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Procedures for Emergency Tank Truck Bulk Water Hauling

1. Introduction

The Massachusetts Department of Environmental Protection (MassDEP) Drinking Water Program (DWP) does not regulate the tank trucks and haulers of bulk potable water. MassDEP regulates public water systems that may need bulk water delivered during an emergency. Although MassDEP DWP does not encourage this method of supplying water, trucked water may be the only viable alternative in some emergency situations. These following procedures provide basic information, which may be needed by bulk water haulers and the public water systems using the haulers during emergency tank truck delivery of potable water. Water is a basic necessity and must be available during emergencies.

Hauling water should only be considered a temporary solution to a water shortage problem. When trucking water, there are important considerations for protection of public health. Water transported following these guidelines should be potable water that is safe for human use and consumption and protects the public from water-borne illness.

MassDEP DWP recommends that someone with water treatment expertise be responsible for the operation and management of trucked potable water for use in public water supply emergencies. Usually this expertise is found in municipal water utilities, or in companies in the business of transporting liquid foods.

A public water system that plans to use trucked water in response to an emergency shall first contact the appropriate regional office of the MassDEP DWP. MassDEP will only approve of such plans under a MassDEP authorized Emergency Declaration.

The emergency supply of water must be safe and properly handled or additional problems will result. For example, a tank truck used to haul water from a stream or river to put out a fire and then used to haul drinking water without first being cleaned and disinfected could very well be the instrument causing an outbreak of such waterborne diseases as typhoid fever, gastrointestinal illness or infectious hepatitis. Therefore, it is essential that water for emergencies is obtained from a safe source, and that the tank trucks used to transport the water be carefully selected, cleaned and disinfected.

2. Tank Construction

All water contact surfaces should be stainless steel of the American Iron and Steel Institute (AISI) 300 series or corresponding Alloy Casting Institute (ACI) types that are non-toxic and non-absorbent and which under conditions of intended use is equally resistant as stainless steel of the AISI 300 series or corresponding ACI types. Interior coatings **MUST BE APPROVED** for drinking water use (NSF or AWWA standards).

All truck containers must be filled or emptied through an air gap or approved double-check valve assembly. All containers must be completely enclosed and tightly sealed, with lockable lids or hatches. Containers that are open to the atmosphere during hauling are not acceptable for use.

3. Selection of Tank Truck or Trailer

Tank trucks used for the transportation of potable water should be selected with two considerations in mind: the nature of the truck's normal use and the degree of difficulty of cleaning. Food-grade trucks **ONLY** are allowed for potable water use. Tanks previously used to transport petroleum products, toxic materials or other deleterious substances shall not be used to haul drinking water. Drinking water may not be transported or stored in tanks used for any non-food product. When using such a service, public water systems must specify that the water will be used for **drinking water purposes** and ask that a copy of the most recent water quality analysis be provided when the first load is delivered. The trucking company should also state what had been carried in previous loads and what method they used for cleaning/sanitizing the tanker if it has not been used exclusively for drinking water. Bulk water transported or stored in a tank used for a food product other than water shall comply with the following cleaning and disinfection procedures.

4. Cleaning Procedures

1. Tank trucks that haul potable water regularly from a public water system approved by the state or local health department need not have the tanks cleaned between hauls, but should be flushed with disinfected water between uses.
2. For milk trucks and military-style water trucks or trailers, tanks should be scrubbed with clean water and flushed thoroughly, then inspected for cleanliness including the absence of particulate matter such as rust and sediment (see **CONFINED SPACE ENTRY INFORMATION** below). A certified milk or juice wash station is recommended, since car washes do not provide the needed level of cleanliness. The certified wash station can also supply a wash sticker to be used as proof of proper washing.
3. The following cleaning procedures may be employed for tank trucks normally used for hauling such liquids as apple juice, vinegar, wine, yeast, linseed oil, corn syrup, peanut oil, margarine oil, etc.]
 - a. Open the drain and flush with hot water.
 - b. Steam with an emulsifying detergent until the tank is clear. Where steam is not available, circulate the detergent at a temperature of 180° to 210°F, changing the location of the nozzle to keep the interior continuously wet from top to bottom. Return the solution to the supply tank and re-circulate until clean. A certified milk or juice wash station can provide this type of wash.
 - c. Rinse the tank thoroughly with hot water and drain to an approved disposal facility (see **CONFINED SPACE ENTRY INFORMATION** below).
 - d. Tanks used for the transport of dairy products must have the interior of the tank inspected with a black lamp (ultraviolet) after cleaning and flushing as outlined above. Tanks shall not be used when odors or contaminants are found or suspected. Waste chlorine solutions should be disposed of at proper waste disposal sites so that their disposal does not result in fish kills, etc.
4. All food grade tanks shall receive an initial wash at state-approved milk (or juice) tank truck washing facility and have a current wash sticker. The following links to a list of Massachusetts Department of Public Health (DPH) Approved Bulk Tanker Washing Locations:

[List of DPH's Approved Bulk Tanker Washing Locations](#)

5. Cleaning and Sanitizing Equipment

All tanks shall be visually inspected both exterior and interior before filling. Any interiors that appear dirty or have residual grit shall be sent to the wash station for cleaning. The interior can be checked with an OVA or HNu meter and an explosive limit meter if desired. Any tank with significant readings shall be rejected.

All containers must be flushed with disinfected water, filled with water to be transported, and then tested for coliform organisms. To ensure that water-hauling equipment is adequately disinfected before using, all rust and sediment must be rinsed or flushed from the tank. The tank should then be completely filled with water containing at least 50-60 parts per million (ppm) of chlorine (see table titled "Dosages of Chlorinating Compounds for Disinfection" at the end of this section). This chlorine solution should be held in the tank for at least 24 hours. All hoses, pumps, and other equipment used in handling water, should be disinfected in the same manner.

About one gallon of liquid bleach is required in every 1,000 gallons of water to produce 50-60 ppm. Bleach should be 5.25-6 percent hypochlorite with no additives, such as scent or cleaning enhancers. To ensure adequate mixing, the bleach should be added in proportion to the water as the tank is being filled. For example: add approximately one-half gallon of bleach with each 500 gallons of water. The chlorine solution must be flushed from the tank after 24 hours in compliance with local and state standards. It should not be discharged directly into a stream because it can kill fish and plants. In some cases, the chlorinated water may be treated with citric acid or thiosulfate to remove the chlorine before discharging it. Once the tank is emptied, refill it with the water to be transported, and test for coliform bacteria. If coliforms are present, repeat the process. Initial testing must show absence of coliform organisms before the tank is used for routine water hauling. If the tank cannot be disinfected to eliminate coliforms, it must not be used. If a truck container has been previously used only for potable water and has been protected from possible contamination, it may be used without disinfection and testing for bacteria. Once the routine hauling operation has begun and precautions are in place to prevent contamination, testing does not need to be repeated during the course of the emergency response.

Chlorine residual shall be measured after filling and the truck driver shall be given a completed four-part Chain of Custody form as certification that the tank was properly filled. The required Chain of Custody information may be incorporated into the Bill of Lading to reduce paperwork. One part of the form shall stay with the filler (PWS), one part with the truck driver, one part will be presented to the recipient of the water, and one part may be forwarded to the MassDEP Drinking Water Program if required. (See SECURITY AND RECORD KEEPING below at section 10. for more information on record keeping).

DOSAGES OF CHLORINATING COMPOUNDS FOR DISINFECTION

Liquid Sodium Hypochlorite - 5.25 Percent Available Chlorine

(Household Bleach such as Clorox, Purex, Speedup, etc.)

(Manufacturer's name is for information and not to show preference)

Dosage parts per million (ppm)	50 gallons water	100 gallons water	500 gallons water	1000 gallons water	5000 gallons water
1	¾ teaspoon	1 ½ teaspoon	7 ½ teaspoon	3 ounces	13 ounces
10	7 ½ teaspoons	3 ounces	12 ounces	1 ½ pints	1 gallon
50	6 ounces	13 ounces	2 quarts	1 gallon	4 ¾ gallons
200	1 ½ pints	1 ½ quarts	2 gallons	3 ¾ gallons	19 gallons

Calcium Hypochlorite Granules or Tablets-70 percent available chlorine

(HTH, Perchloron, Sentry, etc.)

(Manufacturers name is for information and not to show preferences)

1	-	-	-	-	1 ounce
10	-	-	1 ounce	2 ounces	10 gallons
50	-	1 ounce	5 ounces	10 ounces	3 pounds
200	2 ounces	4 ounces	1 pound & 3 ounces	2 pounds & 6 ounces	12 pounds

6. Hoses

All hoses used for loading and unloading should be stored off the ground at all times and all couplings or water contact surfaces should be covered with caps or plastic coverings to protect them from contamination during storage and transportation. Hoses should be made of materials which have no influence on the taste or odor of the water and which are approved for potable water use. Examples are piping made of polyvinyl chloride (PVC), polyethylene (PE), acrylonitrile-butadiene-styrene (ABS) or other equivalent materials.

7. Water Source and Quality

For distribution to drinking water systems only a drinking water supply source that has been permitted or approved by the Massachusetts Department of Environmental Protection (MassDEP) (or by the government agency having jurisdiction for sources located outside of Massachusetts) shall be used as a source to fill tank trucks or trailers during water hauling operations. MassDEP shall approve all in-state sources of water intended for use as bottled water, bulk drinking water and/or vended water. In addition to MassDEP approval, DPH shall also approve all sources that are used for bottled water and bulk drinking water. In Massachusetts, only MassDEP approved Public Water Systems and/or owners of MassDEP and DPH approved bottled water or bulk drinking water sources operating under normal conditions may supply tanker truck drinking water. Tapping fire hydrants without the approval of the water system is a crime and violators will be prosecuted. Water tankers may only fill at designated locations approved by the water system under supervision.

All transported water must carry a free chlorine residual of at least 1 ppm at the beginning of the haul and at least 0.2 ppm free chlorine residual at the end of the haul (see dosage table on last page). Chlorine and water contact time for adequate disinfection is at least 20 minutes before the water may be used. In most cases, water can be analyzed for chlorine residual prior to use. A free chlorine residual of 0.2 ppm at the end of the haul is an indication that the water supply has been satisfactorily disinfected. Transported water should be tested for bacteriological contamination prior to use. During emergencies, this may not be practical. However, when water is hauled for sustained periods of time, the water should be regularly tested for coliform organisms. The presence of any coliform organism is an indicator of unsafe water.

Any truck not able to unload within 24 hours shall dump the load and proceed to an approved source for re-filling.

8. Confined Space Entry Information

CAUTION - Tank trucks are considered confined spaces. Residual compounds or cleaning compounds, which may be introduced, can cause a hazardous atmosphere to workers who enter for cleaning purposes. Tank truck interiors may be extremely slippery. Confined Space entry must comply with all federal, state and local standards and include the following:

1. Continuous forced ventilation to insure dilution of residual contaminants and to provide sufficient oxygen, and;
2. A standby worker attending a lifeline attached to the entry worker(s). If at all possible, these cleaning procedures should be accomplished without entry.

9. Preparing for Delivery

It is advisable for public water systems in their **emergency response planning** to establish a working knowledge of or relationship with a bulk water hauler. Water systems should be knowledgeable of the bulk water hauler's procedure to obtain, transfer, and provide bulk water prior to use of their services. There will be many different scenarios depending on the system requirements, availability of potable emergency water sources and limitations (regional and seasonal) on the water haulers.

Public water systems receiving hauled water must comply with the MassDEP Drinking water regulations and policies including Policy 92-07: Bulk Water Suppliers - Sampling Requirements and Transport Responsibility. In order to receive emergency water from a bulk water hauler the following minimum information should be provided to and/or discussed with the water hauling company:

1. Detailed directions to the water system and any access limitations to the tank.
2. Diameter of the fill pipe on the tank.
3. The thread pitch (threads per inch length) or other description of the connection point. Determine who supplies pipe or connectors necessary for the transfer.
4. Indicate whether a pump is necessary to unload the water and, if so, who will supply the pump and the amount of lift needed.
5. An estimate of the water volume that may be accommodated in the tank and the best time of day for delivery.
6. Road and bridge weight restrictions en route to the water system.
7. Contact information for last minute changes in the plan. Ideally provide a cell phone or pager number.
8. An estimated number of loads that will be required.
9. Disinfection. Please request that the transported water be disinfected according to Section 7. Water Source and Quality (above).
10. Cleaning. For each load, obtain a written description of the method used for cleaning the tank of the previous contents.
11. Record keeping, Security and Chain of Custody. For the first load, ask for a copy of the most recent water quality analysis from that source; it must be an approved public drinking water source complying with MassDEP drinking water standards. Require a Chain of Custody form with signatures at each step (See Sections 5 and 10).
12. Discuss payment terms.

10. Security and Record keeping

1. Receiving Tank

The water system's receiving tanks must be inspected to assure that water quality issues will not occur during filling and later distribution to consumers. Receiving tanks must be cleaned and disinfected using the same procedures identified for the truck containers (see Sections 4 and 5). The receiving tanks must be kept secure and protected from contamination throughout the emergency response. Comments regarding receiving tanks should be documented in written records. The customer's receiving tank must be filled through an air gap or an approved double-check valve assembly.

2. Documentation and Record-Keeping

The receiving water system is responsible for documenting and keeping proper records of the emergency trucked water operation. This includes:

1. written records of the names and contact numbers of the hauler(s),
2. the quantity delivered per trip,
3. the approved water source(s) used,
4. dates and times of delivery,
5. free chlorine residual at point of delivery, if taken
6. assurance by the hauler (or a representative of the receiving system at the fill site) that proper disinfection was performed for each trip,
7. the chlorine dose at the fill point and the free chlorine residual, if taken, after filling,
8. the completed Bulk Water Delivery Inspection Form for each tanker load received,
9. any notes regarding the receiving tank.

Items 1 through 7 should be included in the four-part Chain of Custody (or Bill of Lading). These records should be retained for at least six years for review upon request by MassDEP, State and local health agencies, haulers, or the supplying public water system.

11. Available Emergency Water Haulers

Although the transportation of bulk water is not regulated by MassDEP, the MassDEP DWP put together a list of bulk water vendors that have indicated an interest in providing bulk water to public water systems in emergency situations. MassDEP does not regulate these vendors, unless they are also registered as a public water system. These providers indicated to MassDEP an interest in being represented on this list. Any bulk water vendor interested in being added to this list should contact Program.Director-DWP@mass.gov Subject: Bulk Water. The following links to the DWP list of bulk water haulers:

[List of Available Bulk Water Haulers](#)