

An egregious failure of Virginia's government

I became aware of an egregious failure of the Virginia State government to protect Chesapeake Bay from unacceptable pollution in late September of 2008. Some time in early summer of 2007, nearly 40 truckloads of turkey litter were dumped on a field at the edge of a ravine that ultimately discharges into the Great Wicomico River in Northumberland County. A privately owned pond down-flow from the ravine, stocked with fish, began to become choked with algae. The owner of the pond spent a considerable amount of money, and expended a great deal of labor trying to clear the water. Both the Department of Environmental Quality (DEQ) and the Virginia Department of Agricultural and Consumer Services (VDACS) were informed of the problem in 2008, and only VDACS responded meaningfully. Apparently on VDACS direction, the owner of the field had a low berm constructed, but the berm does not completely surround the pile and, in fact, directs runoff from the pile directly into the ravine (see photos.) Not only was the berm construction incompetent because it worsens the problem, the situation has not been monitored by any State agency. About 800 (wet) tons of turkey litter, estimated to contain about four tons of nitrogen and three tons of phosphorus have sat, uncovered, for over a year despite DEQ's Poultry Litter Fact Sheet, that states "If stored outside longer than 14 days, the litter must be covered with an impermeable barrier that will resist wind, and be protected from storm water running onto or under it."

Although the farmer is certainly at fault, the real failure rests with the State. The essentially unregulated disposal of poultry litter is unacceptable if the State actually intends to improve water quality in Chesapeake Bay. Unless strict regulations are formulated and enforced, the free-market will simply dispose of the waste in the cheapest way possible with no regard whatsoever for environmental pollution, which is exactly what happened in this case. The lack of concern for this problem by DEQ, whose mission is to "Protect and enhance Virginia's environment, and promote the health and well-being of the citizens of the Commonwealth" is not acceptable. Neither acceptable is the failure of VDACS, whose mission is to "Promote economic growth and development of Virginia agriculture, provide consumer protection and encourage environmental stewardship" to act expeditiously. Note the order of the VDACS mandates and what is being promoted and what is merely being encouraged.

Poultry litter is promoted as "free fertilizer" when in fact the real driving force is the cheapest possible disposal of an unwanted substance. Indeed, the litter is free for farmers, but because the nitrogen and phosphorus in the organic material that comprises the litter is not all immediately "plant available," poultry litter must be applied at nearly twice the rate as is true of chemical fertilizer. "Nitrogen Use Efficiency" is the percentage of nitrogen applied to a field that is removed as the crop is harvested. If an acre is fertilized with chemical fertilizer at a rate of 120 pounds of nitrogen to grow about 110 bushels of corn, approximately 95 pounds of nitrogen is removed from the field with the corn grain. The "Nitrogen Use Efficiency" is therefore 95/120, or 80%. Each acre releases about 25 pounds of nitrogen (five 50 pound bags of 10-10-10) to the environment. 85% of poultry litter application in Virginia is currently unregulated. Only 55% of the nitrogen in poultry litter is "crop available" because it takes time for microbes to decompose the organic material and make the nitrogen and phosphorus available for

plant uptake. Because of this unavoidable inefficiency, 218 pounds of nitrogen (120/0.55) is applied to the field in the form of poultry litter if regulations are followed, and the “Nitrogen Use Efficiency” is reduced to 44% (95/218.) What do you suppose is the fate of all that excess nitrogen, amounting to 123 pounds, or more than 20 bags of 10-10-10 per acre? As I pointed out in an article in the December 2006 Bay Journal, approximately 10 million pounds of nitrogen is disposed annually in Virginia by the land-application of poultry litter to no benefit of crops. Most of the excess nitrogen ends up in the Bay.

To make matters worse, poultry litter is very phosphorus-rich. If poultry litter was being applied to meet the phosphorus needs of crops, the land application of litter would be severely curtailed because most Virginia soils are relatively phosphorus-rich after decades of farming. But the State continues to resist mandating the land application of poultry litter (and municipal sewage sludge) according to the phosphorus needs of crops, but rather provides loopholes that do not significantly restrict the use of these kinds of extremely inefficient fertilizers. Unnecessary pollution is the result. The currently active “Technical Advisory Committee” established by DEQ to advise on regulating the land application of poultry litter originally contained 21 appointed members. Ten members represented agricultural interests, seven members were state employees and four represented stewardship organizations. The profits of farmers and poultry-growers obviously trump water quality concerns in the eyes of State government.

Because of the likelihood that algal growth in the pond after 2007 was due to nutrient run-off from the pile of litter, I analyzed water flowing down the ravine toward the pond on 10/05/08. Water trickling down the ravine from just below the pile of litter contained 8.4 ppm nitrate. Although this value does not exceed EPA’s Maximum Contamination Level of nitrate for drinking water (10 ppm), it is extremely high for surface water and is the obvious source of nutrients that are polluting the pond. All other water samples from the ravine draining the litter pile contained between 2 and 4 ppm nitrate. Water from another ravine feeding the pond, but not draining the pile of turkey litter, contained only 0.7 ppm nitrate.

I was puzzled why so few plants are growing on the litter pile after two growing seasons. B. C. Bellows (2005, Arsenic in Poultry Litter: Organic Regulations, ATTRA Publication #IP266/269) stated “... recent studies show that more than 70% of the arsenic in uncovered piles of poultry litter can be dissolved by rainfall and potentially leach into lakes or streams.” A drug containing arsenic is routinely fed to poultry to increase yield. A water sample taken from between the berm and the litter pile contained 170 parts per billion (ppb) arsenic. Selenium was also detected. The maximum allowable arsenic concentration in Virginia groundwater is 50 ppb.

The bottom line is that nearly 40 truck-loads of turkey litter were successfully disposed, remained uncovered for two growing seasons, and continue to pollute a pond and an arm of the Great Wicomico River with nitrate and arsenic. The State knows about it, but the pile remains today as a monument to Virginia’s priorities. The government’s highest priority is obviously not water quality in Chesapeake Bay.



Seen from the air, looking eastward, the piles of turkey litter are surrounded on three sides by a low “berm” but no containment exists adjacent to the ravine to the north.



At the east end of the pile it is obvious how the “berm” merely funnels water into the ravine. The black water between the pile and the “berm” contained 170 ppb arsenic.