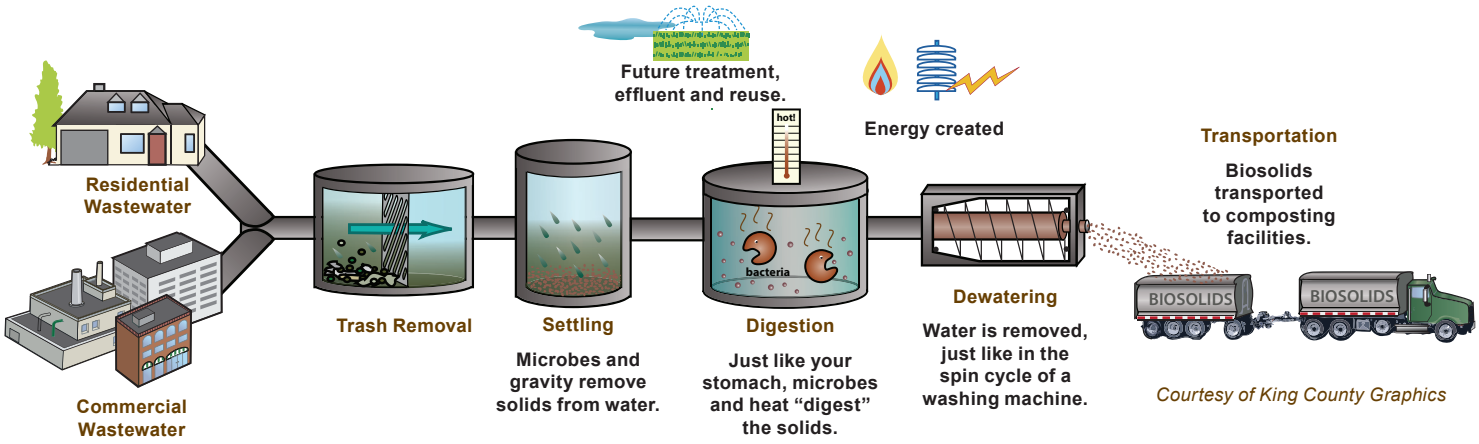
Biosolids Compost:
Rich Source of Plant Nutrients, Great for the Environment, and Reliably Safe

What are Biosolids and what is Biosolids Compost?

Biosolids are a nutrient-rich, natural byproduct of the wastewater treatment process. At the treatment plant, the wastewater is filtered and purified while the solids are separated and reduced by naturally occurring "good" bacteria and other microorganisms. The solids that remain are rich in primary plant nutrients like nitrogen and phosphorus, as well as the secondary and micro-nutrients such as sulfur, magnesium, calcium, copper, and zinc. One way to manage and recycle biosolids is through composting, which produces a soil amendment suitable for a broad variety of uses.

Composting is a natural biological process, dependent on oxygen, heat, moisture, material diversity and microorganisms routinely found in healthy soils. The microorganisms, including bacteria and fungi, break down organic matter into simpler substances and in the process destroy harmful pathogens. The resulting compost contains primary nutrients as well as trace minerals in a slow release form, along with stable organic compounds such as humus and humic acids which help return organic matter to the soil. The slow release of nutrients reduces the risk of nutrient overload in the environment due to leaching or run-off which are persistent problems with synthetic fertilizers. In addition, compost has been shown to improve soil porosity, drainage and aeration, moisture holding capacity and to reduce compaction. Compost can retain up to ten times its weight in water.

Wastewater Treatment Process — How Biosolids Are Made



Courtesy of King County Graphics

Using Biosolids Compost as a Soil Amendment

Biosolids compost is a beneficial, renewable product that can be used to improve soil quality while providing fertilizer value for the crops or plants to be grown. Compost is typically produced by combining biosolids and green waste (e.g. plant material from households, grape pumice, and tree trimmings), and is an excellent amendment for landscaping, gardens, farms, and vineyards, sustainably closing the recycling loop. Using compost as mulch limits evaporation, significantly reducing the amount of water needed for landscaping. Compost has been shown to provide natural drought resistance.

Most of the nitrogen in mature compost is organic, acting as a slow-release source of nutrients, providing those nutrients throughout the growing season, rather than immediately upon application. It can reduce the use of expensive (often fossil fuel-based) commercial fertilizers, and that means less environmental impact from fertilizer leaching into ground water or run-off into waterways.

Environmental Benefits of Biosolids Compost

Biosolids compost is an environmentally sustainable choice at every step.

Recycling of Organic By-products: Composting biosolids with green waste provides a sustainable and valuable recycling process that benefits the community as well as plants.

Improving Soil Health: Compost enhances the vitality of soil microbial populations, which in turn helps to maintain healthy soil or improve less healthy soils. As noted, compost provides slow-release nutrients feeding plants continually over the course of the growing season.

Greenhouse Gas Emission Reduction: The application of biosolids compost sequesters carbon in the soil, reducing greenhouse gas emissions and energy consumption when compared to the production of fossil fuel-based inorganic fertilizers.

Safety of Biosolids Compost

To fully ensure public and environmental health, all aspects of biosolids use are carefully planned and implemented according to comprehensive federal, state, and local regulations. The federal biosolids rule is contained in the US Environmental Protection Agency's 40 CFR Part 503.

Many local producers of biosolids compost are part of the Seal of Testing Assurance program (STA) developed and managed by the US Composting Council and meet exceptional quality standards as defined in the US EPA rule.

There is a common misconception that biosolids contain harmful levels of contaminants or pathogens. However, stringent pre-treatment regulations have dramatically reduced the discharge of pollutants to wastewater treatment plants; as a consequence, most biosolids easily meet the most stringent limits on regulated pollutants. Furthermore, rigorous treatment processes such as composting essentially eliminate viable pathogens while reducing the possibility of attracting flies, rodents and other potential disease carrying vectors prior to the product leaving the compost facility. Stringent regulations, policies and procedures, and comprehensive "best practices" management procedures, along with focused regulatory oversight, result in the consistent production of compost that is safe to use and which performs as expected.

Long-term scientific studies have consistently demonstrated that biosolids recycling is safe and beneficial when performed in accordance with federal, state, and local regulations. Results from these studies show that the risk of adverse effects to the environment or public health from composted biosolids are even lower than from many conventional fertilizers and manures.

There have been many scientific studies on the safety of biosolids for use in compost production and land application. A list of additional resources and some of the most significant studies can be found below:

ASSOCIATION OF COMPOST PRODUCERS

Association of Compost Producers
California State Chapter of the US Composting Council
www.healthysoil.org