



BIOSOLIDS: Fertilizer or Pollution?

Lynchburg College Principles of Science 102A

What are biosolids?

Biosolids are mostly organic solids resulting from the treatment of wastewater that have undergone additional treatment to kill pathogens and that have been approved by the EPA for land application as a fertilizer and soil amendment. It involves such nutrients as nitrogen and phosphorus and contain other micronutrients for plant growth. Opponents refer to this as treated sewage sludge.

Q & A

Question 1: How are biosolids generated and processed?

Answer: Biosolids are created through the treatment of domestic wastewater generated from sewage treatment facilities. Wastewater treatment facilities monitor incoming wastewater streams to ensure their recyclability and compatibility with the treatment plant process. Once the wastewater reaches the plant, the sewage goes through physical, chemical and biological processes which clean the wastewater and remove the solids. If necessary, the solids are then treated with lime to raise the pH level to eliminate objectionable odors. The wastewater treatment processes sanitize wastewater solids to control pathogens (disease-causing organisms, such as certain bacteria, viruses and parasites) and other organisms capable of transporting disease.¹

Question 2: Are biosolids safe?

Answer: The National Academy of Sciences has reviewed current practices, public health concerns and regulator standards, and has concluded that "the use of these materials in the production of crops for human consumption when practiced in accordance with existing federal guidelines and regulations, presents negligible risk to the consumer, to crop production and to the environment."¹

Question 3: Who regulates biosolids?

Answer: Biosolids are regulated at both the federal and state level. Biosolids must first meet several quality standards and regulations in order for them to be applied to land. These standards contain limits for metals that may exist in biosolids, site rules and regulations, pathogen standards, record keeping rules and soil monitoring requirements. In Virginia, the Virginia Department of Health has the primary responsibility for permitting and monitoring the land application of biosolids.²

Question 4: Do biosolids affect water quality?

About 95% of the nitrogen in biosolids exists in an organic form that has a slow release rate, which makes it much less likely to run off into streams. Virginia regulations require buffers between the biosolids application site and wells, creeks, rivers, lakes, drainage ditches or intermittent streams.²



Map of locations where biosolids are applied or stored (Image from Chris Peot, District of Columbia Water and Sewer Authority).

Blue Plains Plant processes 370 MGD. It recycles about 43,000 wet tons a month (Image from Google Earth).



Pros and Cons of Biosolids

Pros	Cons
<ul style="list-style-type: none"> •Creates jobs • It is a cost effective method of disposal • Recycles versus filling landfills • Promotes farming • Reduces emissions from transportation to landfills • Good free fertilizer •Land Reclamation •It's regulated according to EPA law 503 	<ul style="list-style-type: none"> • Potential health hazard • Effects irreversible • Contamination resulting from accumulation of industrial waste • Its true composition is unknown • May contain hazardous chemicals • Possibly transferable to crops • Decreases property value •Not sufficiently regulated •Odor

Works Cited

²Biosolids FAQ." [NutriBlend](http://nutri-blend.com/faq/index.htm) NutriBlend. 2 Apr. 2008 <<http://nutri-blend.com/faq/index.htm>>.

[The Facts About Biosolids](#). Richmond, VA: Virginia Biosolids Council, 2008.

¹ "Frequently Asked Questions." [Biosolids](http://www.epa.gov/OWM/mtb/biosolids/genqa.htm). EPA. 2 Apr. 2008 <<http://www.epa.gov/OWM/mtb/biosolids/genqa.htm>>.

Snyder, Caroline. "The Dirty Work of Promoting "Recycling" of America's Sewage Sludge." [International Journal of Occupational Environmental Health](#) 11 (2005): 415-427.

[Sludge Diet](#). DVD. Thalie Productions, 2006.

Our Greatest Concerns:

- Heavy metal accumulation.
- Long-term effects to land and to health of people and animals.
- Is it transferable to food/water?
- Once it is applied, it is irreversible.

Agendas:

- Who is making the money?
- Why is it free?
- Why bring it all the way from up North to down South when there is farmland in the North?
- Can we trust the government to regulate it properly?

Alternatives:

- Burn it
- Stick it in a landfill



Conclusion:

Students who are undecided or against biosolids are concerned about the long-term effects and want to see more research on the subject.

Students who support biosolids believe that if it is applied properly, biosolids are a viable alternative for fertilizers and good way to recycle.

Class	Pro	Against	Undecided
102A	5	6	3
102B	3	4	6

Class visiting application site in Appomattox, VA.

