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## OPERATION AND MAINTENANCE PLAN EMERGENCY ANIMAL MORTALITY MANAGEMENT\_COMPOSTERS

Composters for emergency animal mortalities process carcasses along with an organic carbon source producing a biologically stable organic material. Although emergency facilities are infrequently needed and needed only to address the emergency, the estimated life span of the installation is at least 15 years. Pre-emergency awareness and planning are important for efficiently responding to an emergency situation.

### GENERAL REQUIREMENTS

#### Pre-emergency Planning

- Identify location and equipment necessary for emergency operations.
- Identify volume and potential sources of carbonaceous material required for the compost mix.
- Become familiar with composting methods and procedures.

*Composting is a biological process and it is expected that some trial and error in mix proportions, timing, etc may be necessary in the start-up of the facility and as the composition of the raw materials vary.*

#### Operation

- **Compost Mix.** Loading or layering of carcasses and raw materials shall be performed to achieve the desired mix proportions. The initial compost mix shall result in a carbon-to-nitrogen (C:N) ratio between 25:1 and 40:1. Add bulking materials to the mix as necessary to enhance aeration. The bulking material may be the carbonaceous material used in the mix or a nonbiodegradable material that is salvaged at the end of the compost period. Make provision for the salvage of any nonbiodegradable material used in the composting process.
- **Moisture Level.** The moisture content of the blended material at the start of the composting process should be approximately 65% and should be maintained between 40% and 65% during the composting process. Additional water if needed during the composting process shall be added in a manner that minimizes runoff. Any runoff shall be captured and treated.
- **Temperature.** Monitor temperature with a probe or sensors. The facility shall have the capacity to maintain the compost temperature greater than 130° F for at least 5 days as an average throughout the compost mass followed by a compatible time for secondary composting. For a windrow system, the temperature of the compost shall be above 130° F for 15 days with a minimum of 5 turnings of the compost.

If temperature falls significantly during composting period, odors develop, or if material does not reach operating temperature, investigate piles for moisture content, porosity, and

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thoroughness of mixing. Compost managed at the required temperatures will favor destruction of pathogens, plant diseases and weed seeds.

Closely monitor temperatures above 165 degrees Fahrenheit. Take immediate action to cool piles that reach a temperature of 185 degrees Fahrenheit.

- **Aeration.** Aerobic conditions are to be maintained uniformly through the composting material. Mechanical aeration, if required, should be frequent enough to maintain aerobic conditions.
- **Composting Period.** Continue the composting process long enough for the compost mix to reach the stability level where it can be safely stored without undesirable odors. It shall also contain the desired characteristics for use such as lack of noxious odor, desired moisture content, and a uniform and friable texture. The compost period shall involve primary and secondary composting to achieve the desired characteristics.
- **Pathogens.** When a management goal is to reduce pathogens, the compost shall attain a temperature greater than 130 degrees Fahrenheit for at least five days as an average through the compost mass.
- **Vectors.** Flies, rats and birds may be attracted to raw compost. Mosquitoes may reproduce where standing water is present. To minimize vector problems, reduce exposed storage areas, turn piles frequently, eliminate standing water and keep the area clean. Cover carcasses with a minimum of 18 inches of carbonaceous material to avoid scavenges and odors.
- **Testing Needs.** Test compost material for carbon, nitrogen, moisture, and pH if compost fails to reach desired temperature of if odor problems develop. The finished compost material should be periodically tested for constituents that could cause plant phytotoxicity as the result of application to crops.
- **Use of Finished Compost.** Spread finished compost according to NRCS CPS Code 590, Nutrient Management, or provide for other acceptable means of disposal.

### Maintenance

- Maintain all travel and working surfaces in a smooth and graded condition, free of ruts and depressions that can collect and hold water.
- Maintain all electrical and mechanical equipment in good operating condition by following electrical codes and manufacturers recommendations. Inspect and repair ground rods, switches, and wiring.
- Fences, railings, and/or warning signs must be maintained to provide warning and prevent unauthorized entry.

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- Inspect and maintain runoff control structures and practices.
- Inspect and maintain all structures at mixing, storage, composting and curing areas. Repair damaged or deteriorated components.
- Keep records throughout the composting process and of disposal operations, as required.

### Safety

- Poison gasses are often heavier than air and may be trapped in closed waste storage structures. Do not allow human entry into any closed structure without safety equipment, including ladders and breathing apparatus. Maintain all lids, grates and shields on openings to underground or enclosed structures.
- Bioaerosols are organisms or biological agents that can be transported through the air and under certain conditions might cause health problems if inhaled in sufficient quantities. Workers who are taking immune suppressant medications, are insulin-dependent diabetics, or who have severe allergies should be provided with respirators.