Minnesota Pollution Control Agency

Co-Mixing Domestic or Sanitary Waste with Animal Waste

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What is co-mixing?

Co-mixing is defined for this fact sheet as the direct piping of human sewage into a manure storage basin. Human sewage is defined as any waste from toilets, bathing, laundry, food preparation operations and any floor drains associated with these activities. The term "black water" is used to describe sewage that comes from the toilet. Sewage that does not come from the toilet is called "gray water." Both gray and black waters are considered sewage and must be disposed of properly.

Co-mixing should be viewed as the **last possible alternative.** It can be done in a total confinement barn for one employee with one shower and one toilet.

Note: *This fact sheet does not address the storage of septage (the solids and liquids pumped out of a septic tank and transported by vehicle) in a manure basin.*

Health concerns

Farmers often have concerns about the potential for spread of human disease to livestock from co-mixing waste. Research shows that co-mixed waste does not represent an increased hazard to livestock[1]. There is also evidence that human pathogens are inactivated when co-mixed[2]. However, if the co-mixed waste is land applied improperly there is potential for the spread of diseases to humans and livestock diseases to other livestock.

Guidelines

When piping human waste into a manure storage basin, follow these guidelines:

- Co-mixing should be viewed as the **last possible alternative.**
- The manure basin shall be designed, constructed and operated in accordance with Minnesota Pollution Control Agency (MPCA) requirements
- Before starting to co-mix any waste, the MPCA feedlot permit must be amended to include conditions that allow co-mixing.
- Co-mixing should only be done in a total confinement barn for one employee with one shower and one toilet.
- Co-mixing should only be done is areas zoned for agricultural use.
- Co-mixing should only be done on non-dairy farms. Dairy farmers wising to co-mix should contact the Minnesota Department of Agriculture.

The co-mixed waste should be land applied in accordance with the most restrictive elements of the MPCA's Land Application of Septage Guidelines and Land Application of Manure.

Regulatory information

Plans and specifications for earthen basins must be prepared by the Natural Resources Conservation Service (NRCS) or a registered professional engineer.

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A feedlot permit must be obtained form the MPCA for any feedlot greater than 50 animal units (ten animal units in shoreland areas). The addition of sewage to manure storage structures will result in increased storage requirements. Contact the MPCA's Feedlot Unit for information on amending a feedlot permit.

Natural Resources Conservation Service cost-share assistance

NRCS design specifications do not allow for the mixing of animal and human waste in earthen basins. To obtain federal or state cost-share assistance, the waste management system must comply with NRCS specifications. Manure basins that receive human waste must be designed by a registered professional engineer to meet the NRCS specifications with the added load from the human waste. Farmers expecting funding for the construction of earthen basins should consider the extra cost of hiring an engineer if the basin is to receive sewage.

More information

The MPCA and other departments have staff that can answer your questions and help you determine whether co-mixing is a viable option for your operation. For more information, contact:

Minnesota Department of Agriculture
651-297-2200

Minnesota Pollution Control Agency
800-657-3864 or 651-296-6300

Minnesota Board of Animal Health
651-296-2942

Natural Resources Conservation Service
651-290-3672

http://www.pca.state.mn.us/programs/ists/index.html

[1]*Snowdon, J.A., D.O. Cliver and J.C. Converse. 1987. Human and Animal Wastes Mixed for Disposal to Land: Inactivation of Viruses and Parasites in a Laboratory Model.*

[2]*Johnson, J.S. and D.O. Cliver. 1985. Public Health Aspects of the Disposal of Mixed Wastes to Land*