The focus of the following Frequently Asked Questions (FAQs) are on composting regulations overseen by the Michigan Department of Environmental Quality, Waste Management and Radiological Protection Division (WMRPD). Other program information is provided when known. It is organized into three main sections:

GENERAL QUESTIONS
MDEQ REGISTERED COMPOSTING FACILITY QUESTIONS
MDARD REGISTERED AGRICULTURAL COMPOSTING FACILITIES

The following information is intended to help Michigan residents and companies properly handle yard clippings and to more easily divert material and compost in compliance with environmental regulations. These FAQs will be updated when composting opportunities change. To follow a link to a question, put your cursor over the question or “Return Home,” press Ctrl and click to go that section in the FAQ.

This FAQ was compiled with input from Department of Environmental Quality regulatory divisions and the Michigan Department of Agriculture and Rural Development (MDARD). Regulations are subject to change. Reliance on information from this document is not usable as a defense in any enforcement action or litigation. Refer to the regulations and discuss your requirements with the regulating agency.

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I. GENERAL QUESTIONS

I.Q1. Where can I find the composting and other regulations?

I.A1. Links to the composting regulations and other composting information is available on the MDEQ Composting website. Act 212 of 2007 (PA 212) amends Part 115, Solid Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA). The statute and administrative rules are available at the MDEQ Solid Waste Statutes and Rules website. All of the Parts of the NREPA can be found at the Michigan Legislature Web site and state administrative rules can be found at the State Office of Administrative Hearings webpage.

I.Q2. What are yard clippings?

I.A2. “Yard clippings” means leaves, grass clippings, vegetable or other garden debris, shrubbery, or brush or tree trimmings, less than 4 feet in length and 2 inches in diameter, that can be converted to compost humus. Yard clippings do not include stumps, agricultural wastes, animal waste, roots, sewage sludge, or garbage. Yard clippings are defined in Section 324.11506(7) of Part 115.

Garbage means rejected food wastes including waste accumulation of animal, fruit, or vegetable matter used or intended for food or that attends the preparation, use, cooking, dealing in, or storing of meat, fish, fowl, fruit, or vegetable matter. Garbage is defined in Section 324.11503(10) of Part 115.

Sewage sludge means any solid or semisolid waste that is generated from a municipal, commercial, or industrial wastewater treatment plant. Sludge is defined in R 299.4105(e) of the Part 115 administrative rules.

I.Q3. What is a composting facility?

I.A3. Composting facilities are locations where composting of yard clippings or other organic materials occurs using mechanical handling techniques such as physical turning, windrowing, or aeration or using other management techniques approved by the director of the DEQ. Composting facilities may be operated by private and governmental entities. Composting facility is defined in Section 324.11502(9) of Part 115.

If you have questions about composting facility techniques or alternative methods, please contact Aaron Hiday, Solid Waste Section, WMRPD, at 517-282-7546.

Some composting facilities may be required to register with the DEQ or Michigan Department of Agriculture and Rural Development (MDARD).
I.Q4. Do all composting facilities have to be registered?

I.A4. No, facilities composting organic materials other than yard clippings do not need to register. Also, not all composting facilities managing yard clippings have to register per Section 324.11521(1) of Part 115. See the flowchart for help determining if a composting facility needs to register with DEQ or MDARD and see the following DEQ and MDARD registration sections for some common questions and answers.

Registration is not required when yard clippings are:

- Composted on the property where the yard clippings are generated. This would include homeowners operating their own composting piles, and other entities that maintain their own grounds such as cemeteries, hospitals, parks, apartment complexes, and industrial complexes that have their own composting operations that do not create a nuisance or violate the NREPA.
- Temporarily accumulated at a site not designed for composting if it meets the following limitations:
  - Does not create a nuisance or violate the NREPA.
  - Not mixed with other compostable materials. This would be other organic materials that can decay that are not yard clippings.
  - Is 1,000 cubic yards or less unless a greater volume is approved by DEQ before the larger amounts are brought onto the site.
  - Moved to another location within the following timeframes in any given year where it is managed under one of the listed options in Section 11521(1) of Part 115:
    - If yard clippings were placed on the site on or after April 1 but before December 1, it must be moved within 30 days after being placed on site.
    - If yard clippings were placed on the site on or after December 1 but before April 1, they must be moved by April 10.
    - If a longer time period is needed, the facility needs to demonstrate why that is necessary and obtain approval by the DEQ director.
  - The site owner or operator must maintain records that demonstrates these requirements are being met and make the records available to the DEQ upon request.
- Composted at a facility that has less than 200 cubic yards of yard clippings and is not creating nuisance conditions. This limitation on the amount includes all materials at all stages of the composting process, except the finished compost.
- Decomposed in a controlled manner in a closed container that is used to create and maintain anaerobic conditions, and operated in accordance with Air Quality Division regulations, or otherwise approved by the DEQ director.
  This management option is for anaerobic digesters. It does not apply to a bioreactor landfill (one that collects and uses methane gas for energy production) because a landfill cell is not a “closed container.” Search for keyword “digester” at Michigan Environmental Quality Publications Center for the Environmental Regulations Affecting Anaerobic Digesters guidance.
- Composted and used by a municipal solid waste (MSW) landfill under specific conditions. A MSW landfill is defined in Section 299.4104 (d) of Part 115 and may also be called a Type II landfill. A MSW landfill may be publicly or privately owned, and receives household waste or municipal solid waste incinerator ash. It may also receive construction and demolition waste, sewage sludge, commercial waste, nonhazardous sludge, industrial waste, and hazardous waste from conditionally exempt small quantity generators. The conditions for a MSW landfill to not register with the DEQ include:
  - Composting takes place on property described in the landfill construction permit.
Composting operations of any amount must be described in and are consistent with the landfill operation plans. (For clarification, this includes landfills composting less than 200 cubic yards on property described in the landfill construction permit.)

Landfill is in compliance with NREPA

MSW landfills accepting yard clippings under the provisions of Section 11521(1)(g) of Part 115 must ensure that the composting and use is described in the landfill’s operation plans. At a minimum, the operation plans must include the following information:

1. Procedures to ensure that nuisance odors are minimized by addressing anaerobic degradation.
2. Procedures to prevent the pooling of water by maintaining proper slopes and grades.
3. Procedures to properly manage storm water runoff.
4. Procedures to ensure that the compost will not attract or harbor rodents or other vectors.
5. Compost pile management techniques and the equipment that will be used.
6. The testing procedures, frequencies and lab analysis of finished products to ensure that the compost is finished (e.g., Dewar self-heating method).
7. Description of the use of the finished compost and any screening rejects.

The DEQ, WMRPD’s Policy Guidance 115-10, “Sanitary Landfill Alternate Daily Cover Approval Requirements and Procedures” and Policy Guidance GEN 13, “Use of Yard Clippings Compost as Landfill Cover” provides additional information on acceptable use of yard clippings at landfills. This information is available on the DEQ Solid Waste Operation Memos website.

If you compost and use yard clippings at your landfill and your operation plans do not include the information described in this letter, please submit revised operation plans that have the necessary information to the appropriate WMRPD District Office by March 26, 2008. The DEQ will review the revised operation plans and either approve them or work with you to gain compliance with these new provisions.

I.Q5. What are examples of other “organic materials”?

I.A5. Organic materials are those capable of decaying into humus. Common examples besides yard clippings include: fruit and vegetable scraps, eggshells, nutshells, paper, wood wastes including sawdust and wood chips, coffee grounds, hair clippings, feathers, bone meal, blood meal, and waste generated in the production of livestock and poultry including manure and used bedding materials. See the EPA Web site on Organic Materials for more information. Polymers and plastics unless designed to be a compostable material are not usually considered organic material due to their poor ability to decompose.

I.Q6. What is considered to be a nuisance?

I.A6. Nuisance means there are conditions that unreasonably interfere with the enjoyment of life and property, such as noise, blowing debris, odors, vectors, or pest animals. Nuisance is defined in R 299.4104(h) of the Part 115 administrative rules.
I.Q7. Can yard clippings be taken to a processing plant?

I.A7. Yard clippings may be taken to processing plants, subject to any limitations or conditions in the facility’s Part 115 operating license.

I.Q8. Can yard clippings be disposed in a landfill or incinerator?

I.A8. Only yard clippings that are diseased or infested or are from invasive plants that were collected through an eradication or control program that are inappropriate to compost can be landfilled or incinerated per Section 324.11521(1)(i) of Part 115. Examples of invasive plants include, but are not limited to, garlic mustard, purple loosestrife, and spotted knapweed. De minimus (or small) amounts of yard clippings may also be landfilled or incinerated with other solid wastes. That means a small amount of material that was put in with other solid waste for disposal. De minimus is defined in Section 324.11503(1) of Part 115.

I.Q9. What is meant by an eradication or control program?

I.A9. Eradication or control programs are formal efforts by an organization or agency to eliminate or limit the spread of unwanted land or water plant species. Several organizations and agencies such as The Stewardship Network (the Network), have programs in Michigan that target the control of invasive species, a member of the Network who signs a memorandum of understanding (MOU) with the Network to remove invasive species that are being specifically addressed by the Network may dispose of these yard clippings in a landfill or incinerator, as the yard clippings are part of an eradication or control program. Landfills or incinerators should keep records of disposal of these invasive species. If you have questions about participating in an eradication or control program, contact Aaron Hiday, Solid Waste Section, WMRPD, at 517-282-7546.

I.Q10. Are there resources to help government officials with on land and aquatic (plant and fish) invasive species?

I.A10. Contact the various organizations and agencies listed in the previous question regarding the resources they have to offer. Also, see the Aquatic Invasive Species Handbook for Government Officials.

I.Q11. Is Rule R 299.4120 (Rule 120) still applicable since PA 212 was passed?

I.A11. No. PA 212 removed yard clippings from the definition of a site or source separated material and as such, the conditions listed in Rule 120 are no longer applicable. PA 212 now provides the requirements for the management of yard clippings.

I.Q12. Does the state offer training or compost operator certification programs?

I.A12. The DEQ does not offer training or certify composting facilities operators. Contact the Michigan Recycling Coalition Composting Committee or other organizations that promote composting and finished products as they may have training and certification programs.
can find information on the Michigan Recycling Coalition Web site or contact the Michigan Recycling Coalition at 517-371-7073. For more information about training programs, go to the US Composting Council Web site.

Other groups also have composting information posted on the Internet such as the North Carolina Department of Environment Quality that provides information about other composting topics like building food waste diversion programs, vermicomposting (worm composting), etc.

For composting operations on a farm, see the MDARD webpage for Generally Accepted Agricultural and Management Practices (GAAMPS) or contact the Michigan Right to Farm department at 517-284-5619.

I.Q13. Does the state offer business startup or expansion assistance or help market compost products?

I.A13. For help starting or expanding a business, see the information at the Michigan Economic Development Corporation or call 800-946-6829.

There are several ways to market the composting facility’s services through state websites:

- To advertise composting, yard clippings and wood collection services, get the company listed in the DEQ Recycled Materials Market Directory.
- To offer services to state owned facilities, become registered with the Michigan Department of Management and Budget (MDMB) as a state vendor. Go to the MDMB Web site and click on the “Vendor Information” link under “Design & Construction Information” in the “Services & Facilities” category. For assistance, call their Vendor Registration Help Desk at 517-373-4111 or toll free at 888-734-9749.
- Discuss your services with the local recycling/composting coordinators to determine if they can refer people to your operation.

At this time, the DEQ does not have any grants or loans available to start or operate a composting facility.

I.Q14. If there is a complaint about a composting operation, who should be contacted?

I.A14. The agency that responds to an initial complaint will depend on which agency is overseeing the composting operation. If it is a farm that is, or should be registered with the MDARD, then the MDARD would do the initial follow-up and when necessary coordinate with the DEQ. See the farm complaint FAQ. If the composting operation is overseen by the DEQ or you are unsure whom you should talk to, contact the WMRPD district office to file a complaint. Be as specific as you can about your concerns, and what you know about the operations including where the composting is occurring. When necessary, the WMRPD staff will coordinate with the other DEQ divisions and MDARD depending on the circumstances.
II. DEQ REGISTERED COMPOSTING FACILITY QUESTIONS

II.Q1. When does a composting operation have to register with the DEQ?

II.A1. See the flowchart at the DEQ Web site clicking on “Solid Waste” then “Composting” to help identify when a facility needs to register.

Composting facilities are required to register with the DEQ’s WMRPD once they have more than 200 cubic yards of material; if they are not operating under the MDARD management method. Facilities must meet the requirements in Section 11521(4) of Part 115.

New facilities need to register before beginning operations. There are no exemptions for state owned or other governmental facilities and they also need to register when they meet the conditions identified in the flowchart.

II.Q2. What is a registered agent that is mentioned in the registration form instructions?

II.A2. A "registered agent" is an entity authorized by a company in their filings with the Department of Labor and Economic Growth to act on their behalf in a named state (i.e. Michigan). It is a legal term. It allows that entity to accept legal service, sign documents, make legal commitments, etc., on behalf of the company. If that is who signed the registration form for the company, submit a copy of the authorization with the registration.

II.Q3. What has to be included in calculating the volume on-site e.g. calculating the amount of yard clippings to determine if the site has 200 cubic yards? Are there any conversion formulas available?

II.A3. Any compostable material and finished compost that is on-site to be included when calculating the volume. Finished compost that has been screened and blended with sand or topsoil does not count in the 200 cubic yard limit. There are different resources available for converting volumes of yard clippings to cubic yards. General average conversion for yard clippings is 3 cubic yards of yard clippings equals 1 ton yard clippings. Specific conversion factors can be found below.

Usually there is 1/2 to 1/3 reduction in yard clippings to compost so one formula that can be used is:

\[(\text{Amount of yard clippings}) \times (0.41) = \text{approximate amount of finished compost}.\]

The actual amount of finished compost may be different because yard clippings consists of different materials in different amounts and may include grass clippings, leaves, twigs and small branches.
The following conversions are based on an excerpt from the EPA document, Business Guide for Reducing Solid Waste; EPA/530-K-92-004; November 1993 found in the EPA Volume-to-Weight Conversion Table.

<table>
<thead>
<tr>
<th>Material</th>
<th>Volume</th>
<th>Weight in pounds (lbs)</th>
<th>Weight in short tons (1 short ton = 2 000 lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaves (uncompacted)</td>
<td>1 cu. yd.</td>
<td>200-250</td>
<td>0.05-0.125</td>
</tr>
<tr>
<td>Leaves (compacted)</td>
<td>1 cu. yd.</td>
<td>300-450</td>
<td>0.15-0.225</td>
</tr>
<tr>
<td>Leaves, vacuumed</td>
<td>1 cu. yd.</td>
<td>350</td>
<td>0.175</td>
</tr>
<tr>
<td>Grass clippings (uncompacted)</td>
<td>1 cu. yd.</td>
<td>350-450</td>
<td>0.175-0.225</td>
</tr>
<tr>
<td>Grass clippings (compacted)</td>
<td>1 cu. yd.</td>
<td>550-1,500</td>
<td>0.275-.75</td>
</tr>
<tr>
<td>Finished compost</td>
<td>1 cu. yd.</td>
<td>600</td>
<td>0.3</td>
</tr>
<tr>
<td>Pallets</td>
<td>--</td>
<td>30-100 each (40 avg)</td>
<td>0.015-0.05 (0.02 avg)</td>
</tr>
<tr>
<td>Wood chips</td>
<td>1 cu. yd.</td>
<td>500</td>
<td>0.25</td>
</tr>
<tr>
<td>Solid / liquid fats food waste</td>
<td>55-gallon drum</td>
<td>400-410</td>
<td>0.2-0.205</td>
</tr>
</tbody>
</table>

A table of bulk density of additional compostable materials listing pounds per cubic yard is available in the On-Farm Composting Handbook by Cornell University.

II.Q4. Are there different requirements depending on when a DEQ registered composting facility began operating?

II.A4. Yes, there are differences regarding where a DEQ registered composting facility can be located depending on when it began operating. However, all the DEQ registered facilities have to meet the same operating requirements. See the following questions for more information.

II.Q5. What are the location restrictions regarding where a DEQ registered composting facility can be located if it was operating on or before December 1, 2007?

II.A5. DEQ registered facilities that began operating on or before December 1, 2007, have 3 isolation distances that must be met. Section 11521(4)(b)(i) of Part 115 requires the facilities to be located:
- 50 feet from a property line
- 200 feet from a residence
- 100 feet from a body of surface water, including a lake, stream or wetland

II.Q6. What are the location restrictions regarding where a DEQ registered composting facility can be located if it began operating after December 1, 2007?

II.A6. DEQ registered facilities that began operating after December 1, 2007, have 7 isolation distances that must be met. Section 11521(4)(b)(ii) of Part 115 includes the following restrictions:
- 50 feet from a property line
• 200 feet from a residence
• 100 feet from a body of surface water, including a lake, stream or wetland
• 2,000 feet from a Type I or Type IIA water supply well
• 800 feet from a Type IIB or Type III water supply well
• 500 feet from a church or other house of worship, hospital, nursing home, licensed day care center, or school other than a home school
• 4 feet above groundwater
• not in the 100 year floodplain

II.Q7. How can I determine the DEQ registered facility meets the appropriate isolation distances?

II.A7. See the Yard Clippings Composting Isolation Distance summary on the DEQ Composting website.

II.Q8. What isolation distances does an existing DEQ registered compost facility need to meet when it is expanding?

II.A8. The more stringent requirements in Section 11521(4)(b)(ii) of Part 115 apply to the expansion area. For example, if the compost pile was in existence on December 1, 2007, and was located within 200 feet of a residence, and it was not placed within the 200-foot threshold after that date, the pile could remain. DEQ registered facilities that were in operation on December 1, 2007, may continue to use the locations where those piles existed as long as there are no negative impacts from those pile locations. However, the DEQ would encourage new piles meet the stricter isolation distances if possible. Any new locations for piles would need to meet the isolation distances.

II.Q9. Are there other water well restrictions not specified in these composting regulations?

II.A9. See the isolation distances information on the DEQ Composting website for what is required under the composting regulations. In addition, some communities have a designated source water and wellhead protection programs and have the protected area delineated. If you do not know if your facility is in the designated area, the DEQ’s Water Resources Division can help you. Include the location of the wells and protected area on your map. If you do not know your local contact, contact the DEQ Water Resources Division at 989-705-3420 for Wellhead Protection Program information.

II.Q10. What are the operating requirements for DEQ registered composting facilities?

II.A10. The operating requirements are in Section 324.11521(4)(c) of Part 115. If a facility needs to obtain approval from the DEQ for their operation as identified below, please discuss with Aaron Hiday, Solid Waste Section, WMRPD, at 517-282-7546.

The requirements are:
a. Create finished compost that does not contain more than 1%, by weight, of foreign matter if it had been put through a 4-millimeter screen. This section does not require the compost to be screened but the finished compost would need to meet the quality standards if it had. Foreign matter would include non-biodegradable material such as metal, plastic, and glass.

b. Do not attract or harbor rodents or other vectors. See the MDARD information on rodent and vector identification and control methods.

c. Remove yard clippings from bags if they were collected in any type of bag except paper bags by the end of each business day. The yard clippings have to be removed from the bags because they are not permeable to air and create odors. However, biodegradable bags can be put in the compost piles after the yard clippings have been removed from the bag.

d. Prevent the pooling of water by maintaining proper slopes and grades of the compost piles and site. Standing water can cause the underlying soils to become anaerobic which may lead to the leaching of contaminants and nutrients to the groundwater.

e. Properly manage storm water runoff. Composting facilities are not subject to the industrial storm water program overseen by the DEQ’s Water Bureau but the precipitation that came into contact with the compost piles and any leachate from the compost would be considered process wastewater and the disposal of that is regulated by the Water Bureau. It may contain pollutants in concentrations that violate Water Quality Standards and require treatment. The facility has four management options:

1) Collect and reuse all of the runoff on-site to maintain proper moisture levels of the compost piles. This is the preferred method and the most cost effective.

2) Get approval from the sewer authority before discharging it into the sewer system if the facility is connected to a municipal wastewater treatment plant.

3) Obtain either a surface water or groundwater discharge permit from the Water Bureau. See Chapter 3 of the manufacturers guide for more information.

4) Characterize the waste to determine if it is hazardous waste or nonhazardous liquid waste and manage it accordingly. See Chapter 2 of manufacturers guide for more information.

Contact your district office if you need assistance or call the DEQ Environmental Assistance Center at 1-800-662-9278 for referral. Also see Water Resource Division Contact Information on page 21 of this document.

f. Do not have more than 5,000 cubic yards of yard clippings and other compostable material, compost, and residuals present on any acre of the property unless prior approval has been obtained from DEQ.

g. Do not accumulate yard clippings over 3 years unless the owner or operator has received prior approval by the DEQ. They will need to be able to demonstrate yearly that they meet the following, unless the director approved a longer time period:

- Have the capacity to compost the yard clippings
- The amount of the yard clippings and compost transferred off-site in a calendar year is 75% or more by weight or volume of the amount of yard clippings and compost that was on-site the beginning of the calendar year

The 3 years accumulation period begins when the yard clippings or compostable material was first brought on-site.

h. Do not create a “facility” as defined in Section 20101 of Part 201, Environmental Remediation, of the NREPA. A “facility” means any area, place, or property where a hazardous substance in excess of the concentrations which satisfy the requirements of Section 20120a(1)(a) or (17) or the cleanup criteria for unrestricted residential use under Part 213, Leaking Underground Storage Tanks, of the NREPA has been released, deposited, disposed of, or otherwise comes to be located. Facility does not include any
area, place, or property at which response activities have been completed which satisfy the cleanup criteria for the residential category provided for in Section 20120a(1)(a) and (17) or at which corrective action has been completed under Part 213 which satisfies the cleanup criteria for unrestricted residential use. Contact the Remediation and Redevelopment Division District Office if you have questions about contamination or cleanup requirements.

i. Meet all of the NREPA requirements that apply to the site. Because there are different composting facility requirements and materials that they may be processing besides yard clippings, the facility will need to determine what regulations apply to them. A good starting part is to review the DEQ permit information and related permit information. Another good resource is the Michigan Manufacturers Guide to Environmental, Safety, and Health Regulations that includes explanations about regulations that may not require a permit or license. Facilities should also contact their local authorities to obtain any necessary local permits and comply with local ordinances and zoning regulations.

II.Q11. How much material would it take to meet the 5000 cubic yards on any acre limit?

II.A11. According to Section 11521(4)(c)(ii) of Part 115, a DEQ registered composting facility is limited to having 5,000 or less cubic yards of material on any acre. As a visual aid, it is estimated 5,000 cubic yards would completely cover one acre three feet deep.

II.Q12. Under what circumstances would the DEQ consider approving a volume greater than 5,000 cubic yards of material per acre?

II.A12. The applicant would need to demonstrate to DEQ that the operator of the facility has sufficient knowledge, training, appropriate site design, and equipment to be able to handle a larger volume. If you want to exceed this limit, discuss the proposed operation with Aaron Hiday, Solid Waste Section, WMRPD, at 517-282-7546.

II.Q13. Are there any size or shape limits on how high or big a compost pile can be?

II.A13. The state waste regulations do not limit the size or shape of compost piles, but the best management practices and equipment capability will have an impact on the compost pile size and shape at an operation. There may be local ordinance restrictions.

II.Q14. What are the reporting requirements to DEQ?

II.A14. DEQ registered composting facilities must submit annual reports to the WMRPD by October 30 of each year. The required report form EQP 5229 will be posted on the DEQ composting website or contact the Storage Tank and Solid Waste Section at 517-582-3445. The DEQ registered composting facility will need to report on how much yard clippings and other compostable material was composted during the previous year.
II.Q15. What composting records are required to be kept on-site?

II.A15. The DEQ registered composting facility must have the following records and make them available to DEQ upon request per Section 324.11521(4)(d) of Part 115.

1. Have documentation that shows the amount of materials received and transferred off-site:
   - volume of yard clippings accepted by the facility each month
   - volume of other compostable material accepted by the facility each month
   - volume of yard clippings transferred off-site each month
   - volume of other compostable material transferred off-site each month

2. Have documentation that confirms the composting operation prevents nuisances and minimizes anaerobic conditions. Anaerobic conditions lead to problems with odors. The most common factors that result in anaerobic odors are excess moisture, inadequate porosity, rapidly degrading substrate, and excessive pile size. See information in the Compost Operator’s Guidebook.

Have the following records available or obtain prior approval from the DEQ to maintain different records:
   - Carbon-to-nitrogen (C:N) ratios
   - Amount of leaves and grass in tons or cubic yards
   - Temperature readings
   - Moisture content readings
   - Laboratory analysis of finished products

Sample record templates will be available on the DEQ composting webpage.

II.Q16. How do I calculate C:N ratios?

II.A16. There are several ways you can calculate the carbon to nitrogen ratios. See information in the compost operator training materials. Some online compost mix calculators like the one on Klickitat County’s Web site are also available.

Another good reference for C:N ratio, moisture content, and bulk density of various materials is from Cornell University.

II.Q17. Does the DEQ recommend any other records be kept?

II.A17. In addition to the required records, facilities are encouraged to create a Compost Facility Site Management Plan. The following are suggested components of a Compost Facility Site Management Plan. They are adapted from a United States Composting Council 1994 draft document titled “Organic Waste Composting Model State Regulation.”

1. Topographic map (U.S. Geological Survey 7.5 minute series) of the area. Topo maps can be obtained from the US Geological Survey https://store.usgs.gov/map-locator or 1-888-ASK-USGS (275-8747).

2. Site plan showing dimensions and details of the proposed receiving, processing, production, curing and storage areas, and locations of all roads, buildings, fences and
gates, other permanent structures, number of acres used for composting, storage, and stockpiling, and isolation distances required by the statute.

3. Description and drawings of the facility’s storm water management system showing compliance with all federal, state, and local storm water regulations and codes.

4. Description of methods employed to prevent environmental impacts to surface and groundwater.

5. Detailed methods for achieving odor control.

6. Detailed methods for achieving noise control.

7. Detailed methods for achieving vector, dust, and litter control.

8. Description of fire prevention and control methods.

9. Flow diagram of the processing steps including the period of time in each step and estimates of maximum handling capacity.

10. Capacity for proper handling, storage, and removal of non-permitted wastes delivered to or generated by the facility.

11. Detailed description of weather monitoring equipment or methods.

12. Written provision for operations during wind, heavy rain, snow, freezing, or other inclement weather conditions.

13. Management plan should address employee safety issues according to state and federal requirements.

14. Description of methods employed to monitor and prevent anaerobic conditions within the piles.

II.Q18. Are there special emergency planning requirements for a DEQ registered composting facility?

II.A18. The composting regulations do not require an emergency plan, but the DEQ suggests that a detailed fire plan be coordinated with the local fire department. If a facility has other regulated materials or has regulated storage tanks on site there may be requirements under other federal and state regulations if the facility meets those conditions. There may also be requirements under local ordinances. See the emergency planning website at the DEQ. Click on ‘Key Topics’ then ‘Environmental Emergencies’ in the sidebar for more state and federal planning information.

II.Q19. Does composting fish waste have different requirements?

II.A19. Options regarding how to handle fish waste are discussed in the Fish Waste Exemption and the related Site Identification Form.
II.Q20. Are there other management options for handling wood waste besides composting?

II.A20. Options would depend on whether the waste was contaminated and regulated as hazardous waste. Options to chip it or to use it as a fuel source is covered in the Scrap Wood Exemption. Wood waste that is not contaminated can be landfilled or incinerated at disposal sites that accept that waste.

II.Q21. Can food waste be added to the yard clippings compost piles?

II.A21. Yes, food waste can be added to yard clippings and a processing permit is not required when the food waste is a source separated material.

II.Q22. Can compostable utensils be composted without a permit or license?

II.A22. Plastic is listed as a source separated material. If the compostable serving ware is "plastic" as defined, by ASTM D 6400, it is therefore not solid waste if composted and the compost is used for beneficial purposes.

ASTM D 6400 defines plastic to be "a material that contains as an essential ingredient one or more organic polymeric substances of large molecular weight, is solid in its finished state, and, at some stage in its manufacture or processing into finished articles, can be shaped by flow."

Therefore, if the serving ware fits that definition and is able to be converted into compost as defined in Part 115, then the material is not solid waste and a solid waste processing permit or license is not required.

II.Q23. Other than yard clippings, what wastes can be composted in Michigan without a permit from the WMRPD?

II.A23. Current regulations do not require any permits or approval from the DEQ WMRPD for the composting of site or source separated compostable material. Source separated material includes wood, paper products, garbage, yard clippings, or any other material approved by the DEQ that is separated at the source of generation for the purpose of conversion into raw materials or new products. The same material is considered "site separated" if it is separated from solid waste for the purpose of conversion into raw materials or new products at a location other than the point of generation. Site separated material does not include the residue remaining after wood, paper products or any other material approved by the department is separated from solid waste. Compost is considered a "new product" for purposes of source and site separated material determinations.

Compostable site or source-separated materials include garbage, wood, and paper. Garbage is defined as “rejected food wastes including waste accumulation of animal, fruit, or vegetable matter used or intended for food or that attends the preparation, use, cooking, dealing in, or storing of meat, fish, fowl, fruit, or vegetable matter.” Wood is defined as “trees, branches, bark, wood pallets, lumber, or other wood product which has not been treated, painted, mixed with glues and fillers, or otherwise contaminated during manufacture or use, and wood chips or sawdust from the materials listed.” Paper includes cardboard and paper products that have not been contaminated during manufacture or use.
No DEQ WMRPD permits are required for composting garbage, wood, and paper, although local authorizations may be necessary. Compostable site or source-separated material can be composted as long as it is done in compliance with Part 55, Air Pollution Control, Part 115, and Part 31, Water Resources Protection, of the NREPA and any administrative rules.

The composting of solid wastes like research animal bedding, street cleanings, or animal waste other than organic waste generated in the production of livestock and poultry must be approved by the DEQ. The composting of garbage, wood, paper, and yard clippings mixed with a material defined as solid waste must also be approved.

II.Q24. How do I obtain approval to compost a compostable material not listed as a site or source separated material?

II.A24. In order to compost a solid waste material not defined as a site or source separated material one must receive approval per R 299.4121 of the Part 115 administrative rules. Including the provisions outlined in R299.4117 and R299.4118 of Part 115 administrative rules, the following information must be included in the petition:

a) The type of waste and its potential for creating a nuisance or environmental contamination;
b) Compost maturity, as determined by a reduction of organic matter during composting;
c) Foreign matter content;
d) Particle size.

The material will be approved for use as compost if:

a) The material has or will be converted to compost under controlled conditions at a composting facility,
b) The material will not be a source of environmental contamination or cause a nuisance, and;
c) Use of the compost material will be done at agronomic rates.

In order to gain approval from the DEQ to compost the material and demonstrate that the solid waste can be converted into a compost product or resource, R 299.4117 of Part 115 administrative rules allows a person to conduct a pilot project with up to 100 tons of solid waste. For additional information, please contact Duane Roskoskey, Environmental Quality Specialist, Solid Waste Section, WMRPD, at 517-582-3445.

II.Q25. What approval is necessary to compost food processing residuals, ashes from wood that is untreated and inert, lime from kraft pulping processes, or aquatic plants?

II.A.25. Food processing residuals, wood ashes, lime, or aquatic plants are not solid waste if applied on, or composted and applied on, farmland or forestland for an agricultural or silvicultural purpose, or used as animal feed. Such an application or use does not require a plan or a permit or license.

Land application of these materials or compost generated from these materials for an agricultural or silvicultural purpose must occur in a manner that prevents losses from runoff and
leaching, and must be done at an agronomic rate consistent with generally accepted agricultural and management practices (GAAMPs) under the Michigan Right To Farm Act, 1981 PA 93, MCL 286.471 to 286.474.

The Department of Agriculture and Rural Development has developed GAAMPs for certain food processing residuals (primarily fruit and vegetable residuals) and lime from kraft pulping process. Because there are currently no GAAMPs for agricultural use of aquatic plants, wood ashes, and other food processing residuals composting of these materials requires DEQ approval.

II.Q.26 Does a retail establishment that only sells finished compost need to register?

II.A.26 No, if they are not doing any composting at the site.

II.Q.27 If a composting facility is operating at several locations, do they have to register each site?

II.A.27 If the sites are not on contiguous property, they need to register each site.

II.Q.28 How do I measure the volume of a compost pile?

II.A.28 Compost pile volumes are measured using calculations that incorporate the length, width, and height of the pile. The shape of a pile will determine the best formula to use to calculate the pile's volume.

Pyramid: If the pile is a long pyramid then multiply the length by the width by the height and divide by 2.

Half-ellipsoid: If the pile is more the shape of a half-ellipsoid, like the one shown below, then multiply Pi (3.14) by the length by the width by the height and divide by 6.

Half-cylinder: If the pile is a half-cylinder, then multiply Pi (3.14) by the length by the width by the height and divide by 4.

The pile in the photo below is about 10 yards wide, 10 yards long and 4 yards tall. It is a half-ellipsoid. Therefore 3.14 x 10 x 10 x 4 divided by 6 equals about 200 cubic yards. The pile below has a volume of 200 cubic yards.
Remember that if you take your measurements in feet and you are calculating a volume in cubic yards either:

a) divide the measurements by 3 to get yards prior to calculating a volume or
b) divide the result by 27 to convert to cubic yards (there are 27 cubic feet in a cubic yard).

Examples:
A pile that is 120 feet x 120 feet by 18 feet tall is 5,000 cubic yards.
A pile that is 72 feet x 72 feet x 10 feet tall is 1,000 cubic yards.
A pile that is 172 feet x 30 feet by 10 feet tall is 1,000 cubic yards.
A pile that is 32 feet x 32 feet by 10 feet tall is 200 cubic yards.

Other Resources

The following are some of the more common regulations that may apply to composting facilities, depending on the operation of the facility. Additional information can be found on the DEQ Composting website by going to the DEQ WMRPD Web site, then clicking “Solid Waste” and then “Composting” under the Information heading.

WASTE MANAGEMENT AND RADIOLOGICAL PROTECTION DIVISION

Requirements for composting of other materials vary depending upon how the material being composted is classified under Part 115.

First, one must determine if any of the materials (other than yard clippings) are classified as solid waste. If any of the materials (other than yard clippings) are defined as solid waste per Part 115 statute and rules, then approval to compost the material is necessary. A person proposing to compost material (other than yard clippings) defined as solid waste must seek approval by submitting a petition to the DEQ. Before petitioning the department, discuss your proposal with the WMRPD District Office solid waste staff.

The first test to determine if the DEQ will approve composting of a material (other than yard clippings) defined as solid waste is whether or not the material is compostable under R 299.4121 of the Part 115 administrative rules, however, only 500 cubic yards of material may be composted without a solid waste processing license per R 299.4101(r)(ix) of Part 115 administrative rules.

If any of the following questions about the solid waste can be answered affirmatively then the DEQ will approve composting of the material:

a) Is the material to be composted, or the finished compost, inert under R299.414-R299.4117 of the Part 115 administrative rules?
b) Can the material to be composted be approved by the DEQ as site or source separated under R 299.4119 of the Part 115 administrative rules?
c) Does the material meet agricultural use requirements of R 299.4111 of the Part 115 administrative rules?

If the answer is no to all above options then the compostable material remains categorized as a solid waste and the facility must obtain a solid waste processing plant
permit and license in order to compost the material. The compost produced will be
permitted for use in limited circumstances based on its characteristics.

If the materials to be composted are not defined as solid waste because they are
exempted from the definition of solid waste under Section 11506 of Part 115 then DEQ
approval to compost the material is not required. However, if the material is defined as
site or source separated then composting of it cannot:
   a) create nuisance conditions
   b) cause a discharge to, or otherwise impact surface water or ground water, or
   c) result in speculative accumulation of the material

See related FAQs for composting specific materials.

Nonhazardous and hazardous wastes

If an operation is not able to discharge their wastewater to a wastewater treatment plant
or do not have a permitted discharge from the Water Resources Division or are
generating liquid wastes from doing their own equipment maintenance, they are subject
to the liquid industrial waste, and hazardous waste regulations for managing the
wastewater and wastes generated from maintaining the equipment. The specific
hazardous waste requirements would depend on how much is generated in a calendar
month. Most composting operations would be a Conditionally Exempt Small Quantity
Generator if they have hazardous waste. See that guidance, and the Nonhazardous
Liquid Waste Generator Requirements, Waste Characterization, Used Oil, Antifreeze,
Electric Lamps and Small Ballasts, Electronic Equipment, Universal Waste and other
waste guidance documents in the DEQ publication center for more information.

Other solid wastes and scrap tires

Discuss with your waste disposal company what they will accept. See what wastes are
banned from landfill disposal. To find recyclers for materials, see the Recycled Materials
Market Directory or contact your local recycling coordinator to find options in your area.
You may also visit the DEQ website to find information about other solid wastes and
scrap tire disposal.

Storage tanks

Operations that have fuel storage tanks need to meet the applicable requirements
depending on the type of stored product and if it is stored in aboveground or
underground storage tanks or are LPG tanks used for heating office space etc. See
information at “Storage Tanks” on the LARA website. If you have questions, call your
WMRPD District Office or call the Storage Tank and Solid Waste Section at 517-582­
3445.

Water Resources Division (WRD)

Depending on where the facility is located, a permit may be required under Part 303,
Wetlands Protection; Part 301, Inland Lakes and Streams; Part 31, Water Resources
Protection for floodplain protection, and other similar land and water resource protection
provisions. Discuss requirements with the WRD District Office or call the Environmental
Assistance Program at 800-662-9278 for information.
The Water Resources Division would also oversee any wastewater discharges from the site that have been mentioned in other FAQs.

In addition, the construction of a composting facility may require a soil erosion and sedimentation control permit. A permit is generally required for any earth change activity which disturbs one or more acres of land or which is within 500 feet of a lake or stream. See the information on permits for an explanation if you need to obtain a local or state issued permit. Discuss requirements with the WRD District Office or call the Environmental Assistance Program at 800-662-9278 for information.

**Remediation and Redevelopment Division (RRD)**

A Baseline Environmental Assessment (BEA) allows people to purchase or begin operating at a facility without being held liable for existing contamination. See information on protecting Michigan’s land selecting “Land Cleanup,” “BEAs & Due Care.” All facilities are required to cleanup contamination and may have release reporting requirements under Part 201, Environmental Remediation. See information on the protecting Michigan’s land selecting “Land Cleanup” “Site Investigation and Cleanup.” Discuss questions with RRD District Office staff or call the Environmental Assistance Program at 800-662-9278 for information.

**Air Quality Division (AQD)**

Rule 336.1285 (bb) of the Michigan Air Pollution Control (MAPC) Rules specially exempts residential, municipal, commercial, or agricultural composting processes or process equipment from the state’s air permit requirement. However, even though a Permit to install is not required, the owner and/or operator of such activities still must comply with all other applicable MAPC rules and Part 55, Air Pollution Control, of The NREPA.

There are two types of pollutants emitted from composting operations: odors and particulate matter. Most of the negative yard clippings composting impacts have been related to the emission of odors. Noxious odors have generally come from composting operations that were not utilizing good operational practices, such as keeping the pad dry and well drained, maintaining the proper mixture of carbon (leaves/wood chips) to nitrogen (grass clippings/foliage trimmings), and properly turning windrows to maintain aerobic conditions. If a facility is unable to adequately minimize the production of odors, it can be cited in violation of R 336.1901 that prohibits the emissions of air pollutants that can cause unreasonable interference with the comfortable enjoyment of life and property.

Fugitive dust, as defined in R 336.1106 (k), means particulate matter that is emitted into the outer air except through stacks. If the particulate matter could pass through a stack or vent, the emissions would not be considered fugitive. For example, a vehicle traveling over a dry unpaved road can generate fugitive dust. It is not practical or feasible to collect this dust and exhaust it through a vent or stack.

Fugitive emissions from composting operations may be regulated under Section 324.5524 of Part 55 of NREPA or MAPC Rules 336.1371 and 336.1372. The location of
the operation, the type of entity performing the composting, and complaints are factors that determine the applicability of the statute or the rules.

Composting of yard clippings is regulated under Section 324.5524 if it is performed by an entity with a standard industrial classification (SIC) of 10-14, 20-39, 40, 42, 491, 495, or 496; and it is located in an area listed in Table 36 of the R 336.1371. Table 36 lists areas in the state that were previously classified as not being in federal attainment status for Total Suspended Particulate or TSP. Section 324.5524 requires compliance with opacity standards and the submittal of a fugitive dust program.

R 336.1371 allows the Air Quality Division of the Michigan Department of Environmental Quality, based upon air emission measurement or citizen complaints, to require a fugitive dust program from a composting operation not located in a Table 36 area. R 2336.372 lists the required actions and control methods. For example, water sprays may be needed to control the fugitive dust generated from the tub grinding of dry woody material.

For additional information about fugitive dust programs, go to the Michigan Environmental Quality Publications Center and enter “fugitive dust” in the keyword search box. If you have questions about fugitive dust control, discuss the requirements with the AQD District Office or call the Environmental Assistance Center at 800-662-9278.
III. MDARD REGISTERED AGRICULTURAL COMPOSTING FACILITIES

III.Q1. What is meant by a “farm”?

III.A1. As defined in the Michigan Right to Farm Act (PA 93 of 1981, as amended), a farm means the land plant, animals, buildings, structures, including ponds used for agricultural or aquacultural activities, machinery, equipment, and other appurtenances used in the commercial production of farm products.

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III.Q2. Does a farm have to register with MDARD or DEQ if they are only composting their own yard clippings?

III.A2. Registration with MDARD or DEQ is not required if the farm:

• Is composting only yard clippings that came from the farm operations, which can include yard clippings produced at multiple farm operations under the same ownership and taken to one location for composting.
• Is composting 5,000 cubic yards or less of yard clippings, which includes all stages of the compost including the finished compost.
• Is following MDARD's generally accepted agricultural and management practices (GAAMPs). GAAMPs have been developed by the MDARD under the Right to Farm Act. They are available on the MDARD Web site or by calling Steve Mahoney with the Michigan Right to Farm Program at 517-284-5620.

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III.Q3. When does a farm have to register its composting operation with the MDARD?

III.A3. A farm needs to register with MDARD if it

• Has more than 5,000 cubic yards of yard clippings on site, which includes all stages of the compost including the finished compost AND
• Accepts yard clippings from other sources and it is needed to assist with managing wastes generated from the farm operations, i.e. the yard clippings are added to manure for proper composting.

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III.Q4. How does a farm register with MDARD?

III.A4. Use the MDARD composting registration form located under the “Nutrient Utilization Section” at www.michigan.gov/gaamps.

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III.Q5. Can a farm receive any type of payment for taking yard clippings from another source?

III.A5. A farm can receive up to 5,000 cubic yards and receive “a valuable consideration” i.e. compensation but they cannot charge a tipping fee or receive any valuable consideration for taking more than 5,000 cubic yards. Section 11521(3)(c) of Part 115 restricts a farmer from receiving monetary or other valuable consideration for taking yard clippings if they accept over 5,000 cubic yards unless they have registered with the DEQ as a composting facility. This section does not limit a farm from selling finished compost.

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III.Q6. Can a farm accept other materials besides yard clippings for composting?

III.A6. A farm may accept other compostable materials that do not meet the definition of solid waste for composting without a solid waste processing license. Farms composting material defined as solid waste must have a solid waste processing license. Farms composting material that meets the definition of source-separated material as defined in Part 115 do not need to register with the DEQ if they do not accept yard clippings. For additional information on composting material other than yard clippings see question 23, 24, and 25 in section II of in the DEQ Registered Composting Facilities section. Similar to other activities on a farm, in order for MDARD to determine that a farm conforms to GAAMPs under the Right to Farm Act, the farm must manage and compost all materials according to GAAMPs.

III.Q7. Who is the MDARD contact to get more information about composting on farms?

III.A7. The MDARD contact in the Michigan Right to Farm Program is Steve Mahoney at 517-284-5620.

III.Q8. Is a MDARD registered composting facility eligible for Right to Farm Protection?

III.A8. Yes. MDARD registered composting facilities are eligible for Right to Farm Protection by meeting certain criteria such as the development of a compost operations plan, site plan, and a compost utilization plan. An on-site inspection of the facility will also be required. Contact Steve Mahoney, MDARD, at 517-284-5620 for further information.

III.Q9. Is a DEQ registered composting facility eligible for Right to Farm Protection?

III.A8. No.

III.Q10. If there is a complaint about a farm composting operation, who should be contacted?

III.A9. Contact the MDARD Right to Farm Program at 517-284-5619.