

SALT SHEDS & SALT DOMES BEST PRACTICES

Road salt sheds and salt domes are often overlooked corners of Public Works facilities. Until winter arrives. When snow and ice events occur, these structures become the center of intense, time-pressured activity involving heavy equipment, large delivery trucks, and workers on foot operating in proximity. The combination of urgency, congested space, limited visibility, and the physical properties of bulk salt creates a serious mix of hazards.

This Bulletin identifies the primary physical hazards associated with salt storage facilities and provides practical control measures that supervisors and employees should implement to prevent injuries and fatalities.

Struck-By & Caught-Between Hazards

Struck-by and caught-between incidents occur when a worker is hit by a moving object, most commonly a front-end loader, a salt delivery truck, a spreader truck, or material falling from a stockpile. Salt storage areas are particularly dangerous because multiple pieces of heavy equipment operate simultaneously in a confined area. Operators of loaders and trucks have significant blind spots, especially to the rear and sides. Workers on foot may be difficult to see against the background of a salt pile or inside a dimly lit shed.

Supervisors and managers should consider the following best practices:

- Establish traffic patterns and a pedestrian exclusion zone. No worker on foot should be in the active loading/unloading area while equipment is operating. Use cones, barriers, or painted floor markings to define equipment-only zones.
- Implement a spotter system. Designate a spotter when trucks are backing or when visibility is limited. Use standard hand signals or radios.
- Require ANSI Class 3 high-visibility (hi-vis) clothing for all workers on foot in or around the salt storage area.
- Ensure adequate clearance between the building walls or doors and operating equipment. Do not park a vehicle next to a stockpile or next to operating equipment. Parked vehicles reduce maneuvering room and create pinch points.

Engulfment Hazards

Engulfment is one of the most underappreciated and deadly hazards in salt storage facilities. Bulk salt can flow, shift, and collapse, burying a worker in seconds.

Supervisors and managers should consider the following best practices:

- Establish strict rules for approaching the vertical face of a stockpile. The pile can collapse as far as it is high.
- Prohibit walking on the pile, especially within 15 feet of the crest. Sinkholes can form as salt is removed from the base of a pile. A worker walking on top of the pile can fall through into a void.
- Never allow employees to work alone on or near a stockpile.

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Chemical Hazards

Road salt (sodium chloride, NaCl) and associated de-icing materials present several chemical hazards to workers, including eye and skin irritation. Front-end loaders, delivery trucks, and spreader trucks operating inside or in the doorway of enclosed salt sheds generate diesel exhaust.

Supervisors and managers should consider the following best practices:

- Post Right-to-Know signs at the salt shed identifying the chemical common name and CAS number, as required under NJ Right to Know regulations. Provide Safety Data Sheets (SDS) for all materials stored and used (sodium chloride, calcium chloride, liquid brine, etc.) in an accessible location. Ensure all workers know where to find them.
- Conduct a hazard assessment and provide the appropriate PPE. Safety glasses or chemical splash goggles when handling calcium chloride or brine. Nitrile or chemical-resistant gloves when handling calcium chloride or brine.
- Provide eyewash stations in or immediately adjacent to the salt storage area.

Salt is highly corrosive. Over time, chloride ions penetrate concrete and corrode reinforcing steel in salt shed and dome structures, leading to spalling concrete, delamination, and potential structural failure. Salt is highly corrosive to electrical systems. Wiring, conduit, junction boxes, and fixtures in salt sheds are subject to accelerated deterioration.

- Conduct regular structural inspections of salt shed and dome structures for signs of concrete spalling, cracking, delamination, or corrosion of structural elements.
- Have qualified electricians conduct regular electrical inspections of all wiring, fixtures, and equipment in the salt storage area. Use corrosion-resistant materials and enclosures rated for the environment.

Slip, Trip and Fall Hazards

Salt storage areas present numerous slip, trip, and fall hazards. Salt tracked onto floors, ramps, and walkways creates extremely slippery surfaces, especially when wet. Brine spills create slick surfaces. Working from the top of stockpiles, truck beds, or loader cabs during inspection or loading/unloading is common. Ice and snow may be present, along with poor lighting in and around the shed or dome, especially during early morning or nighttime storms.

Supervisors and managers should consider the following best practices:

- Practice good housekeeping. Clean spilled salt or brine spills from floors and walkways regularly.
- Survey lighting throughout the facility, including the interior of the shed, the loading area, and access roads. Replace non-working fixtures. Install additional lighting if needed for nighttime operations.
- Inspect and maintain access roads and the facility yard for potholes, ruts, and drainage issues that could cause vehicle instability or worker falls.

Training

Conduct a Job Safety Analysis (JSA) for all tasks performed in the salt storage area (loading, unloading, pile management, maintenance, brine operations). Train employees who work in or around salt storage facilities on the specific hazards described in this guide before the start of each winter season. Do not allow employees to operate equipment or perform new tasks until properly trained by a qualified person.

Emergency Preparedness

Develop a written emergency response plan for the salt storage facility covering engulfment rescue, struck-by incidents, chemical exposure, and fire. Ensure all workers know how to call for emergency assistance and the location of first aid equipment.