

# BRINE MIXING BMP FACTSHEET 13

Rev. 04/2023



## DESCRIPTION

"Salt" means salt, salt solutions, salt mixtures, or salt substitutes in solid or liquid form (brine). Salt brine includes: Sodium chloride (NaCl), Potassium chloride (KCl), Calcium chloride (CaCl<sub>2</sub>), and Magnesium chloride (MgCl<sub>2</sub>). It also includes mixtures of the same substances with abrasives such as sand, cinder, slag, etc. Any mixture that contains 1% or more of the above chlorides including sand and salt mixtures is considered a brine.

### Targeted Pollutants

Sediment	X
Nutrients	
Trash	
Metals	X
Bacteria	
Oil & Grease	
Chemicals	
Salt	X

### Objectives

Cover	X
Contain	X
Educate	X
Reduce/Minimize	X
Product Substitution	

**DO NOT DISCHARGE BRINE DIRECTLY TO A STORM SEWER SYSTEM** due to potential impacts to surface water and groundwater quality. Appropriate disposal of brine waste should be handled using federal, state and local regulations and procedures.

## GUIDELINES

Proper handling of materials during stockpiling, mixing, loading, and off-loading of brine can prevent contact of salt with storm water, thereby minimizing salty runoff and preventing ground and surface water contamination. Proper handling of brine mixtures includes:

- Making sure equipment operators fully understand how to operate and maintain hoses, sprayers, loaders and other equipment being used.
- Mixing should be conducted on a properly constructed pad as close to the storage area as possible.
- During the loading and unloading of materials it is important to anticipate any possible accidents. Therefore make sure your loading/unloading areas are able to contain possible spills or overflows.
- Understand the capacity of your tanks and application devices. A gallon of salt brine weighs over 2 pounds more than a gallon of water. Make sure the tanks you purchase are of sufficient strength to handle the additional weight.
- Ensure type of salt used is compatible with the manufacturer directions of the bring mixing equipment.

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## GUIDELINES (continued)



Brine storage facilities must meet all of the following conditions:

- Salt solutions are extremely corrosive. Ensure that the equipment that comes in contact with the brine is made of a corrosion resistant material such as high density polyethylene, stainless steel, or glass fiber.
- Liquid deicing materials, such as salt brine or magnesium chloride, should be stored in well-maintained and **labeled** storage tanks.
- **Outdoor** storage areas with 1000 gallons or more of brine must have secondary containment structures. Secondary

containment structures should be made out of materials compatible with salt and constructed with a roof.

- **Secondary containment** must be constructed to contain the larger volume of the following:
  - ⇒ 10% of the total volume of all of the containers within the containment structure, or
  - ⇒ 110% of the volume of the largest storage container within the containment structure.
- *Secondary containment structures* must allow for inspections of the tanks or containers, the timely detection of any leaks and recovery of any spillage, and the removal and proper disposal of any captured precipitation so that the minimum required capacity is maintained at all times.
- Brine stored indoors must be managed so no releases can reach drains, groundwater or surface waters. If there is a floor drain, it must be plugged unless it is connected to a holding tank, or approved in a discharge permit the facility has obtained from the Virginia Department of Environmental Quality. Your facility SWPPP should contain documentation of any permits held.



## MAINTENANCE/GOOD HOUSEKEEPING

### Brine Storage and Facility Maintenance

Many of the problems associated with contamination of local waterways stem from the improper storage and maintenance of deicing materials (salt brines). Proper maintenance of brine storage areas will keep structures in good repair and will prevent releases to the environment. Proper **maintenance** practices for salt brine operations include:

- Scheduled maintenance should be performed on the storage tanks along with fittings, valves and pumps. Any leaking or dripping should be addressed in a timely manner.
- It is recommended the brine tank be cleaned out at least once every season (spring) or when a large build-up of non-dissolvable material has begun to accumulate. Cleaned out liquids and solids will need to be collected and properly disposed of. Under no circumstance should cleaned-out liquids and solids be washed onto the ground, into a storm drain, or down into a structural Best Management Practice.
- Detailed maintenance records should be kept to ensure proper upkeep on equipment.
- Make sure equipment operators fully understand how to operate and maintain brine mixers and other equipment being used.
- Keep covers in place at all times when work is not occurring to reduce exposure of materials to rain.
- Clean loading/unloading areas regularly to remove potential sources of pollutants.
- Inspect the outside of the container and/or facility for signs of deterioration, discharges, or accumulation of salt inside diked areas. This visual inspection is intended to be a routine walk-around and include the container's supports and foundations and the facility's roof and walls.

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## SPILL RESPONSE PROCEDURES

In the event of a spill or leak, follow the appropriate Spill Response Procedures posted at your facility or refer to the BMP Factsheet Overview.

- **Survey the incident** from a safe distance. Identify the source of release and the material being released.
- Call the Ft. Belvoir Fire Department if spills are greater than 5 gallons OR greater than 5 square feet. If ANY amount of leaked material has entered a storm drain or waterway call the Ft. Belvoir Fire Department at 703-781-1800 and DPW Environmental Division (Env. Div.) at 703-806-3694.
- Provide the Safety Data Sheet of the spilled material to the spill response personnel.
- Fill out Spill Incident Report in your SWPPP.
- REPORT ALL SPILLS REGARDLESS OF SIZE TO DPW/ENV. DIV.

## REPORT SPILLS TO DPW/ENV. DIV. BY:

- E-mailing your Spill Incident Report to [zachary.d.witman.civ@army.mil](mailto:zachary.d.witman.civ@army.mil)
- Calling 703-806-3694