DEPARTMENT OF AGRICULTURE



BULK DRY FERTILIZER TERMINAL FACTSHEET 1
Barge Unloading and Conveyor

Background

Dry bulk fertilizer terminals are an essential resource to Minnesota's farmers and the state's economy. An estimated 3 million tons of fertilizer moves through the state's dry fertilizer terminals each year. Because barge unloading, storage, and transporting of dry fertilizer occurs on and near the shores of rivers, it is the terminal operator's responsibility to ensure agricultural chemicals, including fertilizer, do not enter and contaminate the soil, groundwater, or surface waters.

The Minnesota Department of Agriculture (MDA) regulates the use, storage, management, and licensing of fertilizers and soil/plant amendments.

This factsheet details the regulatory responsibilities of terminal operators and promotes Best Management Practices (BMPs) to ensure Minnesota's soil, groundwater, and surface waters are not adversely affected by terminal operations.

Large spills or small daily releases of dry fertilizer at bulk terminals can result in high concentrations of nutrient contamination in soil, groundwater, and/or surface water. Excessive nutrients in surface waters can result in:

- **Eutrophication** - the over enrichment of water which leads to rapid plant and algae growth
- **Hypoxia** – the cause of the "Dead Zone" in the Gulf of Mexico due to overgrowth of certain species of algae which can lead to oxygen depletion when the algae die, sink to the bottom, and decompose
- **Excessive Nitrate in Drinking Water** - which can result in serious human health issues such as Blue Baby Syndrome. For further information on the health effects of excessive nitrate in drinking water, visit: www.health.state.mn.us/communities/environment/water/contaminants/nitrate.html#HealthEffects

Know Your Regulations

It is the barge terminal operator's responsibility to know and understand all regulations related to the facilities operations. Terminal operations in violation of Minnesota Statutes and Rules may face financial penalties and expensive cleanup costs. The following statute provides a foundation for terminal operators:

Minnesota Statute 18C.201 PROHIBITED FERTILIZER ACTIVITIES. Subdivision 1. Storage, handling, distribution, or disposal: *A person may not store, handle, distribute, or dispose of a fertilizer, rinsate, fertilizer container, or fertilizer application equipment in a manner: (1) that endangers humans, damages agricultural products, food, livestock, fish, or wildlife; (2) that will cause unreasonable adverse effects on the environment; or (3) that will cause contamination of public or other waters of the state.*

For a complete list of Minnesota Statutes and Rules related to fertilizer, visit:

www.revisor.mn.gov/statutes/cite/18C

MN Administrative Rules1510.0400-1510.0408

MN Statute 115.061

Spills/Releases

Reporting Requirement for Spills
Because dry fertilizer is typically produced as a small granular material, it is difficult to prevent dry fertilizer from blowing off of equipment and conveyor. Good housekeeping is important; small releases or spills from terminal operations must be cleaned up at the end of each day and before any precipitation event that may move the fertilizer off site, into the soil or surface water, or make cleanup of the release more difficult. All spills must be immediately cleaned up and reported to the Minnesota Duty Officer at 651-649-5451 or 1-800-422-0798. Spills on soil, gravel, or other permeable surfaces must be excavated to remove all contamination.

Common Areas Where Spills/Releases Occur

Barge Unloading Area
Dry fertilizer can fall from the clam of the excavator while unloading barges, causing fertilizer to be released to the river, shore, or unloading area. To prevent releasing fertilizer from the unloading area, make sure the proper clam is selected for unloading bulk dry fertilizer. Additionally, many facilities use a tarp or apron between the barge and the unloading area to collect any fertilizer accidentally released from the clam while unloading.

Conveyors, Transfer Points and Load-ins
Selecting the right conveyor system for your facility is extremely important to prevent fertilizer spillage and dust from being released during product handling. When planning initial facility construction or existing facility upgrades, it is strongly recommended to consult with an experienced engineer to discuss conveyor solutions or alternatives that will increase efficiency, optimize performance, and reduce downtime/operating costs. Facilities transporting fertilizer by conveyor are strongly recommended to review and implement the Conveyor Equipment Manufacturers Association (CEMA) Standards (https://cemanet.org/).

Poorly designed or outdated conveyor systems can result in the release of fertilizer to the environment, increase costs to the terminal due to mechanical failure, contribute to excessive daily housekeeping needs, and result in costly violations or clean up.

Existing conveyor systems should be evaluated periodically and upgrades should focus on improving the following areas:

- **Stabilizing and Sealing** – Installation of impact cradles will reduce vibration, eliminate belt sag, provide effective sealing, and improve belt cleaning. Install alignment systems to deliver continuous adjustment and maintain a consistent belt path. Excessive conveyor speed, vibration, belt misalignment, and belt carryover can lead to fertilizer migrating off the conveyor system.
- **Dust Management** - Skirting systems, covers, transfer chutes, and dust suppression equipment can be installed to prevent the escape of fines and dust. Dust control is especially important at conveyor transfer points. Tracking – Tracking systems can help prevent wandering belts. The tracker keeps the belt in alignment with automatic corrections to reduce edge damage, prevent spillage, and maintain belt health.
- **Carryback** – Install belt cleaning systems that reduce the amount of product that can carry over to the bottom side of the conveyor. Belt cleaning systems should be installed near the conveyor discharge locations to reduce the most amount of carryback.

The Conveyor Equipment Manufacturers Association (CEMA) has printed a publication on “Belt Conveyors for Bulk Materials” (CEMA Link) that explains design advantages and industry standards. These engineering guidelines should be used to create a functional and efficient conveyor system layout.

Additional Information

ACRRA
The Agricultural Chemical Response and Reimbursement Account (ACRRA) was created to reimburse persons for costs incurred in cleaning up agricultural chemical (pesticide and fertilizer) incidents.

For more Information on ACRRA, go to: www.mda.state.mn.us/grants/disaster/acrra