

DRINKING WATER BEST MANAGEMENT PRACTICES (BMPs)  
FOR FACILITIES

DISCUSSION

This guide identifies best management practices for drinking water in buildings that are served by municipal drinking water systems to address the following issues:

- Bacteria that may grow within the plumbing system and hot water tanks, on water fountains and faucets, or enter the facility's distribution system (the building's pipes and plumbing) through cross connections
- Elevated lead levels as a result of contamination from the facility's plumbing and drinking water fixtures (former lead free definition allowed up to 8% lead in pipe fittings, plumbing fittings and fixtures)

**Reduction of Lead in Drinking Water Act**

A new requirement, signed into law by President Obama in January 2011, will further reduce lead in pipes, pipe fittings, plumbing fittings and fixtures to a weighted average of 0.25 percent. The Reduction of Lead in Drinking Water Act redefines "lead free" under the Safe Drinking Water Act to mean: not containing more than 0.2 percent lead when used with respect to solder and flux, the material used to join pipes and fixtures together (current law) and not more than a weighted average of 0.25 percent lead when used with respect to the wetted surfaces of pipes, pipe fittings, plumbing fittings and fixtures. After Jan 4, 2014, components not meeting the new definition, including components in current inventory, no longer can be utilized. You can search for lead free NSF Drinking Water Components here: <http://www.nsf.org/certified/pwscomponents/>

A. TOP 5 MAINTENANCE ACTIONS TO PROTECT DRINKING WATER IN YOUR BUILDING

1. Regularly flush all water outlets (including water fountains)
  - At the start of each day, before using any water for drinking or cooking, flush the **cold** water faucet by allowing the water to run for a period of time.
  - Flushing, or opening up a tap and letting the water run, replaces the stagnant water that may have been in contact with lead-containing plumbing fixtures overnight or over the weekend. In addition, it prevents bacterial growth in building plumbing.
  - If many taps need flushing, the tap farthest from the main pipe should be opened for approximately ten minutes to flush out the main pipe. Then, individual drinking water taps should be flushed to rid stagnant water from the pipes.
  - Develop a system for accountability, including identifying

one person who is in charge and developing a record keeping system.

2. Clean debris out of all outlet screens or aerators on a regular basis

- Remove the aerator by twisting off with hands or pliers;
- One or more parts are contained within the aerator. Note the order and orientation of the parts as you remove them;
- Rinse the pieces with water and brush off the debris. For deposits that are difficult to remove, soak the parts in water for a few minutes and scrub with a new toothbrush. Hold removed aerator upside down under flowing water to backwash screens and mesh filters;
- If any parts are cracked or broken, replace them. If the washer has hardened it should be replaced; and
- Reassemble the aerator by screwing it back onto the faucet and hand-tighten.
- The frequency of cleaning depends on how quickly the debris builds up on the inside walls of the aerator. Generally, the aerator should be cleaned at least quarterly. If blockages from scale or particulate accumulation are noticed, the frequency should be increased to monthly. Flow pattern changes are an indication of buildup.

3. Maintain any point-of-use (POU) devices

- POU devices are filtration systems. Use a device that is certified by National Sanitation Foundation (NSF) International and maintain according to manufacturer instructions. If not maintained properly, POU devices may become a source of contamination.

4. Clean drinking water fountains

a) Drinking Water Fountain Daily Cleaning Procedures

The following procedures should be considered for daily cleaning:

- Gather necessary materials and suggested protective equipment;
- Obtain Material Safety Data Sheets (MSDS) for all chemicals being used and review manufacturer's instructions for use;
- Check the flow of the water to make sure there is a constant stream;
- Spray disinfectant cleaner solution on the inside surfaces of the mouthpiece and protective guard;
- Using a scrub brush, clean the inside and outside of the mouthpiece and protective guard;
- Rinse the mouthpiece and protective guard with water; and
- Wipe drinking fountain surfaces with a clean cloth dampened with water.

b) Removing Lime Build-up on Drinking Fountains or Ice Machines

- Spray descaler onto the bowl and back of the drinking fountain;
- Use a clean, lint-free cloth saturated with the descaler. Apply to the surfaces with the lime build-up. Let stand for the length of time recommended on the label;
- Wring out all excess solution from the cloth;
- Wipe the surface clean with the cloth. If necessary, use a brush or scrub pad to remove hard build-up. Be careful not to damage surfaces while scrubbing; and
- Thoroughly rinse the surfaces with clean water.

5. Clean hot water tanks periodically

- Hot water tanks are susceptible to the development of biofilms (surface deposit of bacteria that accumulates creating a slime layer), and accumulation of sediments.

B. INSPECT YOUR FACILITY TO PREVENT POTENTIAL CROSS-CONNECTION CONTAMINATION

Evaluate your facility for the presence of cross-connections (connection between your facility's drinking water system and other liquids or substances), and address any issues related to cross-connections. Common sources of potential cross contamination include:

- When a tube or hose from a faucet is submerged in a solution, beaker or custodian's sink;
- A pipe is connected from a drinking water source to chemical lab equipment, a storage tank or cafeteria equipment; or
- A hose is dropped into a waste/floor drain in an automotive shop, boiler room or cafeteria.
- Cross connections between the drinking water system and heating system boilers, water coolers, lawn sprinkler systems, fire sprinkler systems or soft drink machines
- Missing or inoperable backflow prevention devices. If you have questions about cross connections and contamination, contact the NAVFAC Certification Management Division at (757) 462-4737 or (757) 462-4734.

C. ADDRESS WATER QUALITY COMPLAINTS WITHIN YOUR BUILDING

Occasionally, complaints and/or concerns regarding aesthetic considerations such as taste, odor, or color, are received and must be addressed appropriately. Confirm the following information in order to effectively identify if the root cause is a facility issue or waterworks system problem.

## Building Related Problems

- **Taste/Odor issues in cold water.**  
Root cause: Stagnant water in building pipelines due to low demand.  
Corrective action: Flush water taps for approximately 10 minutes. Follow flushing BMPs described in item A.1.
- **Odor issues coming from drain confused with tap water.**  
Root cause: Bacteria growing in drain.  
Corrective action: To make sure the problem is not in the tap water, fill a narrow glass with a small amount of tap water, then step away from the sink and swirl the water around inside the glass. If the problem is in the drain, the tap water in the glass should not have an odor. Disinfect the drain.
- **The water is discolored every morning or when first used after several hours of disuse.**  
Root cause: Deposits from corroded building plumbing.  
Corrective action: Follow flushing BMPs described in item A.1. Replace building corroded lines if problem persists.
- **The water clears after it has run for a few minutes.**  
Root cause: Deposits from corroded building plumbing.  
Corrective action: Follow flushing BMPs described in item A.1. Replace building corroded lines if problem persists.
- **The discoloration is only at one or several faucets, but not all of them.**  
Root cause: Deposits from corroded building plumbing.  
Corrective action: Follow flushing recommendations described in item A.1. Replace building corroded lines if problem persists.
- **Aesthetic issue only in outlets with POU devices installed.**  
Root cause: Bacteria and particles accumulated in POU.  
Corrective action: Replace filter and ensure maintenance schedule is followed according to manufacturer instructions.
- **Aesthetic issues are only in the hot water.**  
Root cause #1 (Odor/Taste): Bacteria is growing in the water heater.  
Corrective action #1: Address maintenance problems with water heater. This is most likely to occur if the hot water has been unused for a significant period of time, if the water heater has been turned off for a while, or if the thermostat on the heater is set too low. The bacteria that produce this problem are not a health threat; however, the taste and odor can be very unpleasant.  
Root Cause #2 (color): Discolored water can also be observed only from hot water due to accumulation of sediments.  
Corrective Action #2: Clean water heater to remove accumulation of sediments.  
Note: Dissolved air in water is often observed in hot water

(cloudy, milky water). When pressure is relieved by opening the faucet and filling a glass with water, the air is now free to escape from the water, and the milky appearance will clear in a few minutes.

#### Waterworks System Problems

- If all the building related drinking water problems described above have been discarded AND aesthetics issues persist after flushing cold water for approximately 10 minutes, contact the Drinking Water Program Manager at 757-341-0482 to process water quality complaint and coordinate additional flushing of water mains and necessary corrective actions with NAVFAC Utilities.

#### References:

EPA Drinking Water Best Management Practices For Schools and Child Care Facilities Served by Municipal Water Systems, April 2013

Color, Taste, and Odor: What you should know, Massachusetts DEP Drinking Water Program