

NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD

**COMPOSTING FACILITY**

**(NO.)**

**CODE 317**

DEFINITION

A facility for the biological stabilization of organic material.

PURPOSE

To biologically treat organic materials by composting to protect the environment, stabilize nutrients, and destroy pathogens.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies where:

1. ground and surface water resources are protected,
2. the risk of spread of disease is reduced,
3. nuisances such as flies, vermin, and scavenging animals are prevented,
4. air quality is maintained, and
5. a compost utilization plan has been developed.

CRITERIA

Federal, State, and Local Laws

The disposal of the compost shall adhere to all federal, state, and local laws, rules and regulations. It is the responsibility of the producer to secure any permits necessary to install structures and for properly managing the facility on a daily basis.

Facility Size for Composting

For dead animal and bird composting, establish the size of the composting units on the basis of known or published normal mortality rates. Dead animal or bird facilities require a two stage composting system except for the use of mini-composters used for small animals or birds during periods of less than normal mortality rates. A minimum of two primary stages shall be required for all composters. The volume of the second stage shall be site specific but is generally greater than or equal to the first stage. Size the facility as per an NRCS Design Worksheet or OSUE Fact Sheet for the appropriate species.

To decrease the chances of fire, the bin walls shall be no more than 5 feet high, and static piles or windrows shall be no more than 7 feet at the peak.

Structure Design

Material and structural design of the composting facility shall conform to the requirements of NRCS, Standard 313, Waste Storage Structure. Details of material requirements shall be determined by the designer on a case by case basis.

Dead bird composters shall have the following requirements:

- A. A roof to provide year round operation and to control rain water and percolation. Design the roof for applicable wind and dead loads for agricultural buildings.
- B. A concrete floor that is designed for the anticipated loads.
- C. All posts and planks shall be pressure-treated and all metal shall be galvanized.

#### Soils

All composting facilities shall be located a minimum 3 feet above the high water table. Animal composting facilities without a roof shall be located on low permeability soils. A solid base of concrete or gravel with a filter fabric base shall be required for the composting area unless it can be kept dry or free of ruts. Heavy use areas such as access to the compost area shall be managed to prevent rutting and ponding. It is recommended the access be gravel or concrete.

#### Odor and Scavenging Animals

Locate the composting facility where movement of odors toward neighbors will be minimized. Buffer areas, vegetative screens, and natural landscape features can help minimize the effects of odor.

Static pile and windrow composting shall require two feet of cover over dead carcasses. Bin composting shall require one foot of cover over the dead carcasses.

#### Pile Configuration

Windrows and static piles should be triangular to parabolic in cross-section. Windrows and static piles shall be aligned to avoid accumulation of precipitation. Positive drainage shall be maintained on the pad parallel to the windrows. Windrows and static piles shall be rounded to shed rainfall.

#### Runoff

Runoff from the outside drainage areas shall be diverted away from the facility. The composting facility should not be located on a floodplain unless protected from inundation or damage from a 25-year, 24-hour flood event. The facility must remain high and dry.

Leachate and runoff from a dead animal composter without a roof shall be collected, stored and/or utilized as per the operation and maintenance plan. It shall be required to control the 25 year, 24 hour rainfall event within the composting, storage and utilization area without discharge to the waters of the state or from the landowner's property.

## CONSIDERATIONS

### Location

Composting facilities should be located as near the source of organic material as practical with consideration given to:

- (a) The location of neighboring dwellings and how they will be affected by prevailing winds.
- (b) Location of ingress and egress so as not to interfere with traffic flow or utilities.
- (c) Location of the access for easy loading and unloading of compost.

The area surrounding the composting facility will be subject to a high traffic load during loading, mixing, and unloading. This area must be a well-drained stable area. It is recommended that this area be concrete or gravel with filter fabric for ease of clean up and stability.

### Biosecurity

It is very important for anyone working on or about poultry or animal farms to follow biosecurity techniques to prevent the spread of diseases. Biosecurity measures should be followed when working in or around poultry or animal buildings and where animals, manure, debris, and poultry manure exist. If possible, entry into poultry houses or animal facilities should be avoided. However, if entry is necessary, the farm operator's permission is required.

Scavenging animals can be a problem with static pile or windrow composting. The 2-foot cover requirement is critical. It will be necessary to use additional measures to prevent scavenging animals if a problem occurs.

In order for proper pathogen kill to occur, it will be necessary to maintain a temperature of 135 degrees F for a minimum of three days within the active composting area. Other than testing, monitoring temperatures is a good indicator of pathogen kill.

## PLANS AND SPECIFICATIONS

Plans and specifications for dead poultry or animal composting shall be in keeping with this and other referenced standards. They shall be site specific and describe the requirements for applying the practice or practices to achieve their intended purpose. All standard drawings shall be accepted for this practice provided that they comply with this standard and are approved by a Registered Professional Engineer in Ohio, or the Natural Resources Conservation Service, or are issued by the Extension Service. For standard drawings that originate in other states, special attention should be paid to the structure's ability to handle the snow or wind loads required in Ohio. If no agricultural building code exists, a minimum snowload of 20 pounds per square foot shall be used.

## OPERATION AND MAINTENANCE

A written operation and maintenance plan for the composting component of the animal resource management system is required for this practice. As a minimum, the operation and maintenance plan shall include:

1. The mix proportions, moisture requirements, and materials to be used.
2. The design sheet used to size the facility.
3. The process to be followed in loading the bins, windrows, or static piles.
4. Temperature monitoring requirements.
5. The aeration or turning schedule.
6. Frequently encountered mistakes in composting and brief "fix it" scenarios.
7. Utilization Plan as per the Waste Utilization Standard, 633.

## REFERENCES

Murphy, D.W. and T.S. Handwerker, Preliminary investigation of composting as a method of dead bird disposal, Proc. National Poultry Waste Mgt. Symp., Columbus, Ohio; Apr 1988.

Murphy, D.W., Composting of Dead Birds, University of Maryland, Cooperative Extension Service; Handout. (Unpublished).

Murphy, D.W. and L.E. Carr, Composting Dead Birds, Fact Sheet 537, Cooperative Extension Service, University of Maryland System.

Delaware Cooperative Extension Service, Delaware Two-Stage Composter; Construction Details, 1988.

Maryland Cooperative Extension Service, Maryland Free-Standing 2-Stage Composter; Isometric Poultry Composting Shed. 1988.1.

Murphy, D.W. Video. Composting Poultry Mortality. University of Maryland. Video Resource Center, 0120 Symons Hall, College Park, Maryland. 20742.

USDA, Soil Conservation Service, Animal Waste Management Field Handbook, Chapter 10, pages 58 - 62.

Fulhage, C., Water Quality Publication # 225, Composting Dead Swine, Extension Publications, University of Missouri-Columbia, 2800 Maguire, Columbia, MO 65211.

Arkansas Cooperative Extension Service, Suggested Composter Size, University of Arkansas, 2201 Brookwood Drive, P.O. Box 391, Little Rock, Arkansas 72203. (501) 671-2000

Arkansas Cooperative Extension Service, Recommended Operating Procedures (for) Swine Composting (Recipe), University of Arkansas, 2201 Brookwood Drive, P.O. Box 391, Little Rock, Arkansas 72203. (501) 671-2000

Arkansas Cooperative Extension Service, Basic Operating Procedures, University of Arkansas, 2201 Brookwood Drive, P.O. Box 391, Little Rock, Arkansas 72203. (501) 671-2000

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.