

Comparison of key differences in NSF P231 and the proposed supplemental microbiological treatment standard 244-3	
NSF P231	Supplemental Standard 244-3
Purpose/Scope	
Based on 'USEPA Guide Standard and Protocol for Testing Microbiological Water Purifiers, 1987'; Filters/purifiers are for use on 'waters of unknown microbiological quality, but are presumed to be potable' Limited to devices with flow rate \leq 5 GPM Covers ceramic filters, halogenated resins and units (units with chemical disinfection elements), UV units (defaults to NSF/ANSI Standard 55); adaptable to other type of disinfection technologies at the discretion of the testing agency.	For testing and certifying 'mechanical filtration devices for supplemental treatment of microbiologically safe drinking water.' POU/POE systems 'for the supplemental microbial control of specific organisms that may occasionally be present in drinking water ...because of intermittent incursions.' Statement required: " Do not use with water that is microbiologically unsafe or of unknown quality." For testing systems with flow rate up to and > 5 GPM
Quality assurance requirements	
None (For chemical disinfectants, shelf life verification is required)	Documentation of manufacturing consistency subject to inspection; each unit to have ID to trace date of manufacture and lots of materials of construction; Shelf life requirement, 'DO NOT USE AFTER (DATE)'
End of Life Indication ('ELI')	
Basic requirements given; literature requirement for explanation to user on how indicator functions; indicator function verification defaults to NSF/ANSI Standard 53	Detailed requirements for ELI, its function, detailed test protocol for function verification; 1 yr life limit for 'dead-end' filtration devices; other devices with reject or flush stream and ion reduction devices (e.g., RO) have 2 yr life limit; literature requirement for explanation to user on how ELI functions
Microbiological performance claims (mechanical reduction)	
Must 'remove, kill or inactivate all types of pathogenic organisms': bacteria (6 Log), viruses (4 Log) and protozoan cysts (3 Log) in accordance with the acceptance criteria allowing for analytical variance; 24 sample points (mechanical reduction)	Bacteria (6 Log), viruses (4 Log), cysts (3.3 Log - claim based on demonstrated successful reduction of bacteria and viruses); Acceptance criteria same as P231 with allowance for analytical variance; 32 sample points
Test Protocol (mechanical reduction)	
10-1/2 days, minimum, 16-hr/day (can extend beyond 10-1/2 days to accommodate 8-hr test day)	3-week test, plus end-of-test (4 th week) simulation of accidental, worst-case contamination
2 – 48 hr stagnation samples	1 – 48 hr stagnation sample at end of 3 week test
<u>Challenge microorganisms</u> – Bacteria: <i>Klebsiella terrigena</i> (now <i>Raoultella terrigena</i> , <i>Rt</i>) Viruses: Poliovirus 1 (LSc) and Rotavirus (Wa or SA-11) (allows for use of other surrogate viruses) Cysts: <i>Giardia</i> (defaults to live <i>Cryptosporidia</i> or 3 micron latex spheres)	<u>Challenge microorganisms</u> – Bacteria: <i>Raoultella terrigena</i> (<i>Rt</i>) Viruses: MS-2 and fr coliphages Cysts: Cyst reduction claim allowed based on demonstrated successful reduction of <i>Rt</i> and both MS-2 and fr coliphages

Days 1-6 General Test Water #1 (for non-challenge running and microbial challenge points) – Use/modify tap water, chlorine free, pH 6.5-8.5, TOC 0.1-5.0 mg/L, turbidity 0.1-5 NTU	General test water (for first 3 weeks of testing, use for non-challenge running and microbial challenge points– Use chlorine free RO/DI water and add constituents to achieve: hardness (as CaCO ₃ – as CaCl ₂ and MgSO ₄) 40-60 mg/L, TDS (NaCl) 90-110 mg/L, TOC (tannic acid) 2-4 mg/L, added alkalinity 42 mg/L (as NaHCO ₃), Temp 20°C ± 2.5°C, Turbidity (no range – as prepared), pH (±0.25) – wk 1 9.0, wk 2 6.0, wk 3 7.5
Challenge water (Test Water #3) – chlorine free, pH 9, TOC ≥ 10 mg/L (as humic acid), Turbidity ≥ 30 NTU, Temp 4 ± 1°C, TDS 1,500 mg/L ± 150 mg/L	Challenge water for reducing flow rate and microbial challenge at end of test (wk 4 – simulated accidental contamination) – hardness 40-60 mg/L (as CaCO ₃), TDS 1,500 mg/L ± 150 mg/L, TOC 8-12 mg/L (as humic acid), added alkalinity 42 mg/L (as NaHCO ₃), Temp 20°C ± 2.5°C, Turbidity 27-33 NTU (as 0-5 micron Nominal Test Dust)
<u>Pre-start up background microbial systems and test rig check:</u> none	<u>Pre-start up background microbial systems and test rig check:</u> Yes; check test rig and systems for background <i>Rt</i> (≤ 10 cfu/ 100 mL)
<u>General run and sampling plan:</u> challenge with all microorganisms at each sample point - Test Water #1 – Start (Day 1), Day 3 (middle), Day 6 (middle), after 48 hr stagnation Test Water #3 – Day 7 (middle), Day 8 (near end), 48 hr stagnation, Day 10-1/2	<u>General run and sampling plan:</u> Week 1 – General test water, pH 9 – Wk1-Day 1 (<i>Rt</i> , virus 1), Wk1-Day3 (<i>Rt</i> , virus 2), all other days running w/o microbial challenge, 48 hr stagnation (no sample); Week 2 – General test water, pH 6 – repeat Wk1 run Week 3 – General test water, pH 7.5 – repeat Wk2 run Week 4 – Sample after 48 hr stagnation (<i>Rt only</i>), begin simulated accidental contamination event using Challenge test water w/ high TOC, TDS, Turbidity, pH 9
<u>On-off cycle time:</u> 10 percent on, 90 percent off with 15-40 cycle time (testing agency may have discretion depending on type of device)	<u>On-off cycle time:</u> depends on type of device; specific cycle times given for each type of device and sampling periods
<u>Directions/Provisions to address premature clogging:</u> none (options depend on testing agency)	<u>Directions/Provisions to address premature clogging:</u> Yes; if ≥ 75% flow rate reduction occurs before the end of 2 nd week, test is a failure; if flow rate reduction occurs during Wk3, conduct simulated accidental contamination test
<u>Specific directions and examples for different types of devices:</u> none (some general guidance given)	<u>Specific directions and examples for different types of devices:</u> yes; specific directions and examples given for – faucet-mounted and plumbed-in systems without reservoirs, plumbed-in systems with reservoir (tank), non-plumbed pour-through-type batch treatment systems, squeeze and mouth-drawn bottle filters
Instruction and Information	
<u>Required warning statements/instructions –</u> <i>“This system is not intended to convert wastewater or raw sewage into drinking water.”</i>	<u>Required warning statements/instructions –</u> “WARNING: <i>This system is for use on water supplies that have been treated to public water system standards or otherwise are determined to be microbiologically safe as demonstrated by routine testing. This</i>

system has been tested to demonstrate protection against intermittent accidental microbiological contamination of otherwise safe drinking water.” This statement shall be made in the same font and size as the microbiological claim and this statement and the claim shall be simultaneously visible to the reader.”

Statements–

“Do not use with water that is microbiologically unsafe or of unknown quality. This system is not intended for use during a boil water advisory. Stop using this filter system when a boil water advisory is issued. After a boil water advisory has been discontinued and prior to reuse, sanitize and service the system as directed in the owner’s manual.”

“For use on private wells: **WARNING:** Do not use on private well water until the water has been tested by a certified drinking water laboratory to determine microbial safety in accordance with regulatory standards. Before using this device on a private well, it is the responsibility of the user to have the well tested by a certified drinking water laboratory. For continuous use of this device on a private well, it is the responsibility of the user to obtain frequent microbiological testing (recommended twice per year, minimum) of the well water entering the system by a certified drinking water laboratory to monitor continued compliance with the applicable regulatory standards. If the well source becomes microbiologically contaminated as indicated by testing, discontinue use of this device until sufficient well treatment and testing indicates that the water again meets the applicable regulatory standards. Following exposure of the device to microbiologically contaminated water and prior to its reuse, conduct the proper sanitization and servicing as directed in the owners manual.”

“explicit instructions explaining proper sanitization and cleaning procedures during routine servicing and after a boil water advisory has been discontinued or after the system has been exposed to microbiologically unsafe water”

“This system not intended to control all heterotrophic plate count (HPC) bacteria.”

“for components claiming a finite shelf life, a statement noting ‘DO NOT USE AFTER (date)’, or notification or method of informing the user that the device or component may not function as claimed after a certain time or date.”

References to government regulations and product registration –

“Federal agencies specifically involved in responding to questions and problems relating to microbiological purifier equipment include:

- Registration Division, Office of Pesticide Programs (OPP), Environmental Protection Agency (EPA): registration of microbiological purifiers (using chemicals);
- Compliance Monitoring Staff, EPA: control of microbiological purifier device claims (non-registerable products such as ultraviolet units, ozonators, chloride (sic) [chlorine] generators, others;
- Criteria and Standards Division, Office of Drinking Water (ODW), EPA: Consideration of point-of-use technology as acceptable technology under the Primary Drinking Water Regulations; consumer information and service

References to government regulations and product registration –

Annex explaining government (state and federal) regulations and registration requirements for mechanical filtration devices; general guidance, USEPA contact information and guidance regarding international product registration

Operation and Maintenance Instructions

4.4.1 Installation, operation and maintenance instructions

4.4.1.1

- statement that the system is not intended to convert wastewater or raw sewage into drinking water.

Annex containing basic information about devices covered under this standard: required statements in the product literature about operation, installation, maintenance and user information and responsibility; specific information and guidance for use on wells; NGWA link for testing wells:

8.1 Installation, operation and maintenance instructions –

..... - statement noting that the timely maintenance of replacement elements is required to maintain proper product performance;

- statement of intended use: **“WARNING: This system is for use on water supplies that have been treated to public water system standards or otherwise are determined to be microbiologically safe as demonstrated by routine testing. This system has been tested to demonstrate protection against intermittent accidental microbiological contamination of otherwise safe drinking water.”** This statement shall be made in the same font and size as the microbiological claim and this statement and the claim shall be simultaneously visible to the reader.;

- statement for non-integral, multiple component systems (treatment train): **WARNING: This system may not perform as claimed unless all functional components are installed in their proper sequence in accordance with the installation and maintenance instructions.;**

- statement noting **“Do not use with water that is microbiologically unsafe or of unknown quality. This system is not intended for use during a boil water advisory. Stop using this filter system when a boil water advisory is issued. After a boil water advisory has been discontinued and prior to reuse, sanitize and service the system as directed in the owner’s manual.”;**

- statement noting **“This system not intended to control all heterotrophic plate count (HPC) bacteria.”;** and

- statement noting **“For use on private wells: WARNING: Do not use on private well water until the water has been tested by a certified drinking water laboratory to determine microbial safety in accordance with regulatory standards. Before using this device on a private well, it is the responsibility of the user to have the well tested by a certified drinking water laboratory. For continuous use of this device on a private well, it is the responsibility of the user to obtain frequent microbiological testing (recommended twice per year, minimum) of the well water entering the system by a certified drinking water laboratory to monitor continued compliance with the applicable regulatory standards. If the well source becomes microbiologically contaminated as indicated by testing, discontinue use of this device until sufficient well treatment and testing indicates that the water again meets the applicable regulatory standards. Following exposure of the device to microbiologically contaminated water and prior to its reuse, conduct the proper sanitization and servicing as directed in the owners manual.”** This statement shall be made in the same font and size as the microbiological claim and this statement and the claim shall be simultaneously visible to the reader.

- explicit instructions explaining proper sanitization and cleaning procedures during routine servicing and after a boil water advisory has been discontinued or after the system has been exposed to microbiologically unsafe water;

- for components claiming a finite shelf life, a statement noting **‘DO NOT USE AFTER (date)’**, or notification or method of informing the user that the device or component may not function as claimed after a certain time or date.

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