

MDARD Guidance for Emergency Management of Raw Milk

Introduction

The key to emergency raw milk management is being prepared. Develop a plan outlining the best management practices and contingency disposal options for your farm. Reach out to the Michigan Department of Agriculture and Rural Development (MDARD) or Department of Environment, Great Lakes, and Energy (EGLE) staff for assistance and clarification on available options may be very helpful. Having a predeveloped plan is important, since many options may take a week or more to implement. Finding disposal or alternate utilization options for raw milk is always undesirable, but having a plan can make such emergencies less stressful and reduce the risk of polluting surface waters or groundwater.

EGLE Permitted Farms

Some large farms are covered under a National Pollutant Discharge Elimination System Permit (NPDES) for Concentrated Animal Feeding Operations (CAFOs). These permits are in place to protect public health and the water quality of rivers, lakes and streams. Farms operating under this permit are not authorized to dispose of raw milk in their manure storage structure(s). The storage structure(s) on the farm are designed only to hold production area wastes and raw milk does not meet the definition. Though not authorized by the permit, in the rare occurrence when raw milk is disposed into a storage structure(s), the permittee needs to notify EGLE (per Part II.C.6.b. of the NPDES CAFO General Permit) and provide the following information within five days: 1) the non-compliance requirements in Part II.C.6.; 2) volume of raw milk disposed into the storage structure(s); 3) identification of storage structure(s) used; 4) an estimate of the remaining storage volume in used storage structure(s); 5) the reasons for the disposal; and 6) alternatives considered. EGLE will evaluate the disposal of raw milk on a case-by-case basis.

In an official state emergency, alternative options may be allowed. Requests for enforcement discretion can be submitted to EGLE via e-mail at: EGLE-EnforcementDiscretion@mi.gov. The following [website](#) contains additional information and requirements for the request.

Other Farms

Farms placing raw milk in their manure storage structures and applying to land may need a groundwater discharge permit if they are not following Generally Accepted Agricultural and Management Practices (GAAMPs). The GAAMPs for Manure Management and Utilization do not explicitly address the emergency disposal of raw milk from a farming operation. However, the section for Runoff Control and Wastewater Management cites additional resources, including the Milking Center Wastewater Guidelines document (Wisconsin USDA-NRCS, 2009). This resource states that "Dairy farms that use both manure storage and liquid manure application systems have often included milking center waste in this combined system. This is an efficient way to handle milking center waste." This document includes raw milk as a component of milking center waste. The United States Department of Agriculture's Natural Resource Conservation Service (USDA-NRCS) Agricultural Waste Management Field Handbook includes milking centers as a component of agricultural wastes (USDA-NRCS, 2020).

The Milking Center Wastewater Guidelines document further indicates that "The best way to treat milking center wastes as well as manure is to disperse them on land at an application rate that meets the nutrient requirements of the crops at a time when the crops will use the nutrients. When waste is applied or incorporated in agronomically recommended amounts, the organic matter is broken down aerobically and nutrients become available to the plants."

On-Farm Storage

Immediate application of agricultural waste may not always be practical or even desirable. This may necessitate the storage of agricultural wastes, including raw milk, in emergency situations. Environmental standards do not exist in Michigan for the storage of raw milk specifically. However, storage of any agricultural waste comingled with manure needs to meet specific criteria for construction and design standards.

The GAAMPs require agricultural waste storages to be designed and constructed to USDA-NRCS 313 Standards for Waste Storage Facility. All agricultural waste storage structures need to maintain a minimum freeboard of 12 inches (six inches for fabricated structures) plus the additional storage volume necessary to contain the precipitation and runoff from a 25-year, 24-hour storm event. Balancing the volume of raw milk into storage structures, rather than disposing large volumes into to a single storage structure, would reduce impacts by allowing for dilution of high nutrient content raw milk and decreasing the potential for odor events.

Land Application

According to the GAAMPs for Manure Management and Utilization and the GAAMPs for Nutrient Utilization, the following practices exist for the land application of agricultural waste, including raw milk. Land application of agricultural waste, including raw milk, needs to be a part of a nutrient management plan.

The nutrient management plan for the disposal of agricultural wastes should include the following components:

1. The following practices should be followed when land applying agricultural waste, including raw milk:
 - i. All fields used to produce agricultural crops should have soils sampled and tested on a regular basis (at least every three years) before fertilizer nutrients are applied.
 - ii. Take credit for nutrients supplied by organic matter, legumes, and manure or other biological materials.
 - iii. To enhance nitrogen uptake, match nitrogen fertilizer applications to the demand of the crop and the conditions of the soil.
 - iv. Use special nitrogen management practices on sandy soils and in groundwater-sensitive or well-head protection areas.
 - v. Use fertilizer recommendations, consistent with those of Michigan State University, to determine the total nutrient needs for crops to be grown on each field where agricultural waste will be applied.
2. Incorporate agricultural waste, including raw milk, into soil during or as soon as possible after application. This can be done by soil injection or incorporation within 48 hours after a surface application when weather conditions permit. Agricultural waste should not be applied to soils within 150 feet of surface waters or to areas subject to flooding unless injected or surface applied with immediate incorporation (i.e., within 48 hours after application).
3. Agricultural waste applications, including raw milk, should be managed in a manner to optimize nutrient utilization and not result in ponding, soil erosion losses, or runoff to adjacent property, drainage ditches or surface water. Application to saturated soils, such as during or after a rainfall, should be avoided.
4. Agricultural waste applications, including raw milk, to crop land with field drainage tiles should be managed in a manner to keep the agricultural waste within the root zone of the soil and to prevent agricultural waste from reaching tile lines.
5. Land application of agricultural waste, including raw milk, tends to generate odors that are not typical of agricultural operations and may be offensive to neighbors. Therefore, it is important that this agricultural waste be applied to land in a manner which reduces the possibility of odor complaints.

The following is a list of practices that can be used to reduce odor in the application of agricultural waste to land:

- i. Avoid spreading when the wind is blowing toward populated areas.
- ii. Avoid spreading on weekends/holidays when people are likely to be engaged in nearby outdoor and recreational activities.
- iii. Spread in the morning when air begins to warm and is rising, rather than in the late afternoon.
- iv. Use available weather information to best advantage. Turbulent breezes will dissipate and dilute odors, while hot, humid weather tends to concentrate and intensify odors, particularly in the absence of breezes.
- v. Take advantage of natural vegetation barriers, such as woodlots or windbreaks, to help filter and dissipate odors.

Other Considerations for the Emergency Management of Raw Milk

The biological oxygen demand of raw milk is high; consider injecting or immediately incorporating raw milk to reduce the risk of runoff to surface waters and decrease potential for odors. Do not discharge agricultural waste including raw milk or milk related products into areas that will impact groundwater or surface waters.

Do not dispose of agricultural wastes including raw milk or milk related products down drains that lead to your local municipal wastewater treatment facility. Raw milk and related products can cause issues in sewer collection systems. It is possible the wastewater treatment facility in your area is not equipped to handle large volumes of raw milk or milk products, as these products are considered high strength wastes. When high strength wastewater is unknowingly discharged to a wastewater treatment facility, it could cause significant issues to facility operations if the treatment facility is not designed to handle the waste or does not have the available capacity. However, there may be wastewater treatment facilities in your area with the potential capacity to treat agricultural waste including raw milk. A farm interested in this option should contact EGLE's Water Resources Division (WRD) (Charlie Hill at hillc@michigan.gov or Phil Argiroff at argiroffp@michigan.gov) for a list of possible wastewater treatment plants with potential capacity in your region. Once you have obtained a list of facilities, contact the wastewater treatment plant directly for additional information and potential authorization.

Do not dispose of agricultural wastes including raw milk and milk related products down drains that lead to your on-farm septic system. To minimize risks of contaminating surface waters, applications of raw milk should be made only when moderate to heavy rainfall is not expected in the near future. Tile lines should be carefully monitored when applying raw milk. If you observe discoloration or odor, please contact the MDARD Pollution Hotline at 800-405-0101 or EGLE Pollution Emergency Alerting System Hotline at 800-292-4706.

Raw milk has different nutrient properties from those of manure or other agricultural wastes; consult a certified agronomist or nutrient management planner for help in updating your management plan. The nutrient content of raw milk can be generally characterized as follows:

- Applying 4,500 gallons of raw milk per acre will provide about 200 pounds of nitrogen, 81 pounds of phosphate, and 67 pounds of potash.
- All the nitrogen and phosphorus in raw milk are considered immediately plant available. Consider making multiple applications with less volume per application to reduce the risk of nutrient losses.

The Michigan State University Extension factsheet for managing excess raw milk is an excellent resource and contains more comprehensive information on managing and utilizing raw milk on Michigan farms.

Criteria for Milk Related Products

Facilities processing milk into cheese, yogurt, whey or other dairy products must follow certain requirements when disposing of waste residues. Waste residues include any portion of the raw milk not used to make a product. These residues are generated during treatment or are left over after treatment. Waste residues must be disposed of in an environmentally compatible manner and according to applicable laws and rules. Facilities processing raw milk must follow specific conditions in their NPDES permits if they discharge their wastewater directly to rivers, lakes, or streams. Other requirements are established under the EGLE's Industrial Pretreatment Program for facilities that discharge to a wastewater treatment plant.

Resources and Assistance

Assistance is available to those with further questions. EGLE can help evaluate potential options for raw milk disposal that protect groundwater. Case-by-case assistance regarding land application options are available by contacting the EGLE-WRD Groundwater Permits Unit at thelens5@michigan.gov. MDARD can help identify utilization options that follow GAAMPs. Information and resources can be requested by contacting MDARD's Right to Farm Program at MDARD-RTF@michigan.gov.

Sources Cited

Wisconsin USDA-NRCS. 2009. Milking Center Wastewater Guidelines: A Companion Document to the Wisconsin NRCS Standard 629. https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_020247.pdf. Accessed on 4/23/20.

USDA-NRCS. 2020. Agricultural Waste Management Field Handbook. <https://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/water/?&cid=stelprdb1045935>. Accessed on 4/23/20.