proAction® Environment:

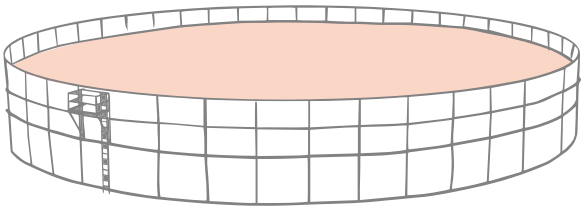
Manure Storage

In the Environment module of proAction®, farms are required to store and use manure in a manner that avoids contamination of surface and ground water and that avoids spreading manure on frozen, snow-covered or saturated ground (EN4).

Storage Type and Management

It is important that storage systems, as well as any management or transfer locations, be properly sited, constructed and maintained in order to reduce the risk of pollution to groundwater and surface water. Provincial regulations generally require the location of the storage, as well as its construction, to be overseen by licensed engineers.

On dairy farms, manure is managed in liquid, semi-solid or solid manure storage systems; many farms will manage manure in more than one of these systems. Some small farms have made a practice of spreading manure daily, but this is no longer common. Most provinces allow for the temporary storage of manure in piles in a field, but stipulate that certain conditions must be met in order to avoid nutrient loss and groundwater contamination. In addition, farms can use technologies such as anaerobic digestion, solid-liquid separation or composting to manage manure, generally in combination with liquid or solid storage.



Liquid storage systems commonly include round or rectangular steel, concrete or earthen storages with either a clay or synthetic liner. Other options include flush barns or above-ground concrete silos, though the latter is increasingly rare. Liquid manure storage structures should be sized appropriately to contain wastewater as well as rain and snow. Yard runoff should be diverted away from manure storage.

Management practices to avoid contamination of surface water and groundwater include:

- A certificate of authorization
- Annual inspection of storages for leaks and undertaking repairs when necessary
- Annual use of monitoring wells
- Secondary containment systems may be permitted for runoff water. Check local regulations.

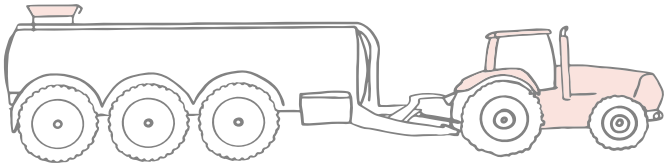
Solid manure systems include bedding packs or storage on concrete or earthen floors (depending on soil properties), with or without concrete or wood walls, and with or without a roof. The main contributors to surface water and groundwater contamination from solid manure systems are run-on and runoff, or leakage beneath the storage. Solid and liquid manure storage should be constructed to contain all liquids within the storage and not be allowed to flow over the top or have seepage escape the storage.

Management practices to avoid seepage:

- The storage should be designed by a professional engineer.
- Prevent run-on into storage with the use of berms, roofs, and sloped soil.
- Runoff from the storage should be contained or collected and managed in a separate liquid storage.

Temporary field storage refers to in-field piles or windrows of solid manure. While some provinces allow storage in fields, they have individual regulations regarding storage period and location that should be consulted prior to setting up field storage. Proper siting depends on depth to bedrock and to water table, soil type and slope, flood zones, distance to wells and watercourses. Farms making use of temporary field storage are expected to meet minimum provincial requirements. Notably, mandatory separation distances between field storage and water features are often larger than for permanent manure storage.

The main contributors to surface water and groundwater contamination from temporary field storage are run-on and runoff, or leaching. Management practices for temporary field storage include:



- Location is away from wells, surface water, tile inlets and flood-prone areas (check provincial regulations for minimum distance).
- Area should be flat (little to no slope).
- Be aware of the water table depth in relation to your soil type.
- Site is not tile-drained or drain is shut off.
- Duration of the field storage should be as short as possible (check provincial regulations for maximum storage duration).
- Field storage locations should be rotated to avoid excessive nutrient build up (check provincial regulations for minimum rotation period).
- A berm, dike or other containment is in place for run-on and runoff around the field storage.

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