Complying with State and Federal Biosolids Regulations

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DEQ

Presentation Overview

- How federal and state biosolids regulations are related
- Permitting biosolids land application programs
- Biosolids Management Plan
- Site Authorization
- Monitoring, Records, and Reports
- Biosolids Program Review

Brief History of Regulations

	Federal	Oregon
1982	EPA Intra-Agency Biosolids Task Force established	
1983	Recommendation for a comprehensive federal program	EQC required to adopt rules for land application
1984	Pollutant study list identified	OAR 340-050 adopted
1987	CWA update – EPA req'd to develop regulations	
1993	40 CFR 503 rule published	
1994	503 rules amended – Mo pollutant limits deleted	
1995	503 rules amended – Cr pollutant limits deleted; Se limits changed	Rules updated to federal standards

Applicability

- State and Federal Program are separate programs

	OAR 340-050	40 CFR 503
Land application	✓	✓
Land disposal		✓
Incineration		✓

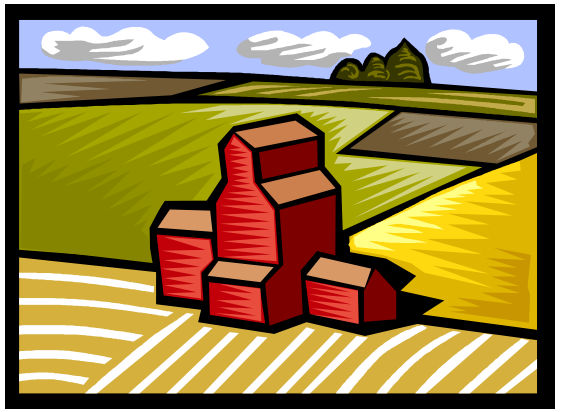
- Oregon DEQ can permit land disposal or incineration, but under Land Quality or Air Quality rules.

Applicability

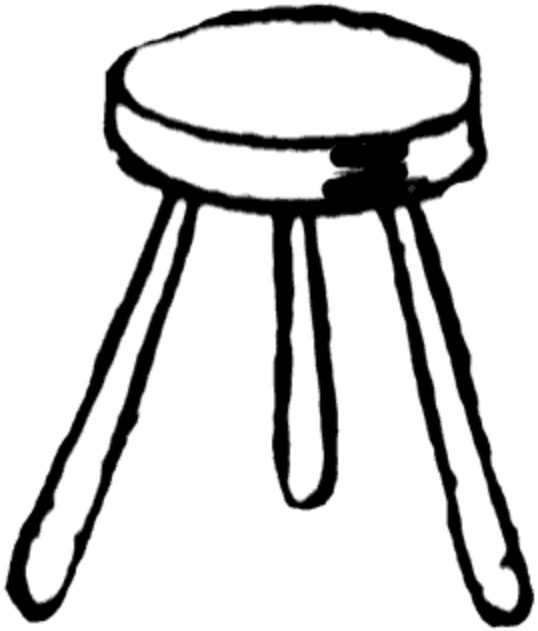
- 40 CFR 503 regulations are self-limiting: Facilities/persons required to follow the rule even if they have not been issued a federal permit for such activities
- EPA can take enforcement action against persons who violate the Part 503 requirements (permitted or unpermitted)
- OAR 340-050 adopts the 503 rules by reference

State of Oregon Biosolids Policy

"The Environmental Quality Commission encourages the land application of treated domestic wastewater biosolids, biosolids derived products, and domestic septage which are managed in a manner which protects the public health and maintains or improves environmental quality. These beneficial recyclable materials..." enhance the soil resource and promote plant growth.



Beneficial Use of Biosolids



Protective of Public Health

Protective of the Environment

Provide a beneficial use/resource value

What is Regulated?

- Pollutants and some nutrients
- Pathogens and vector attraction
- Reporting and recordkeeping
- Land application site management

Regulated Pollutants

Pollutant	EPA 503 Table 1 (Ceiling conc.)	EPA 503 Table 3 (Pollutant concentration)	Oregon ave.[a]	Years to reach loading limit[b]
Arsenic	75	41	5.6	949
Cadmium	85	39	3	1,667
Copper	4300	1500	448	426
Lead	840	300	76.4	501
Mercury	57	17	1.75	1,250
Molybdenum	75	-	13.7	698
Nickel	420	420	35.8	1,494
Selenium	100	100	6.3	2,023
Zinc	7500	2800	852	419

Limits in tables are in dry weight (mg/kg)

a – Weighted average, 2005 ACWA biosolids survey (87% of biosolids generated in Oregon).

b – Assuming annual application rate of 3.5 dry tons/acre

Nutrients and Other Parameters

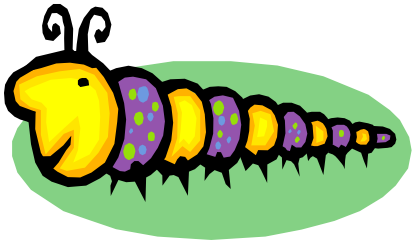
- Nutrients – consideration of supplying crops with adequate nitrogen (agronomic rate) and other nutrients
  - TKN, Nitrate N, Ammonium N, Phosphorus, and Potassium
- Other parameters
  - pH, % total solids, % volatile solids

Pathogens and Pathogen Reduction

- Specific causative agent of disease
- Pathogens - bacteria, viruses, & protozoa (viable helminth ova)
- Class B - 90% of pathogens removed

  98% of biosolids in Oregon
- Class A - 99% of pathogens removed

  2% of biosolids in Oregon



Pathogen Reduction Operational Standards

- Class B
  - Meet 1 of 3 alternatives, which includes treatment in a Process to Significantly Reduce Pathogens (PSRP) – 5 options
- Class A
  - Meet 1 of 6 treatment alternatives, which includes treatment in a Process to Further Reduce Pathogens (PFRP) – 7 options,
  - Meet a pathogen reduction limit for either fecal coliform or *Salmonella* sp., **and**
  - Pathogen reduction requirements must be met before or at the same time as most of the VAR requirements.

Class B Pathogen Reduction Alternatives

- Test for fecal coliform bacteria: geometric mean of at least 7 samples < 2 million MPN or CFU per gram of dry solids
- Processes to Significantly Reduce Pathogens (PSRP): 5 options
- PSRP Equivalent: as determined by permitting authority (EPA)

Class B Processes to Significantly Reduce Pathogens (PSRP)

- Aerobic Digestion
- Anaerobic Digestion
- Lime Stabilization
- Composting
- Air Drying

Class A Pathogen Reduction Alternatives

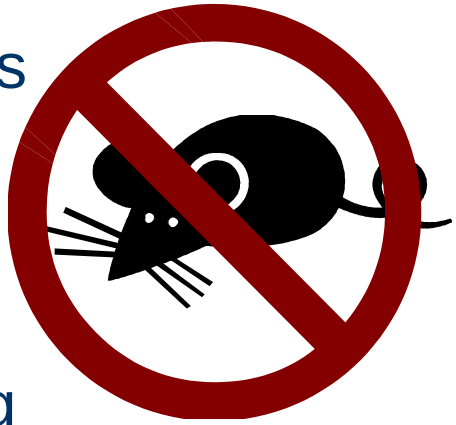
- Thermal treatment
- High pH-high temperature process
- Other process demonstrating reduction of enteric viruses and viable helminth ova
- Unknown process where biosolids must be tested for pathogens
- Meet one of the Processes to Further Reduce Pathogens (PFRP) – 7 options
- Process equivalent to PFRP as determined by permitting authority (EPA)

Vectors and Vector Attraction Reduction (VAR)

- Organism that transmits a pathogen
- Vectors - rodents, mosquitoes, flies, and birds
- VAR - describes the ‘stability’ of biosolids, achieved by reducing volatile solids or through incorporation
- Directly related to reduced odors

Vector Attraction Reduction (VAR) Operational Standards

- Class B: Meet one of ten options – most common is reducing volatile solids content by at least 38%
- Class A: Meet one of eight options
- Compliance must be shown at the same frequency as pollutant monitoring when VAR options 1 - 8 are met



VAR Options

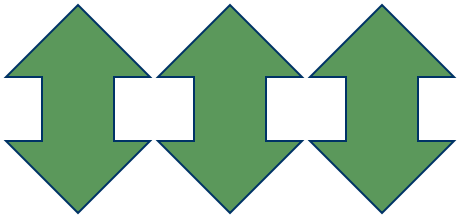
- 3 are based on monitoring for volatile solids reduction
- 1 based on testing for the specific oxygen uptake rate (SOUR) for aerobically treated biosolids (2% total solids or less)
- 1 based on time/temperature
- 1 based on lime stabilization
- 2 based on drying
- 2 based on soil incorporation

How DEQ Regulates Biosolids

Water Quality Permit (NPDES or WPCF)

- All facilities where biosolids are produced and then land applied or disposed
- Public notice requirement

Biosolids Management Plan & Land Application Plan



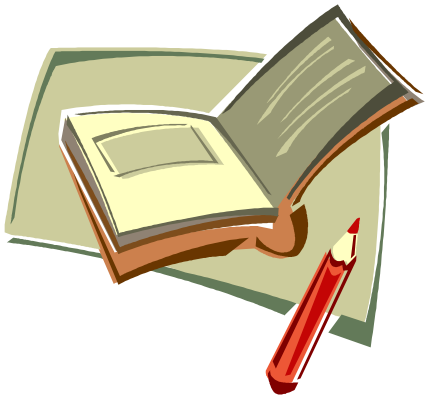
- Wastewater and solids treatment processes
- Land application activities
- Public notice requirement

Site Authorizations

- Site specific restrictions
- Loading Rates
- Public notification

Biosolids Management Plan (BSMP)

- A biosolids management plan is used to guide a wastewater treatment facility's solids operations and biosolids land application activities to achieve compliance.
- The plan is the administrative "tool" of a biosolids program.
- A plan is specific to each facility and the facility's NPDES or WPCF permit.



BSMP – DEQ Requirements

- Any person who intends to land apply biosolids must submit a Biosolids Management Plan to DEQ for approval.
- The permittee is required to adhere to the conditions of the plan, unless DEQ approved modifications are made.
- The provisions of the plan are considered to be permit conditions.
- The plan must be kept current and on file with the permit.

Review (and update) the Plan:

- with operational changes
- with every permit renewal

BSMP - Public Notice Process

- The plan and identified sites are subject to the public participation process as part of the NPDES and WPCF permitting process.
- A public notice with the opportunity for public comment will be provided (min. 30 day).
- A public hearing may also be required.
- Public notice required if there is a revision to any of the land application plan elements in the biosolids management plan.

Site Authorization

- Conditions specific to that site:
  - Application rates and criteria,
  - Site Restrictions
    - Size of setbacks,
    - Site use limitations, and
    - Timing of application
  - Site Monitoring

- Requirements more specific than biosolids management plan and permit

Site Authorization – Process

- Identify sites to be used and document that site meets relevant site selection criteria identified in biosolids management plan.
- Understand the crop management system and determine crop harvest or grazing delays.
- Submit site authorization request to DEQ.
- Participate in site evaluation conducted by DEQ.
- Conduct proper public notification and document activities.
- Receive written site authorization from DEQ.

Site Authorization – Notification

- New sites identified subsequent to approval of the plan must be identified through notification to the neighbors.
- Appropriate county officials will also be informed by DEQ through a copy of the site authorization letter.
- Any proposed site that may be sensitive with respect to residential housing, run-off potential, or threat to groundwater requires public notice.

Photo courtesy of USDA NRCS

Monitoring, Records, and Reports >> Monitoring

- **Operations**
  - Processing conditions (e.g., time, temp. pH)
  - Biosolids Quantity
  - Biosolids Quality
- **Site Monitoring**
  - Suitability (e.g., weather, groundwater, vegetation, etc.)
  - Application rates
  - Soil sampling

Monitoring, Records, and Reports >> Soil Monitoring

- Performance monitoring for residual soil nitrate is required when any biosolids **applications exceed 2 out of 3 years at agronomic rates** [OAR 340-050-0080(5)(a)]
- For sites in western Oregon, soil sampling and testing should occur **in the fall after crop harvest and prior to winter rainfall.**
- The following year's biosolids application rate (or site management practices) should be adjusted to account for residual nitrate.

Monitoring, Records, and Reports >> Records

- Troubleshooting facility operational problems will be easier.
- New operators/managers will have an easier time being trained about biosolids operations.
- Good records can help address questions and increase community acceptance of your program.
- Records can provide defense against accusations of improper land application activities.
- Information can be used to compile annual report.

Monitoring, Records, and Reports >> Records

- Operational and process
- Monitoring
- Sampling
- Laboratory
- Land Application

Monitoring, Records, and Reports >> Reports

- All facilities that land apply biosolids must file an annual report by February 19th, which covers the previous year's activities.
- Major facilities must also report to EPA.
- Compliance and information tool for the facility and DEQ.
- Simplified reporting form for statewide database.

Include site monitoring data (e.g., residual soil nitrate) in your annual report.

Biosolids Program Review >> Operations Review

- Are solids treatment units adequately maintained and operated?
- Are flows indicating plant is nearing hydraulic capacity?
- Is sludge storage being addressed year-round?
- Are there any permit violations and if so, what is the seriousness of them?
- Have treatment processes changed that will affect the quality of biosolids generated?

Biosolids Program Review >> Records Review

- Does the facility have an up-to-date Biosolids Management Plan?
- Are site authorization letters available?
- Is all required monitoring and reporting being completed?
- Are calculations accurate?
- Are records current?
- Do the records indicate any operational problems?
- Do the documented analytical results match what is being reported?
- Are all records available: operating, monitoring, sampling, laboratory, land application?

Biosolids Program Review >> Land Application

- Are land application sites authorized by DEQ?
- How is the land application program operating?
  - Are there sufficient sites?
  - Are conditions in the site authorization letters being adhered to?
  - Are application rates being followed?
  - Are crop management practices being followed?
  - Are site records being adequately maintained?
- Were there any complaints?

Oregon DEQ
Current & Future Activities

- Database development
  - Quantity and Quality of biosolids generated in Oregon
  - Land Application Sites
- Meetings with the regional coordinators
- Information on Common Questions
  - Extended Field Storage
  - Alkaline Stabilization
  - Wet Weather Land Application
  - Easements
  - Soil Sampling

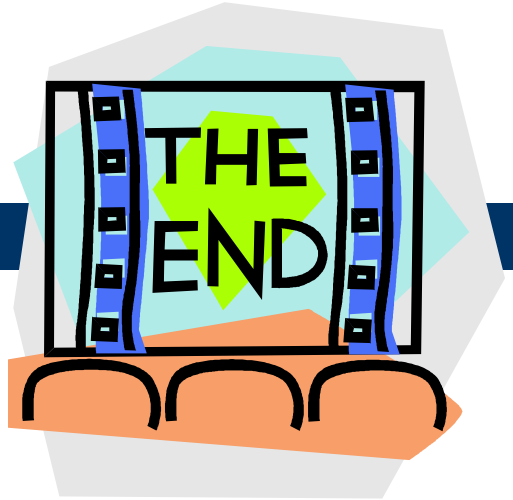
Resources

- Oregon Dept. of Environmental Quality
  www.deq.state.or.us/wq/biosolids/biosolids.htm

- US Environmental Protection Agency
  www.epa.gov/owm/mtb/biosolids/index.htm

DEQ Biosolids Contacts

DEQ Office	Contact	Phone	Address
Oregon State Coordinator Head Quarters/Northwest Region	Pat Heins	503.229.5749	700 NE Multnomah St #600, Portland, OR 97232
Western Region	Paul Kennedy	541.687.7439	1102 Lincoln Street, Suite 210 Eugene, OR 97401
Eastern Region - Bend	Larry Brown	541.336.2026	475 NE Bellevue, Suite 110 Bend, OR 97701
Eastern Region - Pendleton			700 SE Emigrant, Suite 330 Pendleton, OR 97801



QUESTIONS?

For further information:

http://www.deq.state.or.us/wq/Biosolids/Biosolids.htm

THANK YOU!