

City of Lincoln – LinGro Cake Biosolids Land Application Program Frequently Asked Questions

Q: – Where do biosolids come from?

A: – Biosolids are a beneficial byproduct of wastewater treatment. Wastewater received and generated from the thousands of households, businesses, and industries in Lincoln contribute to producing biosolids.

Q: – What is the difference between biosolids and sewage sludge?

A: – It is somewhat analogous to the question “What is the difference between compost and yard waste?” In both cases, bacteria are breaking down the organic matter and producing a beneficial organic material. Composting takes place under aerobic conditions (in the presence of oxygen) while Lincoln’s biosolids are produced within an anaerobic environment (in the absence of oxygen). Through careful processing at the wastewater treatment plant sewage sludge becomes a safe, usable product called biosolids.

Q: – How is sewage sludge converted into biosolids?

A: – The City of Lincoln’s Theresa Street Wastewater Treatment Plant’s modern facility has the capacity to treat 30 million gallons of wastewater per day. The solids in the wastewater (sewage sludge) contain fats, oils, proteins, and complex organic compounds. In a controlled and regulated environment (anaerobic digestion), bacteria will utilize these waste types as their food source and convert many of these complex organic compounds into carbon dioxide, methane, water, and a more stable organic material which is an ideal soil amendment. After about 20 days of biological decomposition in the anaerobic digesters, the sewage sludge has been converted into a beneficial recyclable organic material called “biosolids”.

Q: – Why are biosolids recycled?

A: – Aside from reuse, the only option for the disposal of biosolids is burial in the Bluff Road Landfill. Lincoln’s Biosolids Land Application program started in 1992. Since that time the City has saved close to 700,000 cubic yards of landfill space. This represents a current value of \$5.8 million of landfill space. It also provides a process for renewing the soil with nutrients and organic matter while reducing crop production costs to participating farmers. Biosolids recycling is the best disposal option while also returning nutrients and organic matter to the soil. It is recycling a resource, just like recycling newspapers or bottles. When the right safeguards are taken, land application of biosolids is environmentally protective and beneficial to farmers.

Q: – Why is land application of biosolids beneficial?

A: – Farmers and gardeners across the nation have been recycling biosolids for ages. Biosolids helps to grow crops, fertilize gardens and parks and reclaim mining sites. In Lincoln’s Biosolids Land Application program, the biosolids are used as a substitute for inorganic fertilizers such as anhydrous ammonia. Natural gas is used to produce commercial fertilizer so farmers are conserving the country’s natural gas supply by using biosolids.



Spreading Equipment Used to Apply Biosolids

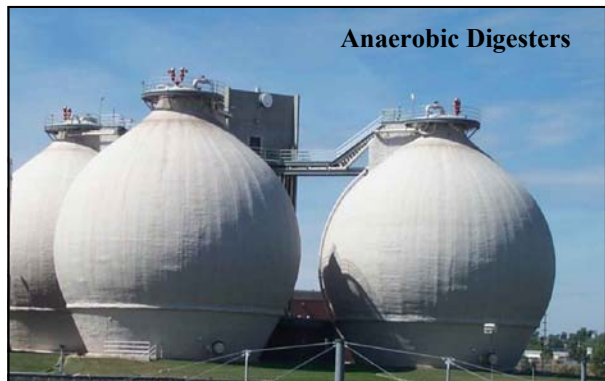
Biosolids add organic matter to the soil that allows the soil to breathe and at the same time, hold more water and nutrients. Organic nitrogen is released slowly, improving crop production. The result is better crops, less water runoff, less soil erosion, and more water conservation.

In addition to organic matter and nitrogen, biosolids have all the essential macro-and micro-nutrients needed to grow crops. Farmers who use biosolids see increased crop yields when they use biosolids, compared with inorganic fertilizers. Biosolids recycling is a safe, reliable, and a cost-effective method for managing biosolids.

Q: – Are there pathogens in biosolids?

A: – Yes, because biosolids are a product of the wastewater treatment process. Approximately 99% of the pathogens (harmful micro-organisms) are destroyed during the collection and treatment of wastewater, and most of the remainder are destroyed through the solids treatment process. Most pathogens cannot multiply outside of living hosts.

Q: – How are biosolids treated to kill pathogens?



A: – The time and temperature processing in the anaerobic digesters kills most of the pathogens, but there will still be low levels of pathogens present. The Environmental Protection Agency (EPA) regulates these treatment processes and amounts of pathogens in biosolids before they can be safely used on cropland.

Q: – Are biosolids regulated?

A: – Yes. Prior to land application, biosolids must meet strict regulations and quality standards established by the federal, state, and local governments. The rules that govern the use of biosolids contain concentration limits for metals in biosolids,

pathogen reduction standards, vector attraction reduction, site restrictions, crop planting and harvesting restrictions, and monitoring, record keeping and reporting requirements for land applied biosolids. More information related to these requirements can be obtained from the Theresa Street Wastewater Treatment Plant or UNL Extension in Lancaster County.

Q: – What proactive programs has the City implemented to assure the quality of the biosolids?

A: – A: The Industrial Pretreatment Program implemented by the City of Lincoln includes routine sampling of the wastewater discharges from industries to the wastewater treatment plants. The wastewater samples collected from various manufacturing and industrial facilities within the City of Lincoln, are analyzed for contaminants that are of concern to the treatment plant processes as well as those that are federally regulated by the biosolids program. By monitoring and testing the quality of the wastewater discharges from these industries, we are able to ensure that the quality of the biosolids produced at the treatment plant meet the requirements of the federal regulations.

Q: – Does the city regularly sample and test the biosolids?

A: – Regulations require that the biosolids be tested six times per year. The City of Lincoln tests the biosolids at the Theresa Street Wastewater Treatment Plant on a weekly basis. Data from this testing can be made available upon request.

Q: – Do biosolids have an odor?

A: – Biosolids may have a different distinctive odor depending on the type of treatment it has been through. Some biosolids may have only a slight musty odor, while others have a stronger ammonia odor. If the biosolids are thoroughly digested at the wastewater plant, the odor is usually that of moist soil. Wastewater treatment plants typically use an organic polymer additive in the process of dewatering biosolids, which can also cause a salt-water smell. The odor from biosolids comes from the decomposition of organic material. Compounds that contain sulfur and ammonia, which are both plant nutrients, cause most of these odors.



Q: – How do you determine the amount of biosolids to apply on a field?

A: – Prior to the application of biosolids, soil tests are taken on potential fields to determine the amount of residual nitrogen in the soil. The application rate of biosolids depends on the nitrogen needs of the next crop to be grown and results from these soil tests.

Q: – How often can biosolids be applied on a field?

A: – The City started the land application program in 1992. Because the (organic) nitrogen in biosolids becomes available to plants over time, there will still be some nitrogen showing up for several years after a single application. Due to this and the large demand for the material the City has adopted the policy to have three or more crop years after the application of cake biosolids. This allows the full value of the nitrogen in the biosolids to be fully utilized and allows a larger number of farmers to make use of the product.