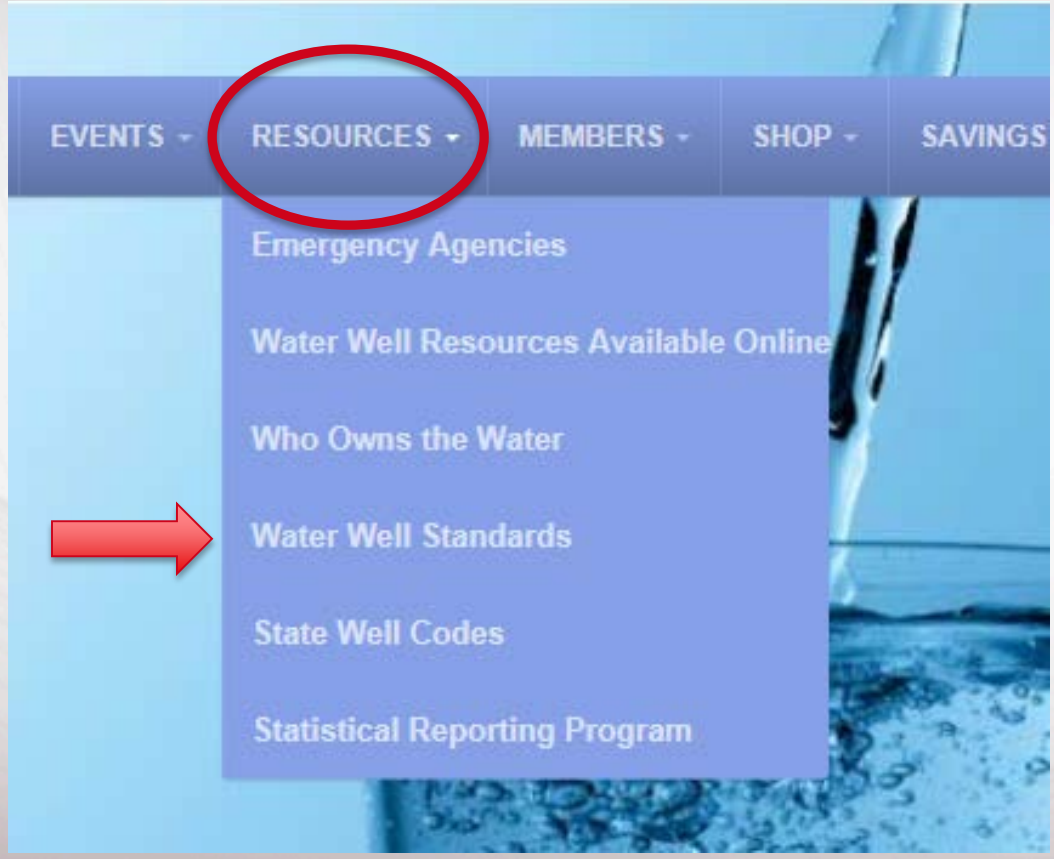
Mission

"To protect and promote well water systems."

Founded in 1932

Only national nonprofit organization with programs solely focused on the private water wells and small shared wells.

Water Systems Council



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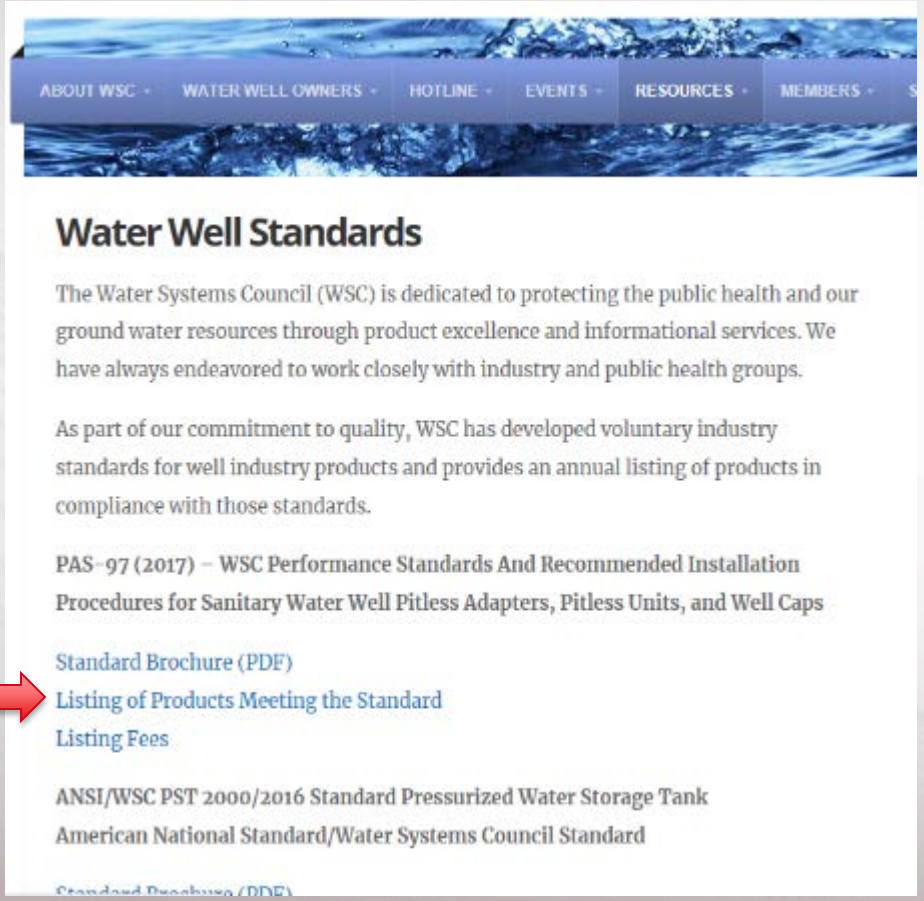
Water Well Standards



- **PAS-97 (2017)**
  - Pitless Adaptors
  - Pitless Units
  - Well Caps
- **ANSI/WSC PST 2000/2016**
  - Standard Pressurized Water Storage Tank

Ohio Department of Health

Listing of Products Meeting the Standards – PAS-97 (2017)

Listing of Products for PAS-97 (2017)

The companies listed below have provided the Water Systems Council with either (a) written reports from independent laboratories attesting that their listed products have been tested and meet the standards or (b) notarized statements from officers of their companies affirming that no design, manufacturing or material changes were made to listed products since they were approved for inclusion on the listing.

The Water Systems Council maintains this list.
Contact memberservices@watersystemscouncil.orgto receive updates as they occur or call 202-625-4387.

American Granby Inc.
Liverpool, New York 315-451-1100
Water Systems Council Member
Approved products for American Granby by the PAS-97 (2017) Standard.

Baker Manufacturing Company, LLC

WSC News

Feb 12 News Release: WSC Heralds Introduction of Bipartisan Bill to Address America's Water Systems In

Nov 7 News Release: WSC New Board Members - Rutz and Weller

Nov 7 News Release: WWT Receives USDA Grant for New Mexico Water Well Projects

Oct 25 News Release: Water Well Trust Completes 27 Water Well Projects in Georgia

Jul 21 News Release: U.S. Senate Committee Hearing on Nation's Water Infrastructure Hears Testimony from WWT AR Project Participant

Example of a Listing

Baker Manufacturing Company, LLC
Evansville, Wisconsin 608-882-5100
Water Systems Council Member
Approved products for Baker Manufacturing Co., LLC by the PAS-97 (2017) Standard.

- Company Website
- Company Location
- Company Phone Number
- Approved Products

Company Website

- Find all of the products they manufacturer
- Although the site may mention compliancy with standards, may not necessarily be certified.

Certified Products

Division	Standard and 3rd Party Certification
Monitor Residential	NSF/ANSI 372 Certified Products: Drinking Water System Components - Lead Content
Campbell™	NSF/ANSI 372 Certified Products: Drinking Water System Components - Lead Content
Monitor Industrial	NSF/ANSI 61 Certified Products: Drinking Water System Components - Health Effects

HAIGHT®	NSF/ANSI 4 Certified Products: Commercial Cooking, Rethermalization and Powered Hot Food Holding and Transport Equipment
Campbell™ Monitor Residential	Water Systems Council PAS-97 Standard:
BAKER® manufacturing company, LLC BAKER · BAKER · BAKER HAIGHT	ISO 9001:2015

Ohio Department of Health

Example of a Listing

Baker Manufacturing Company, LLC

Evansville, Wisconsin 608-882-5100

Water Systems Council Member

Approved products for Baker Manufacturing Co., LLC by the PAS-97 (2017) Standard.

- Company Website
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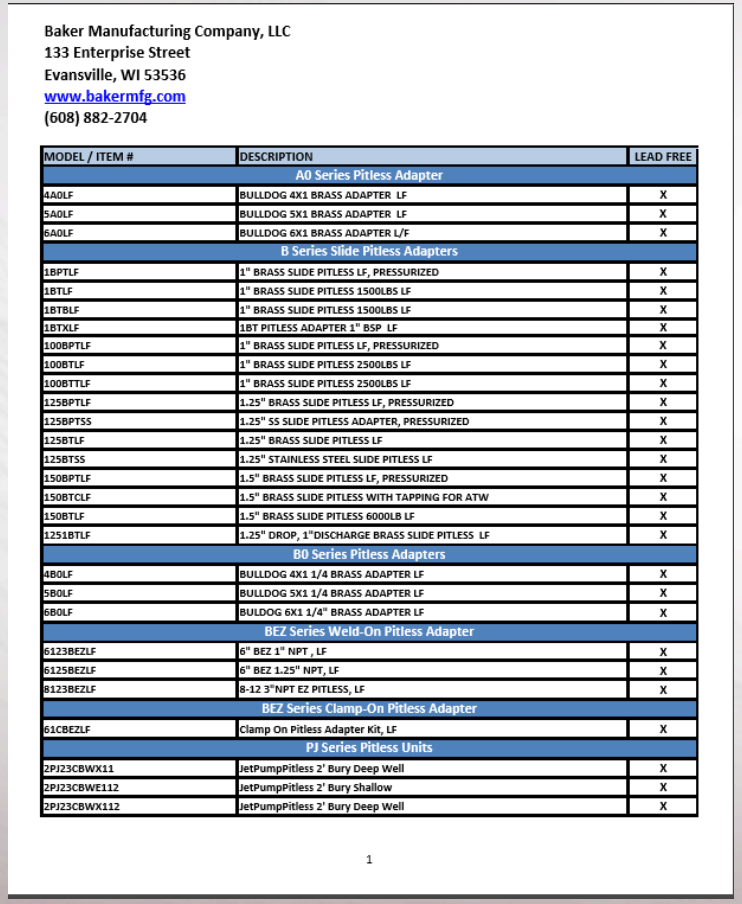
Approved Products



Baker Manufacturing Company, LLC
133 Enterprise Street
Evansville, WI 53536
www.bakermfg.com
(608) 882-2704

MODEL / ITEM #	DESCRIPTION	LEAD FREE
A0 Series Pitless Adapter		
4A0LF	BULLDOG 4X1 BRASS ADAPTER LF	X
5A0LF	BULLDOG 5X1 BRASS ADAPTER LF	X
6A0LF	BULLDOG 6X1 BRASS ADAPTER L/F	X
B Series Slide Pitless Adapters		
1BPTLF	1" BRASS SLIDE PITLESS LF, PRESSURIZED	X
1BTLF	1" BRASS SLIDE PITLESS 1500LBS LF	X
1BTBLF	1" BRASS SLIDE PITLESS 1500LBS LF	X
1BTXLF	1BT PITLESS ADAPTER 1" BSP LF	X
100BPTLF	1" BRASS SLIDE PITLESS LF, PRESSURIZED	X
100BTLF	1" BRASS SLIDE PITLESS 2500LBS LF	X
100BTTLF	1" BRASS SLIDE PITLESS 2500LBS LF	X
125BPTLF	1.25" BRASS SLIDE PITLESS LF, PRESSURIZED	X
125BPTSS	1.25" SS SLIDE PITLESS ADAPTER, PRESSURIZED	X
125BTLF	1.25" BRASS SLIDE PITLESS LF	X
125BTSS	1.25" STAINLESS STEEL SLIDE PITLESS LF	X
150BPTLF	1.5" BRASS SLIDE PITLESS LF, PRESSURIZED	X
150BTCLF	1.5" BRASS SLIDE PITLESS WITH TAPPING FOR ATW	X
150BTLF	1.5" BRASS SLIDE PITLESS 6000LB LF	X
1251BTLF	1.25" DROP, 1"DISCHARGE BRASS SLIDE PITLESS LF	X
B0 Series Pitless Adapters		
4B0LF	BULLDOG 4X1 1/4 BRASS ADAPTER LF	X
5B0LF	BULLDOG 5X1 1/4 BRASS ADAPTER LF	X
6B0LF	BULDOG 6X1 1/4" BRASS ADAPTER LF	X
BEZ Series Weld-On Pitless Adapter		
6123BEZLF	6" BEZ 1" NPT , LF	X
6125BEZLF	6" BEZ 1.25" NPT, LF	X
8123BEZLF	8-12 3"NPT EZ PITLESS, LF	X
BEZ Series Clamp-On Pitless Adapter		
61CBEZLF	Clamp On Pitless Adapter Kit, LF	X
PJ Series Pitless Units		
2PJ23CBWX11	JetPumpPitless 2' Bury Deep Well	X
2PJ23CBWE112	JetPumpPitless 2' Bury Shallow	X
2PJ23CBWX112	JetPumpPitless 2' Bury Deep Well	X

1

- Gives
  - Model/Item #
  - Description
  - Lead-free

Ohio Department of Health

Responsibility of PWS Contractors

Although a product meets a standard, does not mean the that it is permitted for use in all situations.

Contractors responsible for providing the additional information to show that it not only meets the standard, but also to show it meets OAC 3701-28.

Compliance with Rule

Although a product meets a standard, it must also meet the requirements of rule.

Example:

ASTM D2239 Polyethylene (PE) Pipe

Example – Table 1 & 2

Polyethylene (PE) Pipe (particularly ASTM D 2239)

- Susceptible to stress weakening, can be affected by UV radiation, and has burn characteristics not favorable for inside use. This product is best used underground where it is protected from physical damage, UV, and heat.

Outside Use - Table 1

-Table 1: Water service pipe (outside use)

MATERIAL	STANDARD
Copper or copper alloy pipe	ASTM B 42; ASTM B 302
Copper or Copper alloy tubing (Type K, WK, L, WI, M or WM)	ASTM B 75; ASTM B 88; ASTM B 251; ASTM B 447
Chlorinated polyvinyl chloride (CPVC)	ASTM D2846; ASTM F 441; ASTM F 442; CSA B137.6
Ductile iron water pipe	AWWA C151; AWWA C115
Polybutylene (PB) plastice pipe and tubing	ASTM D 2662; ASTM D 2666; ASTM D 3309;CSA B137.8
Polyethylene (PE) plastic pipe	ASTM D 2239; CSA CAN/CSA-B137.1
Polyethylene (PE) plastic tubing	ASTM D 2737; CSA B137.1
Cross-linked polyethylene (PEX) plastic tubing	ASTM F 876; ASTM F 877; CSA CAN/CSA-B137.5
Polyvinyl chloride (PVC) plastic pipe	ASTM D 1785; ASTM D 2241; ASTM D 2672; CSA CAN/CSA-B1373
Stainless-steel	ASTM A269; ASTM A312 / A312-09
	*ASTM – American Standard for Testing and Materials *AWWA – American Water Works Association *CSA – Canadian Standards Association

Inside Use – Table 2

-Table 2: Water distribution pipe (inside use)

MATERIAL	STANDARD
Brass pipe	ASTM B43
Chlorinated polyvinyl chloride (CPVC)	ASTM D2846; ASTM F 441; ASTM F 442; CSA B137.6
Copper or copper alloy pipe	ASTM B 42; ASTM B 302
Copper or Copper alloy tubing (Type K, WK, L, WI, M or WM)	ASTM B 75; ASTM B 88; ASTM B 251; ASTM B 447
Cross-linked polyethylene (PEX) plastic tubing	ASTM F 877; CSA CAN/CSA-B137.5
Polybutylene (PB) plastice pipe and tubing	ASTM D 3309;CSA CAN/CSA-B137.8
Polyvinyl chloride (PVC) plastic pipe	ASTM D 1785; ASTM D 2241; ASTM D 2672; CSA CAN/CSA-B1373
Stainless-steel	ASTM A269; ASTM A312 / A312-09

PE pipe is not on Table 2 for inside use, therefore it is not permitted for inside use.

Contact Information

Steven Schmidt, R.S.

Private Water Systems Program

BEHRP/Ohio Department of Health

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Ohio Department of Health