

BIOSOLIDS NEWS

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A Review of Science & Facts

Findings on the use of biosolids on agricultural lands

Because of the public nature of the biosolids permitting process, it can be helpful to revisit some of the facts about recycling of biosolids on farms and forests. For this reason we have provided in this article a few of the important summaries of various research or research-related projects from the last few years. The full context of these reports and findings can be found at the Council's website:

www.virginiabiosolids.com/resources.

In 2007 the Virginia Department of Health published a study by three respected epidemiologists, *Health Effects of Biosolids Applied to Land: Available Scientific Evidence* (Jenkins, Armstrong et al. 2007). This study represented an exhaustive review of the scientific literature about biosolids and human health. The primary conclusions were: "... there does not seem to be strong evidence of serious health risks when biosolids are managed and monitored appropriately. Human health allegations associated with biosolids usually lack evidence of biological absorption, medically determined human health effects, and/or do

not meet the biological plausibility test."

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 Expert Panel reported 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." The Panel was created by the 2007 General Assembly and was asked to answer a series of questions relating to biosolids, health and the environment.

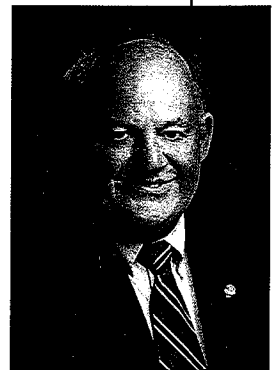
In a report by a team of researchers of national stature, who convened a national expert conference to examine the sustainability of land application of biosolids and manures (*"Sustainable Land Application: An Overview"*, (O'Connor, Elliott et al. 2005)), the researchers concluded: "To date, no case of pathogen-related

Continued on Back Page

Johnson Named Director of VADCR

David A. Johnson was recently named by Governor Bob McDonnell as Director of the Dept. of Conservation and Recreation (DCR). In addition to having oversight of Virginia's state park system, DCR is the primary non-point source pollution prevention agency, having regulatory authority for erosion and sediment control and nutrient management training.

Mr. Johnson has over 30 years of environmental and industrial experience working for private and governmental entities and 14 years experience working on environmental public policy and regulatory issues. An engineer, he has worked as a private consultant for federal, state, industrial and commercial clients primarily in the area related to environmental regulatory matters. He served as Chief Deputy Director at the Virginia DEQ from 1998 to 2002.



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.



A silviculture application in central Virginia.

Research Shows Biosolids Can Enhance Forest Productivity

According to a recent study, forests in the piedmont area of Virginia may be a good alternative location for land application of biosolids. The objectives of this study, conducted by Eduardo C. Arellano and Dr. Thomas R. Fox of Virginia Tech, were to quantify nutrient availability and tree growth in a loblolly pine plantation following the application of different biosolids types, at different rates, and at two different times. The study started in September 2005 in a thinned loblolly pine plantation in Amelia County.

Preliminary results from this study indicate that biosolids additions increased soil nitrogen availability. Soil nitrogen availability following biosolids applications were greater than in the control plots. This occurred following both fall and spring treatment applications. Soil nutrient availability following biosolids was similar to that

following application of inorganic fertilizer. Foliage mass increased in response to biosolids and fertilizer applications indicating there will likely be a positive effect on tree growth. Because the application of biosolids increased N availability in the soil, it also has the potential to increase N leaching. The findings in this study, and other studies, show that the characteristics of the biosolids being applied to land are as important as the site characteristics. Organic N forms, moisture content, and other soil chemical and physical properties could affect nutrient cycling and should be considered when applying biosolids. Currently, the recycling of biosolids for tree farms in Virginia represents a small fraction of the typical agricultural application on farm fields.

The report can be found at www.virginiabiosolids.com/resources.

Science & Facts

Continued from Front Page

health effects from biosolids has been documented.” (Brooks, Tanner et al. 2005), “*Detection of Aerosolized Endotoxin from a Land Application of Biosolids Site*”, showed that endotoxin levels were at background levels at a distance of 100 meters (325 feet) from land application, and even at the point of application were within recommended guidelines for occupational exposures.

Additionally, a research study by Brooks, “*Diversity of aerosolized bacteria during land application of biosolids*”, showed that many of the endotoxins released during land application were attributable to soil organisms, not to the biosolids alone (Brooks, Gerba et al. 2007).

One study showed that biosolids applied to soil caused the soil to be less prone to release of endotoxins to the air, because of the biosolids’ consistency and moisture. This is the finding of the work by Paez-Rubio, “*Particulate matter composition and emission rates from the disk incorporation of class B biosolids into soil*,” (Paez-Rubio, Hua et al. 2006).

In summary, there is good science about the recycling of biosolids. And, Virginia’s regulations contain protective measures to prevent runoff into streams or leaching into groundwater. In all cases, applications are monitored by Virginia DEQ to ensure compliance.

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