

## STANDARD OPERATING PROCEDURE – DOMESTIC WATER TANK CLEANING AND DISINFECTION

### 1 PURPOSE

This procedure is applicable to all domestic water tanks that do not provide access for a power washer. Typically these tanks are of a small volume of water or vertical construction as opposed to a larger size and/or horizontal construction.

### 2 SCOPE

The program applies to all personnel employed at Barclay Water Management, Inc. Watertown, MA, Newton, MA and Edison NJ related facilities and operations, including SAFE delivery personnel and sales and service staff.

This standard describes materials, facility preparation, application of disinfectant to interior surfaces, and sampling of the tank water. All new storage facilities shall be disinfected before they are placed in service. All storage facilities taken out of service for inspection, repair, painting, cleaning, or other activity that might lead to water contamination shall be disinfected before they are returned to service.

### 3 RESPONSIBILITY

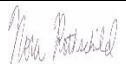

3.1 It is the responsibility of the individual employee to ensure that this procedure is followed.

3.2 It is the responsibility of the supervisors and managers to ensure that these procedures are followed by all personnel.

### 4 PREREQUISITES

4.1 Before proceeding with domestic water tank cleaning, all Barclay employees who are directly involved with domestic water tank cleanings must be trained in Hazard Communication/Right to Know Program, Personal Protection Equipment, Lockout/Tag Out Procedure, Field Personnel Chemical Handling Procedure, Chemical Spill Response Procedure, Respiratory Protection, Fall Protection, Incident Investigation and Pressure Washer Safety.

4.2 Barclay Water Management, Inc. customer's representative will work with the building management team: to coordinate scheduling of the tank disinfection and any pre-disinfection

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- B. Provide workers with appropriate equipment so they can access the domestic water tank safely and work safely.
- C. Environmental Group Hygiene Service Director is responsible for ensuring that all workers are trained in the task and have proper safety gear.

**5.2.2. Chemical Disinfection**

Sodium hypochlorite solution conforming to ANSI/AWWA B300 will be used for the disinfection. The sodium hypochlorite utilized is EPA registered. Solution is mixed at the time of use



**5.2.2.1. Filling Storage Tank with Chlorine Solution**

- The tank shall be filled with potable water and a sodium hypochlorite solution to achieve at least 50 ppm free chlorine. The chlorinated water shall remain in the tank for at least one hour at this strength.
- The drinking water supply tank shall be completely drained and refilled with potable water.
  - Total coliform and chlorine samples will be taken of the potable water in the storage tank and the tank will be placed back on line for water distribution.
  - The area where chlorinated water will be discharged will be examined. If the chlorinated water is determined to cause damage to sensitive surroundings, the chlorinated water will be neutralized with a reducing agent (Method Appendix A).

**5.3 WATER QUALITY SAMPLING AND TESTING**

After the chlorination procedure is completed and before the storage tank is placed back on line, a sample of water from the full tank which is representative of the tank water quality will be tested for the following parameters, in accordance with the latest edition of *Standard Methods for the Examination of Water and Wastewater*.

- Coliform bacteria (to include Total Coliform and E. Coli by EPA approved method, SM 9223 B, by plate count), tested by a state certified lab
- Chlorine residual
- Odor, Turbidity, pH and Temperature, if necessary

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Barclay technicians will test the water in the storage tank to ensure that no offensive odor or turbidity exists and that pH and temperature of the tank are equivalent to the city water values.

These results will be compared to the known water supply parameters to be sure that these results are typical of the water system. The chlorine residuals will be within EPA drinking water limits and match the known chlorine residual of the potable water supply.

While bacteriological testing is used to verify that the disinfection is accomplished, following sanitary procedures during the course of all work is necessary to ensure that the disinfected tank is ready for activation.

If the test is positive for coliform bacteria the situation will be evaluated by qualified personnel. Samples will be re-taken until two consecutive samples are negative, or the disinfection process will be repeated. In this case, samples will also be taken of water flowing into the storage facility to determine if coliforms are present in the potable water source. If coliform bacteria are found to be coming from the incoming water supply to the facility, the local health department will be notified.



### 5.3.1 SAMPLING

The samples will be taken from a sample tap on the outlet piping from the storage tank or from a sample tap connected directly to the storage tank. If it is necessary, technicians will sample from the top of the tank or hatch. The samples will be taken from a clean and sanitary sample tap. The samples will be placed into appropriate sample bottles according to the *Standard Methods*. Total coliform samples will be sent to a state certified lab using their provided sample bottles for 24 hour turnaround.

The operation will ensure that the sample is collected from water that has been in the storage tank. Sample equipment and methods will follow aseptic techniques for bacteria sampling. If the water in the storage tank tests positive for coliform, additional coliform tests will be performed from samples of water flowing into the tank to determine if coliforms are present in the potable water source.

The specific number of samples taken will be determined beforehand and will be based on tank volume and sample tap or hatch availability. **One sample for tanks of 10 MG or less will be taken, and an additional sample for each 10 MG volume, using another tap or hatch if available.**

*Barclay Water Management's scope of work does not include painting or epoxy coating the tank; it only covers its cleaning and disinfection. If the tank was painted or epoxy was applied, the facility will also be*

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tested for volatile organic compounds (VOC). No paint including lead in any form shall be used inside a water tank. All products which come in contact with water are NSF/ANSI approved for this application and comply with the requirements of the Safe Drinking Water Act and other federal regulations for potable water.

Barclay Water Management does not conduct underwater inspections or perform underwater cleaning of potable water storage facilities.

**5.4 DOCUMENTATION**

Barclay Water Management will provide the customer with a detailed documentation of the domestic water tank cleaning and disinfection. This documentation will include:

- 5.4.1 Written report, detailing all comments and recommendations gathered from the task of cleaning the domestic water tank.
- 5.4.2 A certificate that attests that the domestic water tank has been professionally cleaned and disinfected.

**6.0 DEFINITIONS**

**Aerosol** - A system consisting of particles, solid, or liquid, suspended in air.

**Approved** - Tested and listed as satisfactory jointly by the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH).



**Canister (Air-Purifying)** - A container filled with sorbents and catalysts that remove gases and vapors from air drawn through the unit. The canister may also contain an aerosol (particulate) filter to remove solid and liquid particles.

**Cartridge** - A small container filled with air-purifying media.

**Confined Space** - An enclosure such as a storage tank, process vessel, boiler, silo, tank car, pipeline, tube, duct, sewer, underground utility vault, tunnel, or pit that has limited means of egress and poor natural ventilation and that may contain hazardous contaminants or be oxygen deficient.

**Contaminant** - A harmful irritating, or nuisance material that is foreign to the normal atmosphere.

**Face piece** - That portion of a respirator that covers the wearer's nose, mouth and eyes in a full face piece. It is designed to make a gas-tight fit with the face and includes the headbands, exhalation valve(s), and connections for an air purifying device.

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