

FERTILIZER STORAGE AND HANDLING

Why should you be concerned?

Plant nutrients contained in fertilizers are a critical input for crop production. Improper storage and handling of fertilizers on the farm, however, presents an environmental risk.

There are water quality concerns associated with nutrients used on the farm. When certain nutrients, particularly phosphorus, enter surface water, they stimulate the growth of algae and aquatic plants. The death and decay of large colonies of algae, called blooms, deplete oxygen in surface water which can kill fish. Blooms of certain algae can also release toxins that are harmful to aquatic life, livestock and humans if they ingest the water.

Some nutrients, such as nitrates, are highly soluble in water. Nitrates can move with excess water down through the soil past the root zone of plants and ultimately to groundwater. Elevated levels of nitrate in groundwater that is used for drinking poses a health concern because of the direct link to Blue Baby Syndrome in infants.

The federal and provincial governments have set a guideline level for the amount of nitrate that is acceptable in drinking water. The maximum acceptable concentration for public health safety is 10 milligrams of nitrate-nitrogen (NO₃-N) per litre of water (10 mg/L). This is also expressed as 10 parts per million (10 ppm). Water testing has shown that the nitrate levels in some drinking water wells are above this limit.

Soil and landscape properties such as texture, depth, permeability, slope and proximity to water play an important role in proper siting of fertilizer storage. For example, fine textured (clay) soils have a higher potential for runoff, but a lower risk of nutrient leaching. By contrast, coarse textured (sandy) soils have a lower risk of runoff and a higher potential for leaching (and possibly groundwater contamination). Storage sites located upslope from a watercourse pose a higher risk to surface water because of the increased potential for runoff.

Fertilizer handling can involve on-farm or field transfer, mixing and loading of product. These activities likely pose the greatest environmental risk because of the opportunities created for spills to occur. An emergency response plan should be in place to enable a prompt and proper response to a spill.

Section 200 of the Canadian Environmental Protection Act (1999), the Environmental Emergency Regulations, identifies 174 substances that, if they enter the environment as a result of an environmental emergency, may harm the environment and its biological diversity, human life or health or the environment on which human life depends.

For example under Schedule 1 of the regulations, any person that uses or stores in excess of: (1.) 4.5 tonnes of propane (UN1978), (CAS#74-98-6); or (2.) 4.5 tonnes of anhydrous ammonia (UN1005), (CAS#7664-41-7); must submit to Environment Canada, a Notice of Identification of Substance and Place indicating where the substance is stored, the maximum expected quantity and the size of the largest container for that substance. If the maximum capacity of individual containers exceeds these quantities, then an Environmental Emergency Plan must also be prepared.

Under Section 201 of CEPA 1999, any spill or release of a substance identified in Schedule 1 must be reported to Environment Canada immediately by the person who owns or has the charge, management or control of that substance.

What can you do?

1. Whenever possible, purchase only the amount of fertilizer that is needed for immediate application and avoid storing fertilizer on-farm longer than the immediate use period. In the event of unforeseen circumstances, having fewer fertilizers stored on-farm will decrease the potential for spills, leaks, fire exposure or contamination of the products.
2. When unused fertilizers must be stored, make sure that the storage location is secure and the risk of fertilizer escape is minimized. Choose locations where the soil and landscape conditions present the lowest risk to ground or surface water in the event of a leak or spill.
3. Handle fertilizers carefully, especially during mixing and loading. Ensure that all personal protective clothing is used as required. Have an emergency response plan prepared so everyone knows what to do in the event of a leak or spill.
4. Use this worksheet to find out if fertilizers are stored and handled properly on your farm.
5. Contact your local GO Office for additional information and support, or other appropriate agricultural extension specialist.

