SAFE BIOSOLIDS MANAGEMENT IN OREGON
Frequently Asked Questions (FAQ) and Answers for Effective Communications
(December 2022)

What are biosolids?

Biosolids are the products of municipal wastewater treatment processes where the solid portion is converted into stabilized nutrient-rich organic material. As a beneficial resource, biosolids contain all 16 essential plant nutrients and organic matter and can be applied on land as a fertilizer and soil conditioner for crops and forests. Biosolids help the soil retain moisture and encourage the formation of good soil structure. Organic matter (carbon) is sequestered in the process, making land application of biosolids a sustainable practice.

Flogrow biosolids program—City of Florence

What is wastewater?

Wastewater comes from homes (kitchens, bathrooms, and laundry rooms), as well as from process and wash water from industries and commercial businesses such as restaurants. Wastewater is collected at municipal wastewater treatment facilities through networks of sewer collection pipes in cities, towns and communities across Oregon.

What is in wastewater?

Wastewater is composed of mostly water (about 99.5%). Less than 1/2% is suspended and dissolved solids that must be removed so the water can be returned safely to the environment. The solids are comprised of organic material (primarily waste products of animal or vegetable origin, but also some synthetic chemicals) and smaller quantities of inorganic material (sand, grit, nutrients, salts, and metals) (NEBRA, 2014). Wastewater also contains viruses and living organisms such as bacteria, some of which come from the human digestive system.

Why do we have wastewater treatment?

Wastewater treatment is necessary to protect public health and the environment. By discharging clean effluent water, wastewater facility operators are helping to protect:

- Aquatic life, fisheries, and shellfish operations
- Wildlife habitats that depend on shorelines, beaches, and marshes
- Recreational uses such as boating, swimming, fishing
- Human and animal health

Discharging untreated wastewater into waterbodies (e.g., rivers, lakes, and ocean) can harm those environments and can spread disease. In streams, native bacteria, algae, and other microscopic organisms can use the untreated wastewater as food to metabolize and reproduce, using the available oxygen dissolved in the water. If too much waste enters a waterbody, the organisms will use too much of the available oxygen needed by fish and other aquatic life for survival.

How does wastewater treatment work?

Wastewater treatment processes mimic the same biological and physical processes by which water is cleaned in nature. The steps to clean wastewater at a municipal treatment facility include preliminary treatment, primary treatment, secondary treatment, and in some cases also tertiary treatment. Industries and commercial businesses are often required to use their own pretreatment systems before discharging to sewers.

What are the uses and benefits of biosolids?

The organic matter and nutrients in biosolids improve soil structure and water-holding capacity, which improves growing conditions for crops, forests, landscaping, lawns, and vegetation on reclaimed lands. Biosolids are a sustainable alternative to commonly used chemical fertilizers (Oregon DEQ, 2022). Using biosolids allows farmers and landowners to reduce their use of commercial fertilizers.

Land application of biosolids provides all the following:

- Improves soil tilth, increasing soil organic carbon
- Increases water holding capacity, reducing irrigation demand
- Reduces crop drought stress
- Increases crop yields
- Sequesters carbon long-term
- Displaces fossil fuel-intense inorganic fertilizer (0.22 gallons of fossil fuel needed for every pound of inorganic nitrogen)
- Conserves non-renewable resources (like phosphorus) and recycles them

What makes biosolids safe for handling and beneficial use?

Land application of biosolids on farm fields in eastern Oregon.

The Oregon Department of Environmental Quality (DEQ) and United States Environmental Protection Agency (EPA) regulations require biosolids to undergo monitored treatment processes to kill and control pathogens and other disease-causing organisms before leaving wastewater treatment facilities. Biosolids are regularly tested for certain pollutants to meet safe levels to protect human health and the environment.

What regulations apply to biosolids and biosolids products in Oregon?

The beneficial use of biosolids and biosolids-derived products is regulated by DEQ in accordance with Oregon Administrative Rules Chapter 340, Division 50. The state rules incorporate EPA's biosolids regulations (Chapter 40 Code of Federal Regulations Part 503), including requirements to reduce pathogens, stabilize organic matter, and limit trace elements including arsenic, cadmium, copper, lead, mercury, molybdenum, nickel, selenium, and zinc.

In Oregon, monitoring is also required for several nutrients, including potassium, nitrogen, and phosphorus. DEQ is responsible for permitting land application sites for Class B biosolids in Oregon to protect public health and the environment. For each site where Class B biosolids are applied, DEQ issues a site authorization to the wastewater treatment facility that prescribes appropriate management practices for the site, soil conditions, protection of ground and surface water and wells, methods of

biosolids application, application rate, season of application, public access restrictions, crop harvest or grazing restrictions, record keeping and reporting requirements and required buffers near homes, highways, and other public areas. These practices are based on established policies developed by federal guidance, state university researchers and DEQ.

In addition to the EPA and DEQ regulations, Oregon municipalities that generate biosolids implement their biosolids management programs to ensure quality requirements are met or exceeded. The programs include sampling, monitoring, recordkeeping, and reporting of their biosolids processes.

Does the land application of biosolids cause surface water or groundwater pollution?

Properly managed biosolids do not pollute surface water or groundwater. Biosolids land application programs permitted by DEQ require best management practices to ensure water quality is protected. In fact, documented improvements in surrounding water quality have been found in numerous biosolids application projects due to enriched soils and vigorous growth of vegetation that reduce soil erosion and stabilize contaminants that had previously contributed to stream and groundwater pollution (DEQ, 2018). Biosolids are not allowed to runoff into surface water (e.g., rivers, streams, ponds). Application rates for biosolids and site management practices are designed to prevent the leaching of nutrients to groundwater.

Biocycle Farm Poplar Plantation—Eugene-Springfield MWMC

Will the value of my property be adversely impacted if biosolids are used nearby?

The answer to this question is, “No”. Studies have shown that biosolids are beneficial to the land and environment where they are used. By using biosolids, farmers and other landowners are likely managing the nutrients and processes on their properties more carefully and responsibly than other landowners. In addition, those who use biosolids may be benefiting from a more efficient fertilizer option, thus helping their fields or other open lands be more profitable. The more profitable their operations are, the more likely it is that farmers and other landowners will keep their properties green and open for the communities to enjoy (NEBRA, 2014).

What measures are taken to reduce and keep toxics out of biosolids?

Programs and requirements at local, state, and federal levels have been established over the last 40 years to control pollutants discharged to municipal wastewater systems where biosolids are generated.

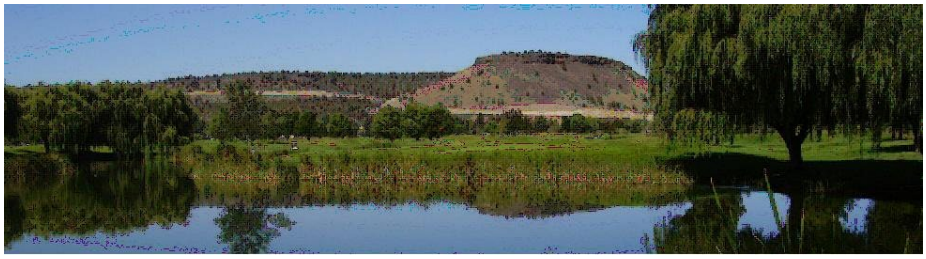
Locally, wastewater utilities establish metal and organic toxic pollutant limits for industrial wastewater dischargers. Utilities can require treatment or best management practices to reduce those pollutants through enforceable local permits. These industrial pretreatment programs are approved with oversight by DEQ and EPA.

Furthermore, DEQ, other state agencies and municipalities have implemented federal regulations to eliminate or control the use of toxic chemicals including lead, mercury, PCBs, dioxins, certain pesticides, microbeads and persistent plasticizers in industrial processes and consumer products.

What about pharmaceuticals and other consumer product ingredients in biosolids?

Over-the-counter and prescription drugs, as well as personal and home care products, such as soaps, shampoos, detergents, cleaners, perfumes, and cosmetics, contain a wide variety of chemical compounds and are discharged to wastewater treatment facilities. Some of the chemical compounds are discharged into sewer systems by households where these products are used. Unlike industrial sources, these discharges are difficult to regulate except by consumer choice.

Communities throughout Oregon encourage health care facilities and citizens to safely discard unwanted drugs and medications primarily using drop off boxes at secure locations or drug takeback programs and educate to not flush in the toilet. The EPA has voluntary programs such as Design for Environment Program and Green Chemistry to encourage product manufacturers to use safer chemicals.



City of Prineville Municipal Golf Course—Safe Application of Recycled Water and Biosolids

For more information about the ACWA Biosolids and Recycled Water Committee, contact the ACWA office at Smith@ORACWA.org or Landers@ORACWA.org

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