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Dear Sir:

The following comments on "Amendment of Regulations Pertaining to Biosolids After Transfer from the Virginia Department of Health - Virginia Pollution Abatement Permit Regulation (Primary) ; Virginia Pollutant Discharge Elimination System Permit Regulation; Fees for Permits and Certificates" are filed on behalf of the 400 member of the Friends of the North Fork of the Shenandoah River. In the interest of brevity, our comments are specific to proposed changes to VPA Regulations. Please apply them to comparable sections of VPDES Regulations.

Although we recognize the need to dispose of treated sewage sludge and that land application may be appropriate under some circumstances, as indicated in our statement at the April 7, 2011 public hearing, we are concerned that the proposed regulations do not adequately protect the environment and natural resources of the Commonwealth. Specifically, the revised regulations do not adequately address (1) the largely unknown content of the sludge, (2) application to geologically vulnerable sites, and (3) insufficient permit requirements to ensure the protection of the environment or human health.

Contents of the sludge: Given the largely unknown chemical composition of sewage sludge and the resultant lack of information regarding the fate, transport and effects of these materials, much more stringent regulations are required to ensure the protection of human health and the environment. According to the Deputy Commissioner of the Virginia Department of Health (letter to DEQ dated May 2, 2008), it is not possible to make a definitive statement about the safety of sludge because we do not know the actual contents of the sludge and there is a complete lack of knowledge regarding the health and environmental effects of some of the contaminants that may be present in the sludge. The Panel of Experts convened by the Secretaries of Natural Resources and Health and Human Services to study the impact of land application of biosolids also concluded that insufficient information exists to determine the long term effects of these materials on wildlife or water quality (Final Report, January 2009)

What we do know is that sewage treatment plants are not designed to remove many of the chemicals that are currently entering the waste stream. Emerging contaminants of concern are being found in waterways across the country, including the North Fork of the

Shenandoah River. Because these chemicals are not removed in the treatment process, they also end up in the sludge. In its recent "Targeted National Sewage Sludge Survey Report, January 2009) the U.S. EPA reported finding 145 different chemicals in sewage sludge from 74 sewage treatment plants in 35 states. In addition to nitrates and phosphorus, almost every sample contained metals, organics and hydrocarbons, pharmaceuticals, steroids, hormones and flame retardants. Overall, 27 different metals were detected in virtually every sludge sample analyzed. Despite language in the state regulations stating that "biosolids may be required to be tested for certain organic compounds prior to agricultural use", the draft regulations require analysis for only 9 heavy metals (only 1/3 of those EPA found in every sample). Concluding that this minimal requirement for chemical characterization of sewage sludge applied to agricultural land will be protective of human health and the environment defies logic. We will know nothing about what else is being dumped along the river and potentially entering our drinking water supplies.

To ensure the protection of surface and groundwater resources, the regulations should require a more complete chemical characterization of sewage sludge. All biosolids permitted for land application should first be monitored for an expanded list of pollutants that are known to occur in sewage sludge. At a minimum, 9VAC25-32-356 Pollutant Limits should be revised to require biosolids be analyzed for aluminum, barium, beryllium, boron, calcium, manganese and silver (identified by EPA as metals of concern in sewage sludge). Because sludge can come from municipal sources and may affect drinking water sources, analyses of class B biosolids should also include the organic chemicals listed in Table 1 at 9VAC25-32-570. The rationale given for not requiring more thorough chemical analyses is "primarily… the lack of a scientific basis for the inclusion of additional parameters". In the absence of definitive proof to the contrary, DEQ assumes that these materials will be safe.

Given the weight of circumstantial evidence indicating the prudence of including additional chemical analyses and the total lack of scientific evidence to support the safety of these materials, a more conservative regulatory approach is warranted. U.S. EPA's Part 503 specifically allows states to adopt more stringent requirements than those enumerated in the guidance. The Endocrine Society is concerned that the public may be placed at risk due to the proliferation of new chemical compounds in the environment and their potential to cause adverse effects at very low levels. Of specific concern to them are endocrine disrupting compounds (EDCs), and they recommend "Until such time as conclusive scientific evidence exists to either prove or disprove harmful effects of substances, a precautionary approach should be taken in the formulation of EDC policy" (Postion Statement on Endocrine-Disrupting Chemicals, June 2009). Field studies from around the world have demonstrated that very low concentrations of some endocrine disrupting compounds can significantly affect natural populations of aquatic vertebrates. Work conducted by the U.S.G.S. found a very high rate of intersex in bass from the Potomac and its tributaries, and also quantified EDCs in their blood (Blazer, et al, 2007, Journal of Aquatic Animal Health; Chambers and Leiker, 2006, U.S.G.S. Report 2006-1393). The U.S. EPA is sufficiently concerned about the potential effects of emerging contaminants that they have undertaken a special review to determine how best to facilitate development of aquatic life criteria for compounds that, among other things, may cause adverse effects at very low levels (U.S. EPA White Paper "Aquatic Life

Criteria for Contaminant of Emerging Concern, Part I, June 2008). It is time for the burden of proof to be shifted to require that biosolids be proven to be safe prior to being land applied throughout the Commonwealth.

Geologically Sensitive Sites: Given an incomplete analysis of what is in the specific sewage sludge and the lack of scientific information regarding the fate, transport and environmental effects of many of the chemicals that may be found in sewage sludge, DEQ cannot confidently determine what an adequate setback distance will be to protect water quality, aquatic organisms, endangered species or human health. The buffer zone requirements recommended in 9VAC25-32-560 (Table 2) are different for different types of water bodies (perennial streams, intermittent streams, sinkholes, agricultural drainage ditches). These different distances seem to be indicative of the uncertainty regarding what is an adequate buffer to protect water sources. Dr. Greg Evanylo of the Department of Crop and Soil Environmental Sciences at Virginia Tech has cautioned that potentially unsuitable areas for sludge application include: areas bordered by ponds, lakes, rivers, and streams, steep areas with sharp relief, areas of karst geology, rocky, shallow soil, and other environmentally sensitive areas, such as floodplains (Virginia Cooperative Extension Publication 452-300). Given the prevalence of these features in areas of karst geology, the interaction between surface water and groundwater in these areas, the heavy dependence on wells for drinking water in agricultural areas and the lack of chemical-specific information to determine adequate buffers regulations need to err on the side of safety in these environmentally sensitive sites. Because the adequacy (i.e., protectiveness) of a buffer cannot be established with any certainty, application of sludge in areas of karst geology and floodplains poses an unacceptable risk of contamination of surface and groundwater, both of which serve as drinking water sources. 9VAC25-32-560 should prohibit land application of biosolids on areas designated as floodplains, on karst landscapes characterized by limestone outcroppings, sinkholes, solution channels, and caves and on slopes greater than 7%. Barring that, minimum buffers around all environmental features listed in Table 2 should at least equal the 35 foot buffer required by NRCS standards, regardless of the method of application.

Permit Requirements: Standard permit requirements should be prescriptive enough to ensure protection of human health and the environment in all cases. Providing DEQ the ability to add conditions on a case-by-case basis to account for situations that may warrant additional scrutiny is not sufficient. DEQ has demonstrated an unwillingness to address unique situations (such as karst geology). This is understandable because there is a lot of pushback from applicants to not require anything over and above the bare minimum allowed by the regulations. Therefore, the regulations must be strengthened to ensure that all applications of sludge are done in as safe a manner as technologically possible.

Section-by-Section comments:
9VAC25-32-10. Definitions: Biosolids - Regulations should not change terminology from sewage sludge to biosolids To support transparency and full disclosure to the public, the regulations should call these materials “treated sewage sludge” or “sewage sludge biosolids”.
Local Monitor – Defining local monitors as “employed by a local government” is too restrictive and may preclude some localities from being able to monitor biosolids

applications within their jurisdictions. Regulations should be revised to define a local monitor as "designated by" or "engaged by" a local government.

9VAC25-32-60. Application for a VPA Permit. Section F.1.c.(7) General information required should include the exact location of sites proposed for application, such that interested individuals can identify specific fields proposed for application.
Section F.2. a. Biosolids characterization - Biosolids analytical data should be from samples taken within one (1) year of the permit application. Allowing analyses that may be 4 or more years old is excessive and may not be representative of the materials that will be applied.
Section F.2.d. Land application sites – topographic maps should depict flood plains, which should be used to determine where biosolids can be applied, rather than "frequently flooded areas".
9VAC25-32-140.B and C. VPA Permit application – Permit Modifications, a public hearing and a public comment period should be required for any additional acreage proposed to be added to a permit. Allowing an increase of up to 50% in acreage covered by a permit without any public notice or review is excessive and precludes any review necessary to protect the environment.
Section D.2.A minimum of 15 days should be allowed for public comment after any public hearing on a permit. The Department should not be allowed to shorten the period.
9VAC25-32-315.C. Additional and more stringent requirements. For the reasons stated already, this section of the regulations should prohibit land application of biosolids on areas designated as floodplains, on karst landscapes characterized by limestone outcroppings, sinkholes, solution channels, and caves and on slopes greater than 7%.
9VAC25-32-356. Pollutant limits. Biosolids should be monitored for an expanded list of pollutants that are known to be present in sewage sludge. At a minimum, 9VAC25-32-356 Pollutant Limits should be revised to require biosolids be analyzed for aluminum, barium, beryllium, boron, calcium, manganese and silver (identified by EPA as metals of concern in sewage sludge). Because sludge can come from municipal sources and may affect drinking water sources, analyses of class B biosolids should also include the organic chemicals listed in Table 1 at 9VAC25-32-570.
9VAC32-25-460. Soil monitoring and reporting. This sections states "Soil shall be sampled and analyzed prior to biosolids application…", but does not say when soil samples must be taken. Soil sampling should be required to take place between the last application of fertilizer (in any form, including poultry litter) and the time of application covered by the subject permit. In no case should samples be taken more than one (1) year prior to the permit application. Results from a 3-year old analysis (the current requirement) are likely not to be reflective of actual soil conditions at the time of application. If other fertilizer or soil amendments are applied within the 3-year period, the older soil sample results would be meaningless
9VAC25-32-560.B. Agricultural Use. Section 3.e.(3) Slopes – should be revised to state "Biosolids should not be applied to slopes in excess of 7%"
Section 3.f. Buffer zones. Because the adequacy (i.e., protectiveness) of a buffer cannot be established with any certainty, application of sludge in areas of karst geology and floodplains poses an unacceptable risk of contamination of surface and groundwater, both of which serve as drinking water sources. 9VAC25-32-560 should prohibit land application of biosolids on areas designated as floodplains, on karst landscapes characterized by limestone outcroppings, sinkholes, solution channels, and caves and on

slopes greater than 7%. Barring that, minimum buffers around all environmental features listed in Table 2 should at least equal the 35 foot buffer required by NRCS standards, regardless of the method of application.

It is difficult to tell whether these proposed regulations require prior notification to the local government of the exact date of application. The regulations should explicitly require the permit holder to notify counties of specific delivery dates for any sewage sludge being applied in the county and the specific locations within the county where it will be applied.

9VAC25-32-560 - Because many soils in the Chesapeake Bay region contain very high concentrations of phosphorus due to long-term application of manure, chicken litter and commercial fertilizer, Dr. Evanylo recommends applying sludge at rates to meet the phosphorus needs of the crops (Virginia Cooperative Extension Publication 452-300). If this is not a requirement of the nutrient management plans, the proposed regulations should be revised to make this a requirement of any permit. Virginia is under increasing pressure to reduce its phosphorus contribution to the Chesapeake Bay. Permitting application of excess phosphorus in the form of sludge is counter to that goal and may necessitate further expenditures by the Commonwealth and our towns to reduce their phosphorus loadings.

There is no provision in the state constitution that requires the state to provide easy disposal of sewage sludge or that entitles farmers or others to receive free fertilizer. However, Article XI, Sec. 1 of the Constitution of the State of Virginia establishes that it is "the Commonwealth's policy to protect its atmosphere, lands and waters from pollution, impairment or destruction, …" Pursuant to that, Virginia State Code Section 62.1-44.19:3.B requires that the State Water Control Board "… adopt regulations to ensure that …ii)land application, marketing, and distribution of sewage sludge is performed in a manner that will protect public health and the environment; and iii) the escape, flow or discharge of sewage sludge into state waters, in a manner that would cause pollution of state waters … shall be prevented." As was concluded by the Panel of Experts and reinforced by the EPA study on sewage sludge, much additional information is needed to ensure protection of health and the environment. DEQ and the State Water Control Board should use all the flexibility they have available to them under federal and state law to regulate the use of biosolids within the Commonwealth in a manner that actually ensures those protections.

Sincerely,

Leslie D Mitchell-Watson

Leslie Mitchell-Watson
Executive Director
Friends of the North Fork of the Shenandoah River