
BIOSOLIDS: QUESTIONS & ANSWERS

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Q. How do we know that biosolids are safe?

A. Long-term scientific studies have consistently demonstrated that biosolids recycling is safe and beneficial when performed in accordance with federal and Virginia regulations.

How Much Do We Know?

The management of biosolids to minimize environmental and health risks has been the focus of hundreds of university research studies conducted for many years. The results of this extensive research show that biosolids can be managed so that the risk of adverse effects to the environment or public health from land application of biosolids is extremely low.

To ensure that biosolids are treated and appropriately managed, the United States Congress directed the U.S. Environmental Protection Agency (EPA) to develop comprehensive national standards to reduce the risks and maximize the benefits of land application of biosolids. In February of 1993, EPA issued its biosolids use and disposal regulation, 40 CFR Part 503, commonly referred to as “Part 503.”

In Virginia, the General Assembly has enacted numerous laws to regulate the production and beneficial use of biosolids. The Virginia Department of Environmental Quality has the primary responsibility of regulating the land application of biosolids. The EPA has approved Virginia’s biosolids management program.

In 2008, an Expert Panel created by the Virginia General Assembly concluded that the application of biosolids to farmland and forests in the Commonwealth represents little risk to human health or the environment and that biosolids should be viewed as a “resource,” rather than a waste product. While the Panel observed that more research is always desirable, it said that during its 18-month study it had “uncovered no evidence or literature verifying a causal link between biosolids and illness.”

Biosolids regulations address the following:

Trace elements

A small amount of trace elements, such as cadmium, lead, copper and zinc, can enter wastewater from industrial discharges, from homes and plumbing pipes. These pollutants remain in the solids throughout the treatment process. When biosolids are applied to the land, the elements cling to soil particles and organic matter and do not move down into the soil or groundwater. Trace elements occur naturally in the soil and many elements are actually essential plant nutrients. The amount of trace elements in biosolids is carefully regulated and monitored.

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Government limits: In order to protect human health and the environment, the Environmental Protection Agency (EPA) sets limits on the amount of trace elements allowed in biosolids. These levels are based on more than 20 years of research on how trace elements affect soils, plants and animals, the most comprehensive risk assessment ever performed by the EPA.

Pretreatment requirements: Rigorous “pretreatment” programs control the amount of pollutants entering wastewater treatment plants. Laws regulate industries to make sure that they dispose of their pollutants safely. This means that pollutants are removed from the waste stream *before* they ever reach the sewer. This ensures that biosolids contain only small quantities that EPA has determined to pose no risk.

Biosolids quality: Biosolids are routinely tested for metal concentrations to make sure that they comply with all regulatory requirements.

Pathogens

Before treatment, wastewater may contain disease-causing microscopic organisms, such as bacteria and viruses, which are known as pathogens, or germs.

Federal law requires treatment to reduce pathogens: Digesters and other forms of treatment kill from 90 to 99.5 percent of the pathogens originally found in wastewater solids. Additional treatment by heating and/or composting can create a product that is used in home gardens and landscapes.

The environmental cleaning process: After land application, conditions such as exposure to sunlight, lack of moisture or a relatively harsh soil environment destroy nearly all of the few remaining pathogens that may exist in biosolids.

Nitrogen

Biosolids contain organic and inorganic nitrogen and can be applied to plants as a fertilizer to dramatically accelerate growth. However, the addition of too much nitrogen, whether from biosolids or from a commercial fertilizer, can be detrimental to plant growth or can degrade groundwater or surface water.

Sites receiving biosolids applications are carefully selected and managed to ensure the protection of water resources. Farmers and foresters consider plant needs and soil nutrient levels when applying biosolids to their crops and trees.

