

# BEST PRACTICES FOR REDUCING ODORS

## Wastewater Treatment Plants & Biosolids Land Application Sites



Wastewater treatment utilities should have a policy to promptly respond to odor complaints received. Document odor investigations and follow up actions when resolving odor complaints.

DEQ adopted a policy for handling odor nuisance complaints in fall, 2013. The policy is available at <http://www.oregon.gov/deq/docs/NuisanceOdorReport.pdf>.

The DEQ policy recognizes that many municipal wastewater treatment agencies have a system for monitoring and responding to odor complaints. The DEQ policy acknowledges that local municipal and district wastewater systems should use their established procedures for receiving and responding to odor complaints.

### Establish an Odor Complaint System

Use a systematic approach for receiving and responding to odor complaints related to wastewater treatment plant operations or biosolids land application operations. A few example odor complaint forms are available on the ACWA web site at <http://www.oracwa.org/n-recentnews.html>.

Ensure that the odor complaint system includes an evaluation of the odor complaint and follow up directly with the complainant.

Resolving odor complaints is a very site specific situation. Each treatment plant will need to evaluate the source of odors within its treatment plant and work to resolve them. Proper treatment plant operations and balancing the treatment systems within the plant can prevent many odor problems.

Some odor complaints may not be related to treatment plant processes, but another source of odor, such as a nearby business, industrial, or agricultural activity. These can include painting operations, composting facilities, wood treaters, asphalt operations, foundries, landfills, and pulp mills.

### Potential Odor Sources at Wastewater Treatment Plants

#### HEADWORKS

The potential sources of odor at headworks and potential odor solutions to consider include:

- Enclose grit handling and/or grit removal systems.
- If the headworks uses a foul air system, ensure that the system is balanced and operating properly.
- When cleaning scum pits and other process areas that can emit foul odors, use best practices to get the job done as quickly as possible. Think about timing the cleanout when the fewest neighbors will be affected. Ensure the wind direction is away from neighbors. Have everything ready to complete the maintenance and cleaning as quickly as possible.



#### TREATMENT PLANT PROCESSES

Both clarifiers and aeration basins are potential sources of odor within the treatment plant. Properly monitor the treatment plant process throughout the treatment train to keep the process in balance and reduce odors.

For some more urban treatment plants, a long term solution could be to cover the primary clarifiers. For other treatment plants, a combination of odor treatment systems may be necessary, including covering some parts of the treatment plant or installing biofilter systems.



#### THICKENERS/DEWATERING FACILITIES/SOLIDS STORAGE FACILITIES

Scrubbers and odor treatment systems can be used to control odors for thickeners, dewatering facilities, and solids storage facilities. Ensure that these odor control systems are properly balanced and operating well. Foul air scrubbing systems may be needed for solids storage facilities.

Some utilities use odor masking agents in these areas to control odors, but note that DEQ regulations generally prohibit masking emissions of regulated pollutants and of pollutants that are potentially detrimental to health<sup>1</sup>. In addition, masking odorants can generate additional complaints about a new odor.

Monitor the digestion process to ensure proper Volatile Solids Reduction (VSR). The volatile solids reduction should be a minimum of 38% and is dependent on the specific treatment plant process. Some treatment plants have developed a VSR policy to adjust biosolids handling practices with varying VSR rates to reduce odors.



## Potential Odor Sources at Biosolids Land Application Sites

Potential sources of odor for biosolids land application sites vary and odors can be related to:

- Treatment process (e.g., anaerobic vs. aerobic digestion)
- Solids concentration (e.g., liquid vs. cake)
- Application method (e.g., surface applied vs. incorporation)
- Proximity to sensitive areas (e.g., residential housing or public use area, such as a park)
- Weather (e.g., inversion layer)
- Accidental spills
- Short-term and long-term storage facilities



All permittees are required to have an Odor Minimization Plan in their respective **Biosolids Management Plans**<sup>2</sup>. Each permittee is required to follow the requirements stated in the plan which includes addressing odor complaints and implementing mitigation measures.

Solutions for potential odor problems during biosolids land application include:

- Re-evaluate solids treatment processes for proper operation
- Consider timing of application activity (e.g., morning vs. afternoon; proximity to a holiday; presence of strong winds, etc.)
- Modification of buffer strips to sensitive areas
- Clean spills immediately and use lime to reduce odors
- Ensure tidy maintenance of storage facilities and use foul air scrubbing technology for long-term storage facilities
- Ensure all biosolids staff is properly trained on the **Biosolids Management Plan** specific to your facility and the proper response to all odor complaints, especially complaints from neighbors.

A reminder to double check compliance with all conditions included in your **Biosolids Management Plans** and the biosolids **Site Authorization Letter** for the land application site. Odor complaints will usually be reported to DEQ and treatment plants should anticipate a DEQ inspector visiting the site.

## ODOR BEST PRACTICES

- Set up an odor hot line to gather odor complaints from the neighborhood. Advertise the hot line with business cards and distribute the cards at neighborhood events. Routinely review and evaluate the odor complaints – ensure the odor log has time, location, and description of the odor. Correlate the odor complaints with wind direction and plant operations.
- Respond to odor complaints as quickly as possible by investigating the cause and communicating back to complainants.
- Be proactive about upcoming events which may generate noticeable odors--such as taking units out of service for maintenance--by contacting neighbors and letting them know.
- Establish routine 'walk arounds' to inventory odors as part of the Standard Operating Procedures for the treatment plant staff. Quickly resolve any odor problems encountered. Document findings and wind location for each 'walk around'.
- Discuss the potential, characteristics, and degree of odors from biosolids land application sites with the site owners (e.g., farmers) and biosolids land application staff. Educate all those involved in the land application practice so they are aware of potential odors and the need to mitigate and respond to these situations.
- Set up community meetings to discuss persistent odor problems.



Oregon Association of Clean Water Agencies

[www.oracwa.org](http://www.oracwa.org)

<sup>1</sup> See OAR 340-208-0400

<sup>2</sup> See OAR 340-096-0028(3)(b)