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November 24, 2004

Sec. Jane H. Woods
Secretary of Health and Human Resources
Office of the Governor
P. O. Box 1475
Richmond VA 23218

Dear Sec. Woods:

Thank you for your 10/19/04 response to my letter of 09/20/04 regarding VDH's violation of current law regarding phosphorus application rates accompanying the land application of municipal sewage sludge. The wording of 12VAC 5-585-550A is clear and unambiguous: "The applied nitrogen and phosphorus content shall be limited to amounts established to support crop growth." The intent of the entire 550A section is obviously to prevent pollution of surface water and groundwater by over-application of either nitrogen or phosphorus.

You wrote "Unfortunately, the science of the available phosphorus in biosolids for plant uptake in different soil and site conditions is not as well developed and understood as it is for nitrogen." That statement is irrelevant. The wording of the law is clear, and the law can always be changed to incorporate the constantly improving level of scientific understanding of the complex biogeochemistry of both nitrogen and phosphorus (I am a geochemist). Virginia assumes that 50% of the total phosphorus in sewage sludge is "plant available" (e. g. Va. Co-op Extension Pub. 452-303, 1999, p. 4). Further, phosphorus fertilization rates for crops are well established in DCR's 1995 "Nutrient Management Standards and Criteria." The following table from that publication, lists, for many crops, the amount of phosphorus "...established to support crop growth."

<u>Soil Test Level</u>	<u>ppm P in soil</u> Mehlich 1	<u>Fertilizer recommendations</u> pounds P/acre
Low	0 - 6	80 -120
Medium	6 - 18	40 - 80
High (Optimum)	18 - 55	20 - 40
Very High (Excessive)	>55	0

These data make it quite easy to apply only the amount of phosphorus needed to support crop growth as the law dictates. Currently, VDH sanctions the land application of municipal sewage sludge according to nitrogen and lime. By ignoring phosphorus, massive over-application of phosphorus occurs. Dr. Calmet Sawyer confirmed this practice by stating to the Northumberland Echo (published in the 03/24/04 edition, p. 8) "The limiting factors are only for nitrogen and lime. Phosphorus is not included." Dr. Sawyer's statement confirms that the law is, unquestionably, being violated, contrary to your statement "Please be assured that the current requirements in regulations relative to phosphorus are being enforced."

It is well known that "...much of the crop land in the Chesapeake Bay watershed is now considered "optimum" or "excessive" in phosphorus from an agricultural perspective and hence needs little additional phosphorus, from any source, to ensure that economically optimum crop yields are attained." (A. N. Sharpley, Ed., Agriculture and Phosphorus Management: The

Chesapeake Bay, 1999, CRC Press, p. 66). It may be significant that no Virginia scientist contributed to this recent, exhaustive publication.

Everyone understands that extensive existing high soil phosphorus levels would preclude the land application of animal wastes (poultry litter, manure and municipal sewage sludge) to most Virginia soils if existing law was being enforced. It is crystal clear that it is the policy of the State to continue the practice of land application of unwanted animal wastes, resulting in massive over-application of phosphorous, because restrictions would impose "...additional costs on the generators, appliers, and users of biosolids." (wording from a recent VDH statement to BOH opposing more regulation of the land application of sewage sludge). Economic issues favoring special interests, namely "generators, appliers, and users," dictate VDH's position. VDH can not continue to hide behind obfuscation about the complexities of phosphorus biogeochemistry to try to justify continued overloading of soils with phosphorus. Continuing to overload Virginia soils with phosphorus from unwanted animal waste, in effect using soils as landfills in the name of free fertilizer, will exacerbate and guarantee very long-term phosphorus pollution of Chesapeake Bay. Not only is the likelihood of catastrophic release of P-laden soil increased, but chemical weathering will slowly remove the excess phosphorus in dissolved form. From my professional perspective as a geochemist, I believe that agronomists have ignored the long-term consequences of overloading soils with phosphorus in their zeal to maximize farm profits, all the while ignoring the cost society bears from excess fertilization. Phosphorus is not insoluble and, given time, chemical weathering will slowly and inexorably remove excess phosphorus from soils and transfer it to Chesapeake Bay via both runoff and groundwater discharge. Existing high phosphorus levels in soils guarantee that the excess phosphorus will "bleed" into Chesapeake Bay for decades, and continued dumping of phosphorus on the land only guarantees that the problem will worsen and persist farther into the future.

Virginia must decide if it is serious about reducing agricultural phosphorus pollution of Chesapeake Bay as the majority of citizens want, or if it plans to continue to protect the economic interests of a few "generators (including poultry farmers), appliers, and users." There is no excuse for applying more fertilizer, taking into account soil nutrient levels, than the "amounts established to support crop growth" as existing law wisely dictates. I have asked that the Attorney General inform me, and the public, why existing common-sense law is being violated.

Yours sincerely,

Dr. Lynton S. Land
Emeritus Prof. Geological Sci., U. Texas, Austin
and Edwin Allday Chair in Subsurface Geology

cc: Gov. Mark Warner, Att. Gen. Kilgore, Sec. Tayloe Murphy, Del. Albert Pollard, DCR, EPA