

NATURAL RESOURCES CONSERVATION SERVICE
VIRGINIA ENGINEERING TECHNICAL NOTE 316 (TN-316)
ANIMAL MORTALITY COMPOSTING

The original Virginia Engineering Technical Note 316 – A Review of Animal Mortality Laws in Virginia was released in February 2009. Since that time, the Virginia Department of Environmental Quality has released new guidance for composting routine animal mortality (Waste Guidance Memo No. 02-2009, On-Site Composting of Routine Animal Mortality). Under this guidance, farmers that have animal mortality that is generated, composted, and utilized on the farm are exempt from the requirement to have a permit for mortality composting.

Since 2009, there has also been some changes in the laws that address composting activities for mortality and non-mortality composting facilities in situations other than those covered in the Waste Guidance Memo. These have a new numbering sequence in the Virginia Administrative Code. Virginia Engineering Design Note 5 – Summary of Virginia DEQ Regulations on Composting and Mortality, dated February 2012, contains information on the current status of Virginia laws and regulations.

Virginia Engineering Technical Note 316 has been renamed as Animal Mortality Composting. This information is a brief summary of information needed for on-farm mortality composting activities in Virginia.

GENERAL INFORMATION ON REGULATORY REQUIREMENTS

Waste Guidance Memo No. 02-2009 provides criteria for the siting and operation of on-site mortality composting in such a manner as not to create an open dump, hazard, or nuisance.

This guidance applies to the on-site composting of routine livestock, poultry, and aquaculture mortality. In cases of epidemic or mass culling, composting may be a viable mortality management option; however, such operations are outside of the scope of this policy. In those cases, the State Veterinarian shall be contacted and disposal shall be in accordance with the appropriate state regulations and requirements.

Criteria for on-site composting:

- Animal carcass composting shall only be on the property which is used for the raising or husbandry of animals
- Composting of carcasses should be initiated within 48 hours of death and prior to creation of an open dump, hazard, or nuisance situation.
- Separation distances are addressed in Virginia Engineering Design Note 2 – Separation Distances for Waste Storage Facilities.
- Compost piles shall be constructed, maintained and sheltered such that the compost materials cannot be dispersed by wind and rain, and combustion and fire are prevented.

- A composting facility will be required to obtain a storm water discharge permit if they are deemed a significant source under the provisions of 9VAC25-31-120 A.
- **No more than a total of 1/3 acre (14,520 SF) of compostable materials are stored on-site.**
- The compost pile does not exceed 12 feet in height above base grade.
- Composting windrows or piles should be constructed to meet the following criteria:
 - Base layer of sufficient porosity for air circulation and depth. (24" required by NRCS);
 - Cap layer of sufficient thickness (18" minimum) to provide insulation for the process and prevent odors and scavenging animals;
 - Designed with a shape and depth to shed precipitation; and
 - Situated such that runoff from the compost site does not flow directly into any surface water body.

Recordkeeping is very important and records should be kept for 3 years. Virginia requires pathogen destruction to be confirmed by documenting that the interior of the compost pile (designed in the manner described above) achieves a temperature of 131 degrees Fahrenheit for three (3) consecutive days.

- For a bin compost system, NRCS requires that the average temperatures in the compost exceed 130° F for at least 5 days during both the primary and secondary compost cycles. Temperatures must exceed 130° F for three consecutive days within this time period.
- For a windrow, static pile, or large animal bin-type system, the temperature of the compost must be above 130° F for 15 days. Temperatures must exceed 130° F for three consecutive days within this time period.

Finished compost shall be used as fertilizer and be land applied on the farm at agronomic rates.

Previously composted materials can be a worthwhile bacterial accelerant when added to a compost pile. However, recurrent used of the same material in composting to avoid land application or disposal of solid waste will not be allowed. **At least 75% of any material accumulated and/or composted must be used within one year of accumulation or it may become subject to regulation as a solid waste.**

SITING

In addition to the siting requirements listed in Virginia Engineering Design Note 2 – Separation Distances for Waste Storage Facilities, 9VAC20-81-320 Siting Requirements has some general information for locating an animal mortality facility. For sites regulated under the Waste Guidance Memo, these are suggestions rather than requirements.

- Facilities need to be adjacent to or have direct access to roads that can withstand the anticipated load limits.
- Sites should have sufficient room to minimize traffic congestion and allow for safe operation.

DESIGN/CONSTRUCTION

Some additional information on composter design is found in 9VAC20-81-330 Compost Facilities.

1. Virginia is a zero discharge state. Leachate from a composting facility must be controlled, preferably by recirculating it within the facility. The other method would include directing the leachate to a waste treatment area. However, a leachate problem on the site of a composter is an indicator of composting problems that need to be addressed.
2. For windrow composting sites, there needs to be consideration of:
 - a. Springs, seeps, and other ground water intrusions;
 - b. Gas, water, or sewage lines under the active areas; and
 - c. Electrical transmission lines above or below the active areas.
3. Roads should be of all-weather construction.
4. Auxiliary power, standby equipment, or contingency arrangements need to be part of the O&M plan.
5. NRCS Conservation Practice Standard *Composting Facility (Code 317)* requires the use of the 25-year, 24-hour storm event to design water control features for composters. This is a more conservative (larger) event than the 10-year, 1-hour storm frequency required by State policy.

CLOSURE

Closure requirements are listed in 9VAC20-81-360. This plan is required for permitted facilities. The Waste Guidance Memo does not require a closure plan for the sites that do not require a permit.

1. Closure plan and amendment of plan.
 - a. The operator shall have a written closure plan. This plan shall identify the steps necessary to completely close the facility.
 - b. This plan can be amended at any time during the life of the facility.
 - c. Other requirements are listed in the DEQ regulations.
2. Closure standards. The facility shall be closed in a manner that minimizes the need for further maintenance, and controls, minimizes or eliminates the post-closure escape of uncontrolled leachate, surface runoff, or waste decomposition products to the ground water, surface water, or to the atmosphere. This shall be done to the extent necessary to protect human health and the environment.

- a. Remove or decontaminate all waste residues, contaminated containment system components (liners, etc.), contaminated subsoils, and structures and equipment contaminated with waste or leachate.
 - b. After all reasonable efforts have been made to remove or decontaminate the site, if the subsoils cannot be practically removed or decontaminated, the operator shall install a water monitoring system and make provisions for monitoring.
3. The facility shall be closed within six months of receiving its final volume of wastes.

REFERENCES

1. On-Farm Composting Handbook, Northeast Regional Agricultural Engineering Service, Cooperative Extension, NRAES-54, 1992.
2. USDA-Natural Resources Conservation Service. National Engineering Handbook – Part 650, Engineering Field Handbook.
3. ACI 360R-06 – Design of Slabs on Grade
4. USDA-Natural Resources Conservation Service. National Engineering Handbook, Part 637, Chapter 2, Composting
5. NRCS GM 420 Part 401 – Cultural Resources
6. “Composting for Mortality Disposal on Hog Farms.” Virginia Cooperative Extension. Publication 414-020, 2003.
7. Virginia Department of Environmental Quality. Waste Guidance Memo No. 02.2009, On-Site Composting of Routine Animal Mortality.
8. Virginia Administrative Code.