

Hog Production and Water Quality: Minimizing the Risks

Hog manure contains many valuable nutrients beneficial to crop production. Proper storage and handling of liquid manure will provide maximum benefits with minimal harm to the environment.

Risks of pollution

For the pork industry in Alberta, good manure management practices will reduce the risk of polluting the environment and maintain an image of producing good food from a healthy environment.

Manure that is applied at inappropriate times or at excessive rates can affect water quality. The quality of surface water (streams, dugouts, lakes or rivers) will deteriorate if liquid manure runs into these waters as a result of over-application on land.

Nutrients from manure stimulate unwanted algal growth in water. Dissolved oxygen in the water is depleted when algae die and decompose, which often causes fish kills. Decomposing algae can also generate offensive taste and odour problems and increase water treatment costs. Consuming water with toxins from blue-green algae can be fatal to livestock, wildlife and even humans.

Drinking water from dugouts or other surface water supplies must be treated before consumption. Drinking water should be tested every year.

Water supplies contaminated with manure contain bacteria and may contain other disease-causing micro-organisms like *Cryptosporidium* and *Giardia*. These organisms are a threat to human and livestock health.

Excessive manure application rates can result in high nitrate levels in shallow groundwater. Nitrate levels above 10 milligrams per litre are unsafe for human consumption.

Protect water resources

It is important to store and handle hog manure to minimize environmental effects. Manure management is not just manure spreading.

- **Ensure sufficient long-term manure storage.** A large storage capacity allows the flexibility for applying manure when soil is dry and work schedules permit. Manure storage should be large enough to contain manure for one year and have a reserve capacity to avoid overflow during heavy rainstorms.
- **Ensure adequate land base for application.** Sufficient land should be available to receive the amount of manure produced each year. Test soil and manure for nutrient content, and apply manure at recommended rates to meet crop requirements.
- **Manage the nutrients.** Apply manure according to manure and soil phosphorus content to meet crop requirements. Since phosphorus can build up in soils over time, over-application of manure can increase phosphorus levels in runoff and contaminate water. Over-application of manure can lead to nitrate leaching and contamination of groundwater.
- **Reduce movement of land-applied manure.** Incorporate hog manure by injection or tillage during or immediately after application. This approach reduces the risk of manure runoff, minimizes odour and maximizes nutrient recovery by reducing ammonia losses. To further reduce the risk of manure runoff

*Manure spills
and over-
application can
pollute water.*

reaching water bodies, maintain a vegetated buffer zone between water bodies and the area where manure is applied. Also, do not apply manure on frozen, saturated or compacted soils and steep slopes where erosion or surface runoff is likely to occur.

- **Ensure proper construction of lagoons.** Store manure in earthen lagoons. In areas with sandy, coarse-textured soils, seal earthen lagoons with compacted clay or plastic liners to prevent leaching to groundwater.
- **Ensure proper location of lagoons.** Maximize the distance from manure lagoons to groundwater wells and surface waters. Lagoons should be downhill from water supplies.

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More information

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