TESTIMONY
House Environmental Resources & Energy Committee Hearing
House Resolution 426
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Chairman Miller, Chairman Vitali and members of the House Environmental Resources & Energy Committee, for the record, I am Vince Phillips, lobbyist for the Pennsylvania Septage Management Association (PSMA). This association represents those firms that are engaged in the business of installing and maintaining septic systems utilized by over 40 percent of Pennsylvanians. In addition, PSMA members work with municipalities and farmers in the application of biosolids.

Note that I used the word 'biosolids' instead of the phrase 'sewage sludge'. The term 'sewage sludge' is defined as "the growing and continuous mountain of hazardous waste produced daily by sewage plants" by the Center for Media and Democracy, an organization vigorously opposed to application of biosolids. In today's testimony, I will use the term 'biosolids' since to me it is a more value neutral term. The Oxford Dictionary defines biosolids as "organic matter recycled from sewage especially for use in agriculture."

Today's question is House Resolution 426 which directs the Legislative Budget and Finance Committee to review the Commonwealth's program for beneficial use of land application of biosolids.

PSMA is not convinced that this study is necessary given the volumes of research already done on the subject nationally and in Pennsylvania regarding the use of biosolids, their application, and the various pros and cons of various options used by farmers to fertilize their fields.

Information About Biosolids is Already There

The web-based publication Residuals Weekly for October 11, 2014 listed 48 different articles focused on biosolids, wastewater and compost.

A quick Google search on the Internet using the term "university biosolids research" came up with 100 listings including studies from University of California Davis, Stanford University, Cornell, University of Toledo, University of Florida, Colorado State University, Kansas State University, Ohio State University, University of Washington, Tulane University, Utah State

University, Duke University, University of Arizona, Yale University, Michigan State University, Texas A&M, University of Maryland, and others.

Penn State has done extensive research on biosolids and perceived advantages and disadvantages. There were 2,050 results shown under biosolids within the Penn State website. Pennsylvania academic research includes projects such as an assessment of 20 farms located in 18 PA counties, "Land Application of Sewage Sludge in PA - Effects of Biosolids on Soil and Crop Quality". Its' conclusions:

Conclusions

Repeated application of biosolids to farm fields has altered some soil quality parameters, but has had no measurable effect on crop quality parameters.

- *Biosolids are clearly providing nitrogen for crop production. Similar crop yields and nitrogen content indicate crops fertilized with biosolids are receiving sufficient nitrogen. However, higher soil nitrate concentrations in biosolids fields at the end of the growing season indicate that nitrogen management with biosolids could be improved. Nitrogen mineralization constants used to calculate biosolids application rates should be reassessed to determine if they are appropriate. Biosolids fields should be planted with winter cover crops to take up any excess soil nitrogen and reduce the potential for nitrate leaching or runoff. When biosolids are used for corn production, application rates could be reduced and pre-side dress soil nitrate testing utilized to determine the need for additional nitrogen fertilizer.*
- *There is evidence that, similar to animal manures, continued biosolids use will lead to increased soil phosphorus levels. The environmental significance of such increases needs to be examined, particularly as Pennsylvania moves to phosphorus-based nutrient management.*
- *Because biosolids are low in potassium, soil test potassium levels should be monitored when biosolids are used. Other sources of potassium fertilizer should be added as needed to maintain optimum soil potassium levels.*
- *Repeated biosolids applications have increased soil concentrations of several trace elements. Such increases are expected since concentrations of these trace elements in biosolids are greater than background soil concentrations. The very small magnitude of these increases relative to allowable trace element additions under current biosolids regulations suggests that these increases are too small to have increased risk to the environment or to human health. Increased trace element concentrations in soil below the depth of normal biosolids mixing indicate deeper than expected movement of these trace elements. Such movement could have occurred by deep incorporation, deep tillage operations, or by downward leaching.*

- *Yields, nutrient contents, and trace element contents of crops grown on biosolids and control fields were similar; indicating the use of biosolids has not affected crop quality and has not increased trace elements entering the food chain.*

Prepared by Richard Stehouwer, assistant professor of environmental soil science.

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Penn State is not alone. Bucknell University has researched the issue technically per studies done by Professor Matthew Higgins:

Higgins, M.J., Y.C. Chen, S.N. Murthy, D. Hendrickson, J. Farrell, P. Schafer. (2007) Reactivation and growth of non-culturable E. coli in anaerobically digested biosolids after dewatering. Water Research, *44 (3), 665-673.*

Chen, Y., Higgins, M.J., Murthy, S.N., Maas, N.A., Covert, K.J. and Toffey, W.E. (2006) Production of odorous indole, skatole, p-cresol, toluene, styrene, and ethylbenzene in biosolids. Journal of Residuals Science & Technology. *3 (4): 193-202.*

Glindemann, D., S. N. Murthy, M.J. Higgins, Y.C. Chen, and J.T. Novak. (2006). Biosolids incubation method for odorous gas measurement from dewatered sludge cakes. Journal of Residuals Science & Technology *3(3): 153-160.*

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Delaware Valley College has a biosolids blog which addresses EPA compliance in 'Control of Pathogens and Vector Attraction in Sewage Sludge' and lists compliance requirements for DEP's General Permit for Exceptional Quality Biosolids.

Don't Overlook DEP Resources

The PA Department of Environmental Protection (DEP) has an informative web site that describes current compliance requirements.

We are all responsible for generation of biosolids. Pennsylvanians produce an estimated 2.2 million tons of wastewater solids, or sewage sludge and residential septage, each year, nearly a quarter of a ton per household. This material has proven to be a valuable resource, when controlled and safely applied, as a fertilizer to help rejuvenate farmland, forests and minelands.

In order to ensure safe use of biosolids, Pennsylvania has updated its regulatory program. The regulations focus on setting strict standards for biosolids quality before land application and requiring generators to be more responsible. This new approach was developed after extensive studies by the U.S. Environmental Protection Agency (EPA) and public review in Pennsylvania found land application is environmentally safe and beneficial to the soil. The

regulations have been endorsed by the Solid Waste Advisory Committee, the Pennsylvania Water Environment Association and the Pennsylvania Septage Management Association. Biosolids that do not meet the new environmental standards must either be incinerated or taken to a landfill for disposal.

Questions and Facts About Biosolids

- *Common Questions About Biosolids, Part I (PDF)*
  3800-FS-DEP2344A (May 2011)
- *Common Questions About Biosolids, Part II (PDF)*
  3800-FS-DEP2344B (May 2011)
- *Understanding Biosolids Land Application in Your Community (PDF)*
  3800-FS-DEP2649 (May 2011)
- *How Can I Learn More About Biosolids and Land Application (PDF)*
  3800-FS-DEP4190 (September 2012)

Biosolids and Regulation

- *Presentation on the Pennsylvania Biosolids Program (PPT)*
  (Microsoft PowerPoint file, 421 KB)
- *Pennsylvania Biosolids Regulations*
  (Title 25, Pa. Code, Chapter 271, Subchapter J)

The General Assembly Can Update Its Own Research

In 2007, the Center for Rural Pennsylvania, a legislative agency serving as a bipartisan bicameral resource for rural policy within the PA General Assembly, completed a study "Biosolids Disposal in Pennsylvania" to assess "*current biosolids management practices…guided by the principles that biosolids management options must be affordable for small communities and promote the welfare of rural residents… (with) emphasis placed on beneficial use rather than disposal."*

In the context of House Resolution 426, the Center for Rural Pennsylvania may have already addressed three of the four goals contained within the resolution. Those goals are to identify:

- Methods currently used for biosolids use and disposal
- Costs connected with current methods of biosolids use and disposal
- Methods used to administer and enforce DEP programs

This study also charts continuing progress in biosolids research, citing comparisons with previous studies, including L.C. Tropea's 2000 "Regulating the Beneficial Use of Biosolids" in a PA legislative hearing on the science of biosolids.

The forth goal stated in House resolution 426 is more elusive, to identify "All appropriate alternatives to current use and disposal methods particularly in regard to their economic feasibility and effects on the environment and on public health in comparison to current use and disposal methods."

The wording of this goal invites controversy since the issues connected with biosolids application can be polarizing. A less volatile approach would be to direct the Center for Rural Pennsylvania to update its 2007 research study. Utilizing the Center may be more efficient in meeting the purpose of HR 426 since the Center has already researched biosolids.

After the Center completes research, then perhaps stakeholder hearings might be useful should the House Environmental Resources & Energy Committee decide to solicit stakeholder positions on the biosolids issue.

Thank you again for convening this hearing and for giving the Pennsylvania Septage Management Association the opportunity to testify.