

Manure Management in the Great Lakes Basin

Animal waste, called manure, has nutrients that help crops to grow, so farmers apply solid or liquid manure onto their fields.

The trend in raising livestock animals is increasing toward concentrated facilities rather than open pastures. As a result, these operations create massive amounts of manure.

When more manure is applied than crops need, rain washes excess nutrients into nearby waters. Excess nutrients can cause algal blooms that harm water quality and pose risks to human health.

Manure spreader
Credit: MPCA on Flickr



Pasture-raised pigs
Credit: MPCA on Flickr



Concentrated pig feeding operation
Credit: EPA on Wikimedia Commons



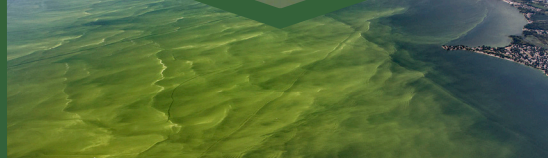
Large pig facility and lagoons
Credit: Waterkeeper Alliance Inc. on Flickr



Algal bloom in a farm drainage ditch
Credit: MPCA on Flickr



Lake Erie harmful algal bloom, 2017
Credit: Aerial Associates Photography Inc. by Zachary Blaslick via NOAA on Flickr



Rules for the various ways to store and apply manure are different for each state and province around the Great Lakes basin.

In US Great Lakes states, most manure management regulations only apply to large, permitted facilities of 700+ cows, 2,500+ hogs, and large poultry operations (except Indiana which has lower limits).

Ontario rules require facilities larger than 300 'nutrient units' to address manure creation, transfer, storage and application. Smaller facilities are not required to address manure application. (A nutrient unit is used to estimate the number of animals equal to a specified amount, in kilograms, of nutrients.)

Overall, manure management rules focus more on growing crops and do not include comprehensive nutrient runoff reduction targets for facilities of various sizes.

Water Quality Board Recommendations

to strengthen regulations and management of manure for large and medium facilities in the Great Lakes

1. Assess and coordinate the regulatory framework

- State and provincial governments should **assess the implementation of permitting rules** for manure management and identify successes and challenges for reducing nutrient runoff.
- Coordinate a **single regulatory framework** that includes:
 - Require permits for both large and medium sized facilities.
 - Harmonize soil phosphorus crop need rates for both commercial fertilizer and manure.
 - Consider banning high trajectory broadcasting of liquid manure.
 - Do not allow subdividing the number of animals in adjoining facilities to bypass permitting requirements.
 - Set up a binational clearinghouse to share information on reuse and treatment.
- Look to the **Ontario Nutrient Management Planning model** as a basis for the framework.



Manure storage structure
Credit: MPCA on Flickr



Manure pile stored near a frozen field
Credit: Putneypics on Flickr

2. Strengthen manure management rules and policies

- Require minimum acreage** of land per animal unit for manure application.
- Develop a land base registry or other tracking system to **improve reporting** on the number of animals and the amount, timing and location of manure applications.
- Establish assessments and **requirements for timing manure application**, including a ban on applying to frozen ground or before and during heavy rains.
- Require livestock facilities to **notify neighbors** when seeking new or expanded permits.
- Standardize the processes for notifying and **consulting neighboring Indigenous communities**.

3. Funding to support agriculture

- Provide federal and state funding to **assist agriculture with adopting technology** for manure reuse and treatment.
- Assist livestock operations to meet new standards and **adopt best management practices**.

4. Understanding the international and indigenous context

- Binational funding should support a **binational panel of experts** to report on international best management practices and latest technology.
- Undertake a comprehensive assessment of **impacts on Indigenous communities**.



Animal waste to renewable energy system
Credit: USDA on Flickr

The bottom line: Manure from concentrated livestock operations should be managed to better protect water quality.

Read the full report at: ijc.org/en/wqb/oversight-animal-feeding-operations-manure-management-great-lakes-basin