

DEPARTMENT OF AGRICULTURE AND RURAL DEVELOPMENT

ANIMAL INDUSTRY DIVISION

BODIES OF DEAD ANIMALS

Filed with the Secretary of State on June 2, 2011

These rules become effective immediately upon filing with the Secretary of State unless adopted under sections 33, 44, or 45a(6) of 1969 PA 306. Rules adopted under these sections become effective 7 days after filing with the Secretary of State.

(By authority conferred on the department of agriculture and rural development by sections 15 and 27 of 1982 PA 239, MCL 287.665 and 287.677)

R 287.651, 287.651a, and R 287.655 of the Michigan Administrative Code are amended, and R 287.657 is added to the Code as follows:

R 287.651 Definitions.

Rule 1. As used in these rules:

- (a) "Afterbirth" means fetal fluids, placenta, and fetal mortality.
- (b) "Anaerobic digestion" means the biochemical conversion of complex organic materials, such as manure, into methane and other byproducts in the absence of oxygen.
- (c) "Animal process operation" is a place where animals or animal tissues may accumulate in a non-production (no multiple-day care and feeding) setting such as a butcher shop, slaughter facility, taxidermist, road commission, veterinary clinic, or market collection point.
- (d) "Animal production operation" generally described as a "farm," means an operation where animals under common ownership or management receive care and feeding for the production of food, co-products, or pleasure.
- (e) "Biogas" means the gaseous mix of methane, carbon dioxide, and other trace gases including hydrogen sulfide, ammonia, and hydrogen.
- (f) "Digestate" means the mixture of liquid and solid material (slurry) remaining after the digestion process is completed. Digestate is commonly known as effluent.
- (g) "Finished" compost means ready for final utilization as a soil amendment, plant fertilizer, or rooting medium. Finished compost shall be dark, humus-like with little odor, and free of any animal soft tissue.
- (h) "Forced aeration" means air is pushed or pulled through compost using a blower and perforated ductwork (within the compost or in the floor or walls surrounding the compost) to speed the composting process.
- (i) "In-vessel" means composting within a container, using forced aeration by mechanical turning (rotating drum).
- (j) "Leachate" means any liquid that may drain from compost.
- (k) "Mesophilic" means operating the anaerobic digester in the temperature range of 95 degrees Fahrenheit to 105 degrees Fahrenheit.

- (l) "NRCS" means Natural Resources Conservation Service of the United States Department of Agriculture.
- (m) "Passive aeration" means the movement of air through a compost pile brought about by the pull that is created when warm air exits the top and side of the pile and air from or through other parts of the compost is drawn in to take its place. Exiting air contains gases, moisture, and heat.
- (n) "Restaurant grease" means animal or vegetable oils and fats that have been used or generated as a result of the preparation of food by a restaurant or other establishment that prepares or cooks food for human consumption. Restaurant grease does not include trap grease, interceptor grease, or other contents of grease traps or interceptor traps.
- (o) "Site" means the location on premise where composting occurs.
- (p) "Specifically designed container truck" means a truck or other vehicles designed or modified and constructed to haul individual leak proof containers.
- (q) "Surface waters" means the definition in R 287.651(1)(o)(i) to (viii).
- (r) "Thermophilic" means operating in the temperature range of 125 degrees Fahrenheit to 135 degrees Fahrenheit.
- (s) "Trap grease," also referred to as "interceptor grease," means any restaurant grease

R 287.651a. Adoption of standards by reference.

Rule 1a. The following standards are adopted by reference in these rules and are available for inspection, and may be obtained without cost, from the Michigan Department of Agriculture and Rural Development, Animal Industry Division, P.O. Box 30017, Lansing, Michigan, 48909. The rules may also be skimmed, filtered, separated, or otherwise captured from wastewater before discharge.

(t) "Waters of the state" means all of the following, but does not include drainage ways and ponds used solely for wastewater conveyance, treatment, or control:

- (i) The Great Lakes and their connecting waters.
- (ii) All inland lakes.
- (iii) Rivers.
- (iv) Streams.
- (v) Impoundments.
- (vi) Open drains.
- (vii) Other surface bodies of water within the confines of the state.
- (viii) Groundwater.

obtained at no cost from the sources listed below:

(a) The Natural Resources Conservation Service 635 Vegetated Treatment Area Conservation Practice Standard, Date October, 2009, is available at <http://www.nrcs.usda.gov/technical/Standards/nhcp.html> or Natural Resources Conservation Service, Attention: Conservation Communications Staff, P.O. Box 2890, Washington, DC 20013.

(b) The Natural Resources Conservation Service 313 Waste Storage Facility Conservation Practice Standard, November, 2005, is available at <http://www.nrcs.usda.gov/technical/Standards/nhcp.html> or Natural Resources Conservation Service, Attention: Conservation Communications Staff, P.O. Box 2890, Washington, DC 20013.

(c) The Michigan Animal Tissue Composting Operational Standards, Michigan State

University and Natural Resources Conservation Service, September, 2006, is available at <https://www.msu.edu/~rozenboom/> or Swine Nutrition & Production Management, 2209I Anthony, Department of Animal Science, Michigan State University, East Lansing, MI 48824-1225 or the Michigan Department of Agriculture and Rural Development, P.O. Box 30017, Lansing, Michigan 48909, or [http://www.michigan.gov/documents/mda/BODA\\_Composting\\_Operational\\_Standards\\_216592\\_7.pdf](http://www.michigan.gov/documents/mda/BODA_Composting_Operational_Standards_216592_7.pdf).

(d) The Natural Resources Conservation Services, Field Operations Technical Guide Anaerobic Digester (NO) 366, October 2010, is available at <http://www.nrcs.usda.gov/technical/Standards/nhcp.html> or Natural Resources Conservation Service, Attention: Conservation Communications Staff, P.O. Box 2890, Washington, DC 20013.

#### R 287.655 Composting.

Rule 5. (1) Unless otherwise approved by the director, composting methods shall accommodate only normal daily natural mortality under common ownership, and be designed with capacity for both active composting and curing.

(2) Active composting consists of all of the following:

- (a) Organic materials.
- (b) Aeration and moisture management.
- (c) Heat production.
- (d) Repeated temperature patterns.

(3) Bulking agent is a material added to compost to provide nutrients, decrease bulk density, promote aeration, and remove heat. Bulking agent also means amendment, medium, carbon source, and feedstock. Any of the following may be used as compost bulking agents:

- (i) Dried grass.
- (ii) Hay.
- (iii) Chopped straw.
- (iv) Chopped corn stover.
- (v) Chopped bean stover.
- (vi) Unpainted wood chips that do not have additives or preservatives.
- (vii) Unpainted shredded bark that does not have additives or preservatives.
- (viii) Sawdust which is unpainted and which does not have additives or preservatives.
- (ix) Leaves.
- (x) Grass clippings.
- (xi) Grain hulls.
- (xii) Poultry litter or litter cake.
- (xiii) Animal manure solids.
- (xiv) Waste animal feeds.
- (xv) Finished or cured compost.
- (xvi) A mixture of any of the recommended bulking agents listed in subdivisions (i) to (xvii) of this subrule.
- (xviii) Other, as approved by the director.

(4) Curing is the period of time after active composting for further decomposition at a slow rate. Less intense heat production and lower temperatures will be sustained during

curing.

(5) In response to a written request, the use of composting methods other than as specified in this rule and the Michigan Animal Tissue Composting Operational Standard (Michigan State University and NRCS), as adopted by reference in R 287.651a, may be permitted by the director.

(6) One or more of the following methods of composting shall be used and passive, forced, and (or) active aeration may be used with each method:

- (a) Open pile.
- (b) Bin.
- (c) Windrow.
- (d) In-vessel.
- (e) Other, as approved by the director.

(7) The composting structure shall be constructed and maintained to withstand structural damage caused by active composting and equipment used for compost aeration and movement. Any structural damage to the structure shall be repaired before it is used again for active composting.

(8) The site for composting shall maintain the following minimum isolation distances:

- (a) Two hundred feet from waters of the state as defined in R 287.651(1)(o)(i) to (viii).
- (b) Two feet above the seasonal high water table, as defined by NRCS 313 Waste Storage Facility Conservation Practice Standard, and adopted by reference in R 287.651a.
- (c) Two hundred feet from any well.
- (d) Two hundred feet from nearest non-farm residence.

(9) The composting site shall be selected and/or graded to direct surface runoff away from the compost site and prevent effluent from contacting surface waters.

(10) For an animal production operation accumulating more than 20,000 pounds of mortality annually or any animal process operation, regardless of composting method, composting shall be done in compliance with the following:

(a) All active, finished, curing, and cured compost at the site shall be located in or on, 1 or both of the following:

(i) On an improved surface, as defined by NRCS 313 Waste Storage Facility Conservation Practice Standard, and adopted by reference in R 287.651a, (see section on "Liners") and designed to withstand anticipated loads from the equipment used for placement, aeration, and movement of compost.

(ii) In an in-vessel system.

(b) All effluent generated and runoff events during active composting and curing, not retained in the compost, shall be managed in a manner consistent with all applicable federal, state, and local laws and with at least 1 of the following:

(i) Reintroduced into compost piles.

(ii) Collected and stored in a storage facility with a liner that meets the criteria defined in NRCS 313 Waste Storage Facility Conservation Practice Standard and adopted by reference in R 287.651a, and utilized for crop production in accordance with the recommendations in Generally Accepted Agricultural Management Practices for Nutrient Utilization, January 2010, as established in 1981 PA 93, MCL 286.471, and published at [http://michigan.gov/mda/0,1607,7-125-1567\\_1599\\_1605-70361--,00.html](http://michigan.gov/mda/0,1607,7-125-1567_1599_1605-70361--,00.html).

(iii) Diverted to a treatment system meeting the criteria in NRCS 635 Wastewater Treatment Strip Conservation Practice Standard, and adopted by reference in R 287.651a.

(iv) Other methods, as approved by the director.

(11) For an animal production operation accumulation less than 20,000 pounds of mortality annually, composting may be done without a structure or vessel provided the following conditions are met:

(a) A new composting site is selected for use annually. The following shall apply:

(i) Use of the current year's site may continue until the compost is finished, but not more than 2 years from the time of the first dead animal addition, at which time the finished compost must be disposed of in accordance with Rule 5(10).

(ii) No new tissue is added to a site after 1 year from the first dead animal addition.

(iii) A new site may be immediately adjacent to a previous site.

(iv) A previous site is not reused within a 10-year period of time.

(b) A new site is on land used in crop rotation.

(c) A new site is not directly above subsurfacing drains or tile.

(12) Active composting shall maintain all of the following:

(a) Carbon-to-nitrogen ratio minimum of 15:1.

(b) Moisture content, range of 40% to 60%.

(c) At least 1 reading of a temperature greater than 130 degrees Fahrenheit after the initiation of a batch with the temperature measured at a depth of 1 foot into the compost once weekly. A temperature reading shall be conducted twice per week for a rotating drum, continuous flow, in-vessel system.

(i) The following conditions shall be met for active composting:

(A) Composting temperature may remain in a range of 100 degrees Fahrenheit to 150 degrees Fahrenheit for several weeks.

(B) Properly timed aeration and (or) moisture alterations.

(ii) Each batch of animal tissue compost must undergo a minimum of 3 heat cycles of active composting before final utilization.

(iii) A static compost pile may be aerated passively, by periodic agitation, mixing or turning, or by using forced aeration.

(13) A person shall manage the composting process in compliance with the guidelines described in the Michigan Animal Tissue Composting Operational Standards, as adopted by reference in R 287.651a, and all of the following:

(a) The composting process shall be managed in batches. Composting shall involve controlled active and curing phases, temperature-based aeration, and a planned end point of not more than 2 years from the time of the first dead animal addition to a batch. Complete curing is not required. Compost is considered finished based on its planned use as a soil amendment or rooting medium, and its aesthetic acceptability. In the context of animal tissue composting, finished and cured are different terms. Compost shall be finished; however, complete curing is not required.

(b) Dead animals shall be added to the compost batch within 24 hours following death.

(c) Afterbirth may be stored in closed impervious containers and shall be added to the batch within 3 days of initiating container use.

(d) Initially, the compost pile or windrow shall be constructed with a base of dry absorbent bulking agent that is at least 1 foot deep before any dead animal is added for composting. A base depth of 2 feet shall be used for dead animals of greater than 600 pounds body weight.

(e) Dead animals shall not be placed in the pile or windrow closer than 6 inches to any edge or wall.

(f) Dead animals shall be covered by a minimum of 6 inches of bulking agent and not be exposed.

(g) Pieces of hide remaining at the completion of curing shall be removed and added to a new active compost batch or shall be disposed of under section 21 of 1982 PA 239, MCL 287.671, before the compost may be sold or transferred or applied to crop land.

(h) Large bones of mature animals remaining at the completion of curing shall be crumbled during the mechanical spreading process or removed and added to a new active compost batch, or disposed of under section 21 of 1982 PA 239, MCL 287.671, before the compost may be sold or transferred or applied to crop land.

(i) Flies, rodents, pests, vermin, and other scavengers or predators shall be controlled so as not to disrupt the compost piles or constitute a risk or health hazard to human or animal populations.

(j) Odors shall be controlled in accordance with the Michigan Animal Tissue Composting Operational Standards, as adopted by reference in R 287.651a.

(14) The disposition of finished compost may be by direct application to soils, sale, or other transfer of ownership. Application to soils shall be done in accordance with the recommendations within the Generally Accepted Agricultural and Management Practices for Nutrient Utilization, January 2010, as specified in 1981 PA 93, MCL 286.471, and published at [http://michigan.gov/mda/0,1607,7-125-1567\\_1599\\_1605-70361--,00.html](http://michigan.gov/mda/0,1607,7-125-1567_1599_1605-70361--,00.html).

(15) In the interest of public health or animal health, the director may require that any compost be tested at a laboratory approved by the director for certain pathogenic organisms or any contaminant at any time before the compost leaves the composting site.

(16) Composting dead animals shall not be removed from the composting site, except as finished compost, unless the dead animal is disposed of in accordance with section 21 of 1982 PA 239, MCL 287.671.

(17) The owner or operator of the composting site shall keep records for 5 years containing the following information and shall make the records available to the director immediately upon request:

(a) The start date of each compost batch.

(b) The approximate weight, maturity, and species of dead animals or afterbirth added each time an addition is made and the dates the tissue is added to new compost batches.

(c) The temperature of each batch measured weekly, shall be taken at a minimum of 1 foot deep into the compost.

(d) The date compost is mechanically aerated shall be recorded.

(e) The final disposition of finished compost, including the method, destination, date, and volume for the batch.

(18) A contingency plan to remedy problems and ensure the proper disposal of dead animals shall be kept at the compost site. The contingency plan shall include all of the following information:

(a) A list of the following:

(i) The location of telephone numbers for and emergency numbers for the police, the fire department, and medical aid.

(ii) The person or persons responsible for the composting operation.

(b) An action plan for all of the following emergencies:

- (i) Fire.
- (ii) Wind.
- (iii) Flood.
- (c) Plans for the proper disposition of dead animals if composting is temporarily or permanently terminated.

R 287.657 Anaerobic digestion.

Rule 7. (1) Unless otherwise approved by the director, anaerobic digestion methods shall accommodate either of the following:

- (a) Normal daily natural mortality under common ownership.
- (b) Dead animals under the management of licensed dead animal dealers.
- (2) Anaerobic digestion technologies suitable for mortalities include plug flow and complete mix digester operating in the mesophilic and thermophilic temperature ranges.
- (3) Anaerobic digestion systems shall consist of all of the following:
  - (a) Controlled input of organic digester feedstock.
  - (b) Controlled heating of digester feedstock, also known as digester contents.
  - (c) Control of digester vessel atmosphere. The headspace shall contain less than 5% oxygen.
  - (d) Biogas and digestate production.
  - (e) Biogas destruction.
  - (f) Digestate management in accordance with federal and state regulations.
- (4) Digester feedstock is commonly referred to as influent or substrate.

Acceptable digester feedstocks for anaerobic digesters in this state include the following:

- (a) Livestock manure.
- (b) Waste animal feed.
- (c) Dead animals.
- (d) Yard waste or grass clippings.
- (e) Organic food processing waste.
- (f) Waste grease/trap grease.
- (g) Food waste intended for human consumption.
- (h) By-products from ethanol, biodiesel, and algal production.
- (i) Other digester feedstocks may be approved by the director of the Michigan department of environmental quality operating under a national pollutant discharge elimination system permit.
- (5) Facilities operating under a national pollutant discharge elimination system permit shall comply with the terms and conditions of the permit when utilizing non-farm digester feedstocks for anaerobic digestion.
- (6) A person shall manage an anaerobic digestion system treating dead animals in compliance with the guidelines described in the Michigan on-farm anaerobic digester operational handbook, as adopted by reference in R 287.651a, and in accordance with MCL 287.665 and all of the following:
  - (7) A qualified anaerobic digester operator. The operator of an anaerobic digester shall meet all of the following requirements:
    - (a) Possess the skills necessary to start, maintain, and troubleshoot an anaerobic digester.
    - (b) Complete the Michigan-on-farm anaerobic digester operator certification course.

(c) Obtain certification by the Michigan department of agriculture and rural development as an anaerobic digester operator. The Michigan on-farm anaerobic digester operator certification course provides instruction for persons seeking to obtain the skills and knowledge necessary to meet the Michigan department of agriculture and rural development's requirements for qualified digester operator certification. Information on course enrollment may be obtained from Michigan State University extension, (<https://researchgroups.msu.edu/adrec>) or the Michigan Department of Agriculture and Rural Development, P.O. Box 30017, Lansing, Michigan 48909.

(8) One or both of the following methods of anaerobic digestion shall be used:

(a) Plug flow anaerobic digester. A plug flow anaerobic digester is a long, narrow tank with a rigid or flexible cover. The tank is heated and often built partially underground to reduce heat loss. Use of plug-flow digesters is limited to higher solids feedstocks. Plug flow digesters are generally not mixed, however, in some cases mixing is used to facilitate the process.

(b) Complete mix anaerobic digester. A complete mix anaerobic digester is an enclosed heated tank with a mechanical, hydraulic, or gas mixing system. Complete anaerobic mix digesters are intended for slurry or liquid feedstocks. Mixing ranges from intermittent to continuous.

(9) Anaerobic digestion systems processing dead animals shall operate within the following parameters:

(a) Temperature: 95 degrees Fahrenheit to 145 degrees Fahrenheit.

(b) Hydraulic retention time: greater than 20 days.

(c) pH: 6.8 to 7.5.

(d) Volatile solids loading: in the range of 0.02 to 0.25 pounds of volatile solids per cubic foot.

(e) Total solids of the digester contents: not to exceed 20% (200,000 ppm).

(f) Modifications to the operating parameters require approval from the director and may occur when the director has sufficient evidence that the modifications will allow the process to work effectively without causing harm to humans or the environment.

(g) Processing is recommended to reduce dead animals prior to introduction into the anaerobic digesters. Particle size reduction to less than 2 inches in size improves heat transfer and exposes additional surface area for biological activity.

(h) All water used for or generated during particle size reduction must be put directly into digester or stored according to state regulations.

(i) Dead animals shall be added to the anaerobic digester within 24 hours following death.

(j) Afterbirth may be stored in closed impervious containers and shall be added to the anaerobic digester within 3 days of initiating container use.

(k) The anaerobic digestion systems site shall maintain the following minimum isolation distances:

(i) Two hundred feet from waters of the state as defined in R 287.651(1)(u)(i) to (viii).

(ii) Two feet above the seasonal high water table, as defined by NRCS 313 Waste Storage Facility Conservation Practice Standard, and adopted by reference in R 287.651a.

(iii) Not within a 10-year time-of-travel zone designated as a wellhead protection area as recognized by the Michigan department of environmental quality, pursuant to the program established under the Michigan safe drinking water act, PA 399 of 1976, MCL

325.1001 to 325.1023, unless approved by the local unit of government administering the wellhead protection program. Where no designated wellhead protection area has been established, construction shall not be closer than the minimum isolation distance as stated on the well permit for a Type I or Type IIa public water supply. Facilities shall not be constructed closer than 800 feet to a Type IIb or Type III public water supply unless the structure is located in accordance with Table 1 of the Natural Resources Conservation Service Technical Guide Waste Storage Facility (No) 313.

(iv) Two hundred feet from nearest non-farm residence.

(l) The disposition of digestate may be by direct application to soils, sale, or other transfer of ownership. Application to soils shall be done in accordance with the recommendations within the Generally Accepted Agricultural and Management Practices for Nutrient Utilization, January 2010, as specified in 1981 PA 93, MCL 286.471, and published at [http://michigan.gov/mda/0,1607,7-125-1567\\_1599\\_1605-70361--,00.html](http://michigan.gov/mda/0,1607,7-125-1567_1599_1605-70361--,00.html).

(m) In the interest of public health or animal health, the director may require that any digestate be tested at a laboratory approved by the director for certain pathogenic organisms or any contaminant at any time before the digestate is land applied.

(n) The owner or operator of the anaerobic digester shall keep records for 5 years containing the following information and shall make the records available to the director immediately upon request:

(i) The approximate weight, maturity, and species of dead animals or afterbirth added each time an addition is made and the dates the tissue is added to new batches.

(ii) The daily input mass or volume of all digester feedstocks.

(iii) The daily temperature digester contents.

(iv) Daily biogas production information.

(v) Quarterly biogas composition information.

(vi) System maintenance and operation logs.

(vii) Design and construction documents showing the as-built capacity of the anaerobic digester

(viii) The final disposition of digestate, including the method, destination, date, and volume for the batch.

(ix) A contingency plan to remedy problems and ensure the proper disposal of dead animals by anaerobic digestion. The contingency plan shall include all of the following information:

(A) A contingency plan shall be prepared to describe how digester contents will be managed in the event of a biological failure. The contingency plan shall identify at a minimum how to restart the digester, and how state regulations will be followed in the event that the digester cannot be restarted. The plan shall include management of dead animals and digester contents if operation of anaerobic digestion is interrupted or terminated.

(B) A list of both of the following:

(1) The location of telephone numbers for and emergency numbers for the police, the fire department, and medical aid.

(2) The person or persons responsible for operation of the anaerobic digester.

(C) An action plan for all of the following emergencies:

(1) Fire.

(2) Wind.

(3) Flood.

(4) Other mechanical failures.