

# BIOSOLIDS NEWS

News and Information from the Virginia Biosolids Council • April 2009



McGill-Sussex plant is the largest enclosed composting facility in Virginia. Biofilter (foreground) removes odors and particulates from plant exhaust.

*McGill plant in Waverly provides new capacity*

## Composting a growing option for biosolids recycling

Composting is an emerging management option for recycling biosolids in Virginia, thanks to a new Sussex County facility operated by McGill Environmental Systems.

The year-old, \$7 million plant is the largest enclosed composting operation in the Commonwealth. The 85,000 square foot plant sits on a 110-acre site near Waverly and is currently producing an average of 9,000 cubic yards of Class A compost a month.

The compost is sold in bulk as a soil conditioner for agriculture, landscaping, horticulture, sports turf, soil remediation and erosion control. Compost is primarily a soil conditioner that provides a broad range of macro and micronutrients, and humus, the carbon rich coffee-colored organic material that enhances moisture retention and reduces the need to water.

McGill-Sussex also produces Nutri-Green® compost under contract to Hampton Roads Sanitation District (HRSD). Nutri-Green, which is sold in bulk and in retail bags at home and garden centers in the Hampton Roads area, is produced exclusively from biosolids provided by HRSD in a process that separates its feedstocks from other compost production at the plant.

In addition to HRSD, McGill is receiving biosolids from D.C. Water & Sewer Authority (DCWASA) and

the Rivanna Water and Sewer Authority in Charlottesville to produce McGill's own Soil Builder compost product. Composting supports the authorities' environmental goals of recycling the valuable nutrients and organics in biosolids. DCWASA and HRSD are also major suppliers of biosolids for recycling through land application on farms in Eastern and Central Virginia.

The McGill-Sussex plant is one of seven composting plants operated by McGill. The company has its headquarters and two plants in North Carolina and four facilities in Ireland, where the company's co-founder, James H. McGill, lives.

According to Bob Broom, business development manager for McGill, the Waverly location was selected because of the availability of reliable supplies of biosolids and other organic material and the proximity to high-demand markets for compost, including agriculture and urban landscaping.

McGill Environmental Systems was formed in North Carolina in 1991 by McGill and Noel Lyons, a fellow Irishman, to commercialize a composting process the two had developed to recycle poultry and hog manure. Lyons manages the U.S. operation from the Harrells, NC headquarters.

*Continued on back...*



*The Virginia Biosolids Council supports the recycling of biosolids in Virginia through information and education on the beneficial use and safety of biosolids. The Council is supported by municipal wastewater treatment plants, land application and composting companies and biosolids users, and is available as a resource to those who need information about the recycling of biosolids.*

...continued from front.

## Compost a growing option

While composting is a natural process that is as old as life itself, large commercial and municipal composting operations like McGill use technology to enhance and accelerate the process. McGill uses static pile forced aeration composting to provide an environment that is highly conducive to the growth of beneficial microorganisms, including bacteria and fungi, that break down organic matter, including biosolids, wood waste and other organic materials.

### Composting kills pathogens

While some composting operations require that the composting piles be periodically turned to ensure the microorganisms have enough air, the McGill process forces air through a static composting pile, which accelerates the decomposition process. This process of decomposition releases significant amounts of heat at temperatures sufficient to kill disease-causing pathogens, weed seeds and fly larvae, and results in a Class A soil conditioner that is in great demand for agricultural, landscaping and home gardening applications.

According to Broom, the key to the McGill process is providing a consistent mix of feedstocks and maintaining a precise balance of moisture, temperature, time and oxygen during the active composting process. While the basic science of composting is certainly well known, Broom says that McGill's process has significant advantages. To maintain its competitive edge, the company does not disclose details of its manufacturing process.

### Process independent of weather

All of McGill's primary composting takes place indoors, which allows operations 365 days a year regardless of outdoor temperatures or weather conditions. This provides greater control over the process and a more consistent, high quality product, says Broom.

The first two stages of the process, blending and primary composting, take place inside. The blending area includes storage for wet and dry feedstocks, plus amendments and bulking agents. Feedstocks for McGill's products can include biosolids, food waste, agricultural waste, animal manures and bedding, wood waste, yard waste, paper and paperboard.

McGill facilities are able to process many types of source-separated, non-hazardous organic materials. However, prior to acceptance, each material must be evaluated to ensure that it meets or exceeds regulatory requirements, operating permits, as well as company policies, procedures and processing standards. All feedstocks must meet EPA Class A standards for metals prior to acceptance.

Raw feedstocks are blended with amendments and bulking agents to provide nutrients, balance the moisture content, create a homogeneous mix and create adequate space for air to move through the composting mass. This blending is done by front-end loader operators who are highly trained to achieve the desired mix.

From the blending area, a front-end loader operator places the blended mixture into a composting bay. Channeled concrete floors in the bay allow air to be continually forced by fans up through the pile, which accelerates the composting process.

Temperature probes near the center of the compost pile relay information to a computerized process control station. The computer maintains the temperature in the pile within preset levels by controlling the speed of fans.



**Nutri-Green® compost is produced by the McGill-Sussex plant from biosolids supplied by the Hampton-Roads Sanitation District. The product is in great demand and typically sells out during the spring and fall growing seasons.**

The air and moisture are drawn off the pile and channeled through massive biofilters that remove odors and particulates before the air is released to the atmosphere. These biofilters are actually large beds of wood chips that are replenished periodically. The used wood chips are recycled in the composting mixture.

After approximately two weeks, when primary processing is complete, the material is removed from the bay, screened to remove larger particles, and is a market-grade product. However, to improve compost quality and increase market value, McGill places the compost in outdoor windrows to cure for another four to six weeks. Curing is characterized by a lower level of microbial activity and the further decomposition of the material.

When the decomposition process is completed, the material is tested to ensure it meets McGill's product quality standards for high-end markets. All compost products produced at the McGill facility are certified through the US Composting Council's STA program. Before shipment from the McGill plant, the compost may be rescreened and/or blended with other materials to meet the requirements of specific customers.

**For more information, go to [www.mcgillcompost.com](http://www.mcgillcompost.com)**



Biosolids News is published by the Virginia Biosolids Council  
P.O. Box 72893 • Richmond, VA 23235  
[www.VirginiaBiosolids.com](http://www.VirginiaBiosolids.com)  
e-mail: [info@virginiabiosolids.com](mailto:info@virginiabiosolids.com)