

# Oregon Department of Environmental Quality

Jan. 24-25, 2019

Oregon Environmental Quality Commission Meeting

Action item J, Temporary Rulemaking

Composting Special Pathogen Reduction Temporary Rule 2019

## DEQ recommendation to the EQC

DEQ recommends that the Oregon Environmental Quality Commission:

1. Determine that failure to act promptly would result in serious prejudice to the public interest or the interests of the parties concerned as provided under the Justification section of this staff report.
2. Adopt TEMPORARY rules as proposed in Attachment A of this report as part of chapter 340 of the Oregon Administrative Rules to be effective on filing with the Oregon Secretary of State.

*Proposed EQC motion language:*

*I move that the Oregon Environmental Quality Commission determine that failure to act promptly would result in serious prejudice to the public interest or the interests of the parties concerned as provided under the Justification section of the staff report for this item; and adopt temporary rules, as seen in Attachment A to the staff report for this item, as part of chapter 340 of the Oregon Administrative Rules to be effective on filing with the Oregon Secretary of State.*

## Overview

Current DEQ solid waste compost rules need to be modified to adequately address requirements for managing liquid digestate from anaerobic manure digestion. During review of a permit modification request in 2018, DEQ identified inconsistent pathogen reduction requirements in the rules for digesters that digest manure at agricultural operations, as defined by ORS 467.120(2)(a), as compared to digesters that digest manure that are not located at agricultural operations.

When the anaerobic digestion section of the compost rules was originally adopted in 2013, DEQ did not recognize the potential for unequal treatment of manure digesters based on facility location. Currently, anaerobic digesters located at agricultural operations are exempt from DEQ's solid waste pathogen reduction requirements. In contrast, anaerobic digesters that are not located at agricultural operations are subject to the pathogen reduction requirements. The liquid digestate limits and testing requirements in the pathogen reduction rule are not practicable and are cost prohibitive for manure digesters to meet. Manure digesters located at agricultural operations are exempt from pathogen rule requirements, while those not co-located with agricultural operations must meet the additional requirements.

DEQ determined that the requirements for the anaerobic digestion of manure should be the same, regardless of where a digester is located. These proposed temporary rule amendments will correct this inconsistency.

In most instances, liquid digestate from anaerobic digesters for manure is applied on agricultural lands at agronomic rates in accordance with a CAFO permit and nutrient management plan. DEQ researched EPA and other states' digestate management requirements and consulted with the Oregon Department of Agriculture. Soil application of liquid digestate at agronomic rates is a safe and appropriate management method. Furthermore, the land application of digested manure is more environmentally protective than the land application of raw manure, given the pathogen and methane reduction benefits.

The proposed temporary rule modification would provide an exemption from the pathogen reduction testing limits for liquid digestate from manure digesters not located at agricultural operations. It would also require that liquid digestate from manure digestion that is applied to soil be done so at agronomic rates to be environmentally protective.

As a temporary rule, the proposed changes would be effective for a maximum of 180 days. DEQ staff are working on a proposed permanent rule amendment to implement the same changes as proposed in the temporary rule, and intend to bring that proposed permanent rule for commission consideration and action in July 2019.

## Statement of need

The current rule language applies requirements inconsistently to manure digesters based on where the facility is located. The proposed temporary rule amendment corrects this oversight until DEQ can adopt a permanent rule.

DEQ issued a compost permit to an anaerobic digestion facility located at the Port of Tillamook Bay in Tillamook, Oregon, in 2013. This permit allowed the facility, which is not located at an agricultural operation, to digest manure only. DEQ recently issued a permit modification to authorize the Port of Tillamook Bay to accept additional feedstocks for digestion. Prior to the compost permit, the Port of Tillamook Bay was operating under a solid waste treatment permit.

While issuing the modification, DEQ identified an inconsistency in the rule that subjects the facility to a standard that is unnecessary, impracticable, unreasonable, cost prohibitive, and applied inconsistently between similar operations.

This proposed temporary rule language would allow the Port of Tillamook Bay, and other manure digesters not located at agricultural operations, to be commercially viable while providing environmental benefits.

This proposed temporary rule amendment would provide for the safe and effective managing of liquid digestate from anaerobic digesters as federal and other state laws allow. This proposed temporary rule amendment is needed to ensure that manure that is land applied is done so in an environmentally protective manner by encouraging anaerobic digestion.

DEQ will know this need has been met if the Port of Tillamook Bay can resume operations of its biodigester with the additional permitted feedstocks allowed by the 2018 permit modification request.

## Justification

In review of a 2018 permit modification request, DEQ identified an inconsistency in the application of the solid waste pathogen reduction rule, based solely on a facility's location. The application of the rule to anaerobic digesters that digest manure is unnecessary, impracticable, and cost prohibitive, does not result in environmental benefit, or protect from environmental harm. DEQ intends to address this inconsistency through permanent rulemaking; however, a temporary rule amendment is necessary to address a current permit consideration.

The Port of Tillamook Bay recently applied for modification to its existing permit to allow it to accept additional feedstocks. After issuing the permit modification DEQ received a Petition for Reconsideration of the permitting decision under the Oregon Administrative Procedures Act. In reviewing the petition, DEQ determined that there was legal uncertainty with respect to the treatment of the pathogen reduction standards in the permit. The permit requires land application of digestate at agronomic rates but does not require meeting the pathogen reduction standard in the current rule. This issue existed in the original permit issuance and is not a result of the modification to accept additional feedstock.

As previously stated, the current standard is cost prohibitive, in that it provides a standard that is not economically viable for permittees to comply with and does not result in environmental benefit. This was not the intent of the Department when it originally proposed the rule.

The proposed temporary rule amendment would limit legal uncertainty related to the petition for reconsideration, without applying a standard to the permittee that is not operationally obtainable, and allow the Port of Tillamook Bay's anaerobic digester to resume operations.

Failure to act promptly would result in the Port of Tillamook Bay's public infrastructure remaining underutilized, wasting a valuable community asset. Furthermore, regulatory uncertainty will delay operations of the DEQ-permitted facility, putting farmer, feedstock, and power purchase agreements at risk. Without this facility operating:

- Manure management options are limited for participating dairy farmers
- Feedstock agreements for management of organic waste material are at risk, limiting alternatives to landfilling
- The local utility risks losing green power promised by a power purchase agreement

### Affected parties

- Anaerobic digesters that accept manure feedstock
- Port of Tillamook Bay
- Tillamook BioGas
- Tillamook PUD
- Participating dairy farmers
- Other feedstock providers

**How the temporary rule would avoid or mitigate consequences**

The proposed temporary rule change would eliminate the inconsistent application of the pathogen reduction rule and allow for soil application of liquid digestate from anaerobic digesters not located at agricultural operations.

This proposed temporary rule would regulate facilities that digest manure equally. The proposed temporary rule would avoid potential negative environmental consequences by allowing all anaerobic digesters to manage manure similarly, regardless of location. The proposed temporary rule would eliminate costly equipment and operations upgrades necessary to meet the current liquid digestate pathogen reduction limit and testing requirements. The proposed temporary rule would encourage the anaerobic digestion of manure and the associated environmental benefits of pathogen reduction and biogas capture.

## Rules affected, authorities, supporting documents

### Land Division

Materials Management

OAR 340-096-0140

- Amend OAR 340-096-0140 (1) and 140 (2)

### Statutory authority

ORS 459.045, 459A.025, 468.020, 468.065

### Statute implemented

ORS 459.005, 459.015, 459.205

### Legislation

*Does not apply*

### Documents relied on for rulemaking

Document title	Document location
Safe Management of Liquid Digestate from Anaerobic Digestion – White Paper	40 Code of Federal Regulations Part 503 – Standards for the Use or Disposal of Sewage Sludge; Subpart D – Pathogens and Vector Attraction Reduction
Letter in support of temporary rule from ODFA	EPA Environmental Regulations and Technology Guidance Document – <i>Control of Pathogens and Vector Attraction in Sewage Sludge Under CFR Part 503</i>
Washington Dept. of Ecology <i>Guidelines: Operating an Anaerobic Digester Exempted From Solid Waste Handling Permit</i>	Washington Administrative Code 173-350 Solid Waste Handling Standards including sections: 220 Composting Facilities; 225 Other Organic Material Handling Activities; 230 Land Application; and 250 Anaerobic Digesters

## Housing costs

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As ORS 183.534 requires, DEQ evaluated whether the proposed temporary rules would have an effect on the development cost of a 6,000-square-foot parcel and construction of a 1,200-square-foot detached, single-family dwelling on that parcel.

DEQ determined the proposed rules would have no effect on the development costs because DEQ Solid Waste Composting rules only affect DEQ permitted composting facilities.

## **EQC Prior Involvement**

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DEQ has not previously share information about this proposed temporary rulemaking with the EQC.



## Implementation

### Notification

The proposed temporary rules would become effective upon filing with the Secretary of State, on Jan 25, 2019. DEQ would notify affected parties by Jan 28, 2019.

### Compliance and enforcement

- Affected parties – DEQ permitted Solid Waste facilities
- DEQ staff – Materials Management regional staff
- Oregon Department of Agriculture Confined Animal Feeding Operation staff

### Measuring, sampling, monitoring and reporting

- Affected parties – DEQ permitted Solid Waste facilities
- DEQ staff – Material Management regional staff
- Oregon Department of Agriculture Confined Animal Feeding Operation staff

### Systems

- *None to update at this time*

### Training

- Affected parties – DEQ permitted Solid Waste facilities
- DEQ staff – Material Management Staff
- Oregon Department of Agriculture Confined Animal Feeding Operation staff

**Key to Identifying Changed Text:**

~~Strikethrough: Deleted Text~~

Underline: New/inserted text

**DEPARTMENT OF ENVIRONMENTAL QUALITY**

**Division 96**

**SOLID WASTE: SPECIAL RULES FOR SELECTED SOLID WASTE DISPOSAL SITES**

**340-096-0140**

**Special Rules Pertaining to Composting: Pathogen Reduction**

(1) All composting facilities must comply with this rule, except that agricultural operations as defined by ORS 467.120(2)(a) producing composted material and digestate only for on-farm use are not subject to the requirements of this rule. The department may require that an agricultural operation or other facility excluded under section 2 of this rule comply with this rule if the department determines that such compliance is necessary to protect human health or the environment.

(2) All composted material and digestate, excluding: 1) composted material and digestate that is sent as feedstock to a composter possessing either a composting permit or registration, or 2) digestate applied to soil at agronomic application rates and consistent with site restrictions in 40 C.F.R. §503.32(b)(5), must meet the following limits:

(a) For composted material produced from Type 1 or Type 3 feedstock, or a mix of Type 1 and 3 feedstocks, analysis must be performed for salmonella or fecal coliform and meet the following limits:

(A) Salmonella analysis must result in less than 3 Most Probable Number per 4 grams of total solids (dry weight).

(B) Fecal coliform analysis must result in less than 1,000 Most Probable Number per gram of total solids (dry weight).

(b) For composted material and digestate produced from Type 1 or Type 3 feedstock with less than 50% by volume of Type 2 feedstock, analysis must be performed for salmonella or fecal coliform and meet the following limits:

(A) Salmonella analysis must result in less than 3 Most Probable Number per 4 grams of total solids (dry weight).

(B) Fecal coliform analysis must result in less than 1,000 Most Probable Number per gram of total solids (dry weight).

(c) For composted material and digestate produced from feedstock containing more than 50% volume of Type 2 feedstock in the initial pile, analysis must be performed for fecal coliform and meet the following limits:

(A) Analysis must result in less than 1,000 Most Probable Number per gram of total solids (dry weight).

(3) Methods of Pathogen Reduction. All composting facilities subject to this rule must document and implement a pathogen reduction plan that addresses requirements of the Code of Federal Regulations, 40 CFR Part 503. The plan must include a Process to Further Reduce Pathogen (PFRP), under 40 CFR Part 503 Appendix B, item (B)(1), dated February 19, 1993, that must include one of the following elements:

(a) Using either the within-vessel aerobic composting method or the static aerated pile composting method, the temperature of the active composting pile must be maintained at 55 degrees Celsius or higher for three days;

(b) Using the windrow composting method, the temperature of the active composting pile must be maintained at 55 degrees Celsius or higher for 15 days or longer. During the period when the composting pile is maintained at 55 degrees Celsius or higher, there must be a minimum of five turnings of the windrow;

(c) Using anaerobic digestion, the following parameters must be met:

(A) All feedstocks are pasteurized at 70 degrees Celsius or higher for five minutes or longer prior to placement in the digester; or

(B) The digestion process (treatment phase) maintains an operating temperature of 53 degrees Celsius or higher for five hours or longer; or

(C) The digestion process (treatment phase) maintains an operating temperature of 35 degrees Celsius or higher for 10 days or longer; or

(D) The digestion process (treatment phase) maintains an operating or liquid digestate storage temperature above 6 degrees Celsius or higher for six months or longer; or

(d) An alternative method that permittee can demonstrate achieves an equivalent reduction of human pathogens.

(4) Testing compost and solid digestate for pathogen reduction. All composting facilities subject to this rule must test composted material and solid digestate, excluding composted material and digestate that is sent as feedstock to a composter with either a composting permit or registration, with the following frequency:

(a) If less than 2,500 tons of composted material from Type 1 and 2 feedstocks are produced per year, testing must be conducted once a year.

(b) If more than 2,500 tons of composted material from Type 1 and 2 feedstock are produced per year, testing must be conducted every 5,000 tons of feedstock used or a maximum of once every three months.

(c) If less than 2,500 tons of composted material from Type 3 feedstocks are produced per year, testing must be conducted once every four months.

(d) If more than 2,500 tons of composted material from Type 3 are produced per year, testing must be conducted every 5,000 tons of feedstock used or monthly.

(5) Testing liquid digestate for pathogen reduction. The frequency with which liquid digestate must be tested for pathogen reduction depends on the average storage time for digestate following the treatment phase, where "average storage time" is defined as the total amount of liquid digestate withdrawn from storage over the course of a month, divided by the average quantity of liquid digestate being stored in that month. All anaerobic digestion facilities subject to this rule and proposing to use liquid digestate as a soil amendment, fertilizer or other productive use must test liquid digestate with the following frequency:

(a) If the average storage time for liquid digestate is less than one month, then testing must be conducted at least monthly.

(b) If the average storage time for liquid digestate is one month or greater, but less than six months, then testing must be conducted at least quarterly.

(c) If the average storage time for liquid digestate is six months or greater, then testing must be at least semi-annually.

(6) All composting facilities subject to this rule must receive written approval from the department regarding any use of liquid digestate other than:

(a) Discharge to an approved wastewater treatment system; or

(b) Discharge under a water quality permit issued under ORS 468B.050.

(7) Composted material and digestate from type X feedstock must be disposed in a landfill permitted to receive domestic solid waste, unless a facility receives written approval from the department for alternative use of the material.

**Statutory/Other Authority:** ORS 459.045, 459A.025 & 468.020

**Statutes/Other Implemented:** ORS 459.005, 459.015 & 459.205

**History:**

DEQ 7-2013, f. & cert. ef. 8-29-13

DEQ 6-2009, f. & cert. ef. 9-14-09

# White Paper

## Safe Management of Liquid Digestate from Anaerobic Digestion

### Clarification to Language in OAR 340-096-0140 *Special Rules Pertaining to Composting: Pathogen Reduction*



State of Oregon  
Department of  
Environmental  
Quality

**To:** Materials Management PMT

**From:** Bob Barrows, Waste Policy Analyst

**Date:** Oct. 16, 2018

Pathogen reduction standards for liquid digestate in Oregon Administrative Rules 340-096-0140, *Special Rules Pertaining to Composting: Pathogen Reduction*, are too restrictive for most anaerobic digesters in Oregon, particularly those using dairy manure as feedstock. Current Oregon rules do not recognize alternative standards and management options identified as safe for public health and the environment in 40 Code of Federal Regulations Part 503, *Standards for the Use or Disposal of Sewage Sludge*.

This paper proposes two things:

- 1) An interpretation of pathogen reduction standards in Oregon Administrative Rule 340-096-0140 for liquid digestate, to be used in anaerobic digester permits, based on standards and management options identified in federal 503 regulations
- 2) Considerations for future rule changes

### Background

During anaerobic digestion microorganisms break down biodegradable material without oxygen. One byproduct is biogas. Biogas is combusted to generate electricity and heat. It can also be processed into renewable natural gas and transportation fuels.

Anaerobic digestion technologies convert livestock manure, municipal wastewater solids, food waste, high strength industrial wastewater and residuals, fats, oils and grease, and various other organic waste streams, into biogas. Separated digested solids are typically composted, used for dairy bedding or directly applied to cropland. Nutrients in the liquid stream, called liquid digestate in Oregon Administrative Rules, are used in agriculture as a soil amendment or fertilizer.

OAR 340-096-0140, *Special Rules Pertaining to Composting: Pathogen Reduction*, establish a number of procedures and protocols intended to ensure finished compost and digestate are safe to public health and the environment.

The rules:

- Establish composting and digester processing procedures, and
- Set finished compost and digestate testing protocols and standards

The OAR borrows technical procedures, protocols and standards from U.S. Environmental Protection Agency regulations, specifically the Environmental Regulations and Technology for Control of Pathogens and Vector Attraction in Sewage Sludge. 40 C.F.R. Part 503.

#### Program

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# White Paper

EPA's Biosolids 503 regulations allow two levels of pathogen reduction for biosolids; Class A and Class B. The goal of Class A processes is to reduce the level of pathogens below detectable levels and below the level at which they may cause disease when exposed to the public. Class A materials may be used without site restrictions and must be tested to show that the microbiological requirements are met. OAR 340-096-0140 reproduces those analytical standards.

Unlike Class A biosolids, which are essentially pathogen free, Class B biosolids may contain some pathogens. Class B biosolids may be land-applied as a fertilizer, allowing competition with soil microorganisms and exposure to the sun and weather to further reduce pathogens to safe levels for public health and the environment. Farming practices, such as animal grazing, and public access, are restricted for a certain period of time. This allows further pathogen reduction. No one may give away or sell Class B biosolids in bags or other containers.

Aerobic composting and anaerobic digestion are two of the methods the 503 regulations recognize to treat biosolids and meet pathogen reduction standards. Aerobic composting can produce Class A or Class B biosolids. Anaerobic digestion can produce Class A or Class B biosolids. But most digesters are not designed or operated to attain Class A standards for liquid or solid digestate. Consequently, most digestate will be considered Class B. Class B compost and solid digestate can be aerobically composted and upgraded to Class A.

The following table identifies pathogen reduction standards and uses for biosolids under the 503 regulations for Class A and Class B biosolids:

	Class A	Class B
<b>Analytical limit:</b>		
<b>Fecal coliform</b>	<1,000 MPN/ gram solids*	<2,000,000 MPN/ gram solids*
<b>Salmonella</b>	<3 MPN/ 4 grams solids*	
<b>Use of compost or digestate</b>	Unlimited use	Restricted to agricultural use
*Most Probable Number per gram dry solids = an index of the number of coliform bacteria that, more probably than any other number, would give the results shown by the multiple fermentation tube test method.		

## Pathogen Reduction Standards in Current DEQ Composting Rules

DEQ used class A pathogen reduction requirements in the 503 regulations as a model when DEQ wrote OAR 340-096-0140. DEQ originally designed its pathogen reduction rules only for aerobic composting as a pathogen reduction method. Feedstocks expected for use in composting facilities include solid wastes such as yard debris, food waste and animal manures. Biosolids are not an allowed feedstock under these rules. Finished composted material under the current rules may be used anywhere appropriate without restriction.

Dairy manure is a common anaerobic digester feedstock in Oregon. It contains contains high levels of fecal coliform bacteria. Most manure digesters are not designed or operated to attain a Class A pathogen reduction standard. Rather, digestate is treated to a Class B standard and spread on agricultural fields as a soil conditioner or fertilizer. A Class B pathogen standard is safe for agricultural use.

DEQ added anaerobic digester regulations to DEQ composting rules during the 2012 Conversion Technology Rulemaking. This rulemaking did not consider restricted uses for digestate allowed under Class B Pathogen Reduction in 40 C.F.R.Part 503, including agricultural use of liquid



State of Oregon  
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### Program

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digestate. The rules currently require testing and compliance of all compost and digestate, including liquid digestate, to Class A, unrestricted use standards. This has made it difficult to write a permit that recognizes Class B pathogen reduction standards with agricultural crop use.

### **Proposed Permitting Implementation Pathway for Liquid Digestate**

Current pathogen reduction rules do not adequately address management of liquid digestate. This paper proposes DEQ recognize the procedures and standards allowed for management of digestate in the Class B Pathogen reduction standards under the EPA 503 regulations.

Specifically, the anaerobic digester permit template should be amended to authorize the agricultural practices allowed for digestate management in Class B standards. This would entail:

- Removing “analytical limits” for digestate under the Pathogen Reduction section
- Adding the following language to the permit allowing agricultural soil application under an Oregon Department of Agriculture approved Nutrient Management Plan:

“Apply digestate on agricultural lands at agronomic application rates in accordance with an Oregon Department of Agriculture Confined Animal Feeding Operation permit and approved nutrient management plan or applied at non-CAFO permitted agricultural operations at agronomic rates and as a nutrient management plan approved by ODA allows.”

- Adding the following language to the permit allowing other safe uses for digestate (for example, research is underway for other uses such as dewatering liquid digestate and selling the resultant liquid as a bottled fertilizer for home use):

Authorize “other productive uses for digestate DEQ approves”.

Additionally, in the future, DEQ should consider amending the Pathogen Reduction rule (OAR 340-096-0140) to recognize Class B standards and practices. DEQ should consider language used in Washington state anaerobic digester rules *WAC 173-350-250*.