NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

WASTE UTILIZATION
(AC.)
CODE 633

DEFINITION

Using agricultural manure, wastewater and organic by-products or other organic residues.

PURPOSE

- Protect water quality
- Protect air quality
- Provide fertility for crop, forage, fiber production and forest products
- Improve or maintain soil structure
- Provide a source of energy

CONDITIONS WHERE PRACTICE APPLIES

This practice applies where organic materials are generated or utilized. The materials include animal manure; contaminated water from livestock and poultry operations; agricultural processing residues (e.g. whey) and solids and wastewater from municipal treatment plants.

CRITERIA

General Criteria Applicable to All Purposes

A. REGULATIONS

All federal, state and local laws, rules and regulations governing waste management, pollution abatement, health and safety shall be strictly adhered to. The owner or operator shall be responsible for securing all required permits or approvals related to waste utilization, and for operating and maintaining any components in accordance with applicable laws and regulations

- Land application of municipal biosolids (sewage sludge) is addressed by the Minnesota Pollution Control Agency (MPCA) through Minnesota Rule R. chapter 7041

- Land application of industrial sludge and processing wastes are addressed as necessary in the permit process by MPCA.

- Disposal of individual sewage treatment system septage is governed by 40 Code of Federal Register Part 503.

- Land application of manure from animal feedlots is addressed by MPCA through Minnesota Rule R, Chapter 7020

- Acceptable dead animal (carcass) disposal is regulated by The Minnesota Board of Animal Health through Minn. Statute 35.82 and Minnesota Rule1719. MPCA and Minnesota Department of Natural Resources (MN-DNR) rules also apply.

- The sale of composted manure or manure sold as a soil amendment is regulated by the Minnesota Department of Agriculture (MDA).

- The use of animal parts or manure as a source of feed for other animals is regulated by the U.S. Food and Drug Administration, the MDA (Minnesota statutes 25.31 to 25.43); and the MN Board of Animal Health (Minn.Rule Chapter 1719)

B. LAND APPLICATION

All Criteria in **Conservation Practice Standard 590 (Nutrient Management)** must be followed when manure and other on-farm organic materials are used as a nutrient source for crop, forage, fiber or forest product production.

NRCS-Minnesota
September 2007

Non-farm organic materials shall be applied in a manner and at rates as prescribed by Minnesota law or permit requirements. All required plan and reporting requirements also apply.

ANALYSES

- Use of manure, wastewater and other organic by-products and residues shall be based on at least one analysis of the material during the time it is to be used. In the case of daily manure spreading, the manure shall be sampled and analyzed at least seasonally. As a minimum, the waste analysis should identify nutrient and specific ion concentrations.

- Composted manure should be analyzed, when required by Minnesota Rule 7020.0405, for pH, moisture content, particle size, NPK ratio, and soluble salt content. Composted manure used as an on-farm crop nutrient source should also be analyzed for total N, P_2O_5 and K_2O.

- Non-farm organic materials shall be analyzed for characteristics as prescribed by Minnesota law or permit requirements.

  - Biosolids (Sewage sludge) analysis, application and reporting requirements can be found in **Chapter 7041 MPCA Sewage Sludge Management Rules part 7041.1500.** Those requirements include analysis for pH, percentage of total solids; volatile solids as percentage of total solids, major plant nutrients, and concentration of various metals. The sludge generator or applicator is responsible for obtaining the analysis.

  - Where the metal content of municipal wastewater, sludge, septage and other agricultural waste is of a concern, the analysis shall also include determining the concentration of metals in the material.

Additional Criteria to Protect Water Quality

- All organic materials shall be utilized in a manner that minimizes the opportunity for contamination of surface and ground water supplies. Appropriate setbacks and buffer areas will be established and maintained on land application areas according to state or local regulations.

- Manure and agricultural waste shall not be land-applied on soils that are frequently flooded, as defined by the National Cooperative Soil Survey, during the period when flooding is expected.

- When liquid manure and wastes are applied, the application rate shall not exceed the infiltration rate of the soil, and the amount of waste applied shall not exceed the moisture holding capacity of the soil profile at the time of application.

- Agricultural wastes and organic materials shall not be applied to frozen, snow-covered or saturated soil if the potential risk for runoff exists. Consult Conservation Practice Standard 590 for winter-time restrictions related to manure and other on-farm organic by-products. Consult Minnesota Rule Chapter 7041 for winter-time Biosolids (sewage sludge) application restrictions. The basis for the decision to apply waste under these conditions shall be documented in the nutrient, manure, biosolids (sewage sludge) or other management plan.

- Dispose of mortalities in strict adherence to state rules.

Additional Criteria to Protect Air Quality

- All materials shall be handled in a manner to minimize the generation of particulate matter, odors and greenhouse gases.

- See Conservation Practice Standard Nutrient Management (Code 590) when land applying manure and other organic by-products containing nitrogen.

Additional Criteria for Improving or Maintaining Soil Structure

- Where municipal wastewater and solids are applied to agricultural lands as a nutrient source, the single application or lifetime limits of heavy metals shall not be exceeded. The concentration of salts shall not exceed the level that will impair seed germination or plant growth. Consult Minnesota Rule R. Chapter 7041 and Chapters 5, 6, and 11 of the NRCS Agricultural Waste Management Field Handbook (AWMFH) for additional details.

- Residue management practices shall be used for maintenance of soil structure.

Additional Criteria for Providing Feedstock for Livestock

- Agricultural wastes to be used for feedstock shall be handled in a manner to minimize contamination, preserve its feed value and prevent disease transmission. Chicken litter stored for this purpose shall be covered. Strict adherence to federal and state laws is critical when utilizing animal parts or manure as a feedstock.

- The feed product shall be free of harmful pathogens, pesticide residues, parasites, and heavy metal or drug residues above levels permitted by statute or regulation.

- A qualified animal nutritionist shall develop rations that utilize wastes.

Additional Criteria for Providing a Source of Energy

Use of agricultural waste for energy production shall be an integral part of the overall waste management system.

All energy producing components of the system shall be included in the waste management plan and provisions for utilization of residues of energy production identified.

Where the residues of energy production are to be land-applied for crop nutrient use or soil conditioning, the criteria listed above shall apply.

CONSIDERATIONS

Consider various uses of organic materials when developing the utilization plan (e.g. composted potting medium, biogas production, and feed).

Consider composting to reduce waste volume.

The effect of waste utilization on the water budget should be considered, particularly where a shallow ground water table is present or in areas prone to runoff. Limit waste application to the volume of liquid that can be stored in the root zone.

Agricultural wastes can contain pathogens and other disease-causing organisms. Wastes should be utilized in a manner that minimizes their disease potential.

Priority areas for land application of wastes should be on gentle slopes located as far as possible from waterways. When wastes are applied on more sloping land or land adjacent to waterways, other conservation practices should be installed to reduce the potential for offsite transport of waste.

It is preferable to apply wastes on pastures and hayland soon after cutting or grazing before re-growth has occurred.

Consider the net effect of waste utilization on greenhouse gas emissions and carbon sequestration.

PLANS AND SPECIFICATIONS

Plans and specifications for Waste Utilization shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose. The manure and other organic by-product plan will address all manure and animal by-products produced and all intended use of those materials including as appropriate energy production, refeeding, off-site transport and carcass disposal. All land application areas shall be clearly indicated on a plan map.

Where agricultural wastes are to be spread on land not owned or controlled by the producer, the waste management plan, as a minimum, shall document the amount of waste to be transferred and who will be responsible for the environmentally acceptable use of the waste.

OPERATION AND MAINTENANCE

Records shall be kept for a period of five years or longer, and include when appropriate:

- Quantity of manure and other agricultural waste produced and their nutrient content.
- Soil test results.
- Dates and amounts of waste application where land applied, and the dates and amounts of waste removed from the system due to feeding, energy production or export from the operation.
- Describe climatic conditions during waste application such as: time of day,

temperature, humidity, wind speed, wind direction and other factors as necessary.

- Waste application methods.
- Crops grown and yields (both yield goals and measured yield).
- Other tests, such as determining the nutrient content of the harvested product.
- Calibration of application equipment.
- Mortality disposal

The operation and maintenance plan shall include the dates of periodic inspections and maintenance of equipment and facilities used in waste utilization. The plan should include what is to be inspected or maintained, and a general time frame for making necessary repairs.

REFERENCES

Agricultural Waste Management Field Handbook. 1992. USDA-NRCS

Animal Mortality Composting. 1999. Mn. Dept. of Agriculture

Best Management Practices: Carcass Disposal. 2000. MPCA.

Composting: A Method of Dead Animal Disposal in Minnesota. MN Board of Animal Health

Composting Poultry Carcasses. 1994. North Central Regional Extension Publication 530.

General Guidelines for the Land Application of Industrial Sludge. 1994. MPCA.

Using Whey on Agricultural Land - A disposal Alternative. 1981. Univ. of Wisc. Extension publication A3098.

On-Farm Composting Handbook. 1992. Northeast Regional Agricultural Engineering Service publication NRAES-54.

Poultry Water Quality Handbook. 1994. Poultry Water Quality Consortium.

Manure Management Alternatives: A Supplemental Manual. 1995. MDA.

Manure Management: Practices for the Minnesota Pork Industry, MN Ext. Serv**., 1994**

Nutrient Management. Conservation Practice Standard 590. USDA-NRCS