

MDARD Guidance for Emergency Management of Raw Milk

Introduction

The Generally Accepted Agricultural and Management Practices (GAAMPs) for Manure Management and Utilization do not explicitly address the emergency disposal of raw milk from a farming operation. However, in the section for Runoff Control and Wastewater Management the document cites additional resources including Milking Center Wastewater Guideline(s) (Wisconsin NRCS Standard 629 companion document, 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 Natural Resource Conservation Service Agricultural Waste Management Field Handbook includes milking centers as a component of agricultural wastes.

The Milking Center Wastewater Guideline(s) 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

However, 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, any agricultural waste comingled with manure needs to meet manure storage construction and design standards. Manure storage facilities within the GAAMPs are required to be designed and constructed to United State Department of Agriculture Natural Resource Conservation Service 313 Standards for Waste Storage Facility. All agricultural waste storage structures shall maintain a minimum freeboard of twelve 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.

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. Which should include the following components:

1. The following nutrient management practices should be followed when applying agricultural waste, including raw milk:
 - i. All fields used for the production of agricultural crops should have soils sampled and tested on a regular basis (at least every 3 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 N uptake, match N fertilizer applications to the demand of the crop and the conditions of the soil.
 - iv. Use special N 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 by-products 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 manures are 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 manure 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.
 - vi. Establish vegetated air filters by planting conifers and shrubs as windbreaks and visual screens between cropland and residential developments.

Other Considerations for the Emergency Disposal 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 decreases potential for odors.

To minimize risks of contaminating surface waters, applications of raw milk should be made only when 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 1-800-405-0101 or EGLE PEAS Hotline at 1-800-292-4706

Raw milk has different nutrient properties than 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 N, 81 pounds of P2O5 and 67 pounds of K2O.
- All of the N and P in raw milk are considered immediately plant available. Consider making multiple applications with less volume per application to reduce the risk of nutrient losses.

Anaerobic digesters may be a viable outlet for raw milk based on local or facility capacity. However, exercise extreme caution if considering adding milk to anaerobic digesters as this may alter the balance of these systems.