

ALL ABOUT CHICKEN MANURE

By Gary Antonides



The excess amount of chicken manure generated by Maryland's chicken farms has been an issue with many twists and turns in the last several years. When used as a fertilizer, too much of it runs off into the Bay, resulting in, among other things, excessive amounts of phosphorous in the Bay. New requirements, especially those to reduce the amount of phosphorous in the Bay, have led to efforts to build manure-to-energy systems in Maryland. This could be a very positive development, but is complicated by Maryland's Renewable Fuel Standard (RFS) which designates energy derived from manure as clean energy. This makes it part of the 20% clean energy that is mandated by 2025, reducing the amounts of other clean energy needed. And the amount of pollution in such a system depends on the technology used.

<http://thinkprogress.org/climate/2015/11/18/3722590/maryland-chicken-manure-clean-energy/> explains that under Maryland's current renewable portfolio standards, chicken manure is classified as a "tier one" renewable resource, the same designation offered to things like wind, solar, and geothermal. To some, this is a smart compromise that allows Maryland to meet its renewable energy goals while dealing with the millions of tons of chicken waste produced each year by poultry farms. But to others, the rule gives factory farms an excuse for their pollution at the expense of public health.

"Burning chicken poop is not clean," says Taylor Billings, a field organizer with Food & Water Watch, a national group that opposes industrial-scale agriculture. "It's really toxic. It emits any chemical you can think of from carbon monoxide to sulfur dioxide. They are trying to burn chicken poop and trash and call it renewable energy."

In Maryland, with around 350,000 people employed in some aspect of agriculture, chicken farming is the largest commercial industry in the state. Within Maryland agriculture, poultry production accounts for 40 percent of Maryland's total cash farm income. Perdue, the country's third-largest producer of broiler chickens, is based on the Delmarva Peninsula where some 1,700 chicken farms are located.

Such large-scale poultry production leaves Maryland with around 650 million pounds of chicken manure each year. Some farmers use the manure, which is especially high in phosphorus, an important nutrient for plant growth, on their



fields. But some manure from chicken producing operations or over-saturated fields makes its way into the Chesapeake Bay, where it stimulates the growth of algae and creates areas of low oxygen known as "dead zones." According to a 2012 report by the Chesapeake Bay Commission, 15 percent of the nitrogen and 36 percent of the phosphorus in the Chesapeake Bay comes from manure.

In 2010, the EPA established a pollution diet that required Maryland, as well as other states within the Chesapeake Bay watershed, to reduce the amount of nitrogen and phosphorous reaching the bay each year. As part of the state's phosphorous management plan, farmers stopped using chicken manure as heavily as fertilizer, turning to nitrogen fertilizer or using legume cover crops to add nitrogen to the soil. In 2011, Maryland legislators, looking for a solution to both the excess amount of waste and the pollution in the bay, added chicken manure to "tier one" of the state's renewable portfolio standard, putting the incineration of chicken manure in the same category as solar and wind. That same year, they also called for proposals for manure-to-energy projects.

The most common technology used to turn manure into energy utilizes incinerators that burn the manure to produce heat and energy. A 2013 report on the feasibility of manure-to-energy projects in Virginia conducted by the Center on Human Needs at Virginia Commonwealth University found that a large-scale chicken manure incinerator would result in a higher concentration of things like nitrous oxide, sulfur oxides, and particulate matter. Such pollutants have been shown to lead to an increased risk of asthma, cancer, heart disease, and other health impacts in surrounding communities.

However, an anaerobic digester, which is what was recently proposed for Maryland, creates energy by converting manure into methane gas. As of March, there are 247 manure-to-biogas operations being used on commercial livestock farms around the country. With anaerobic digesters, the only byproduct, other than methane, is carbon dioxide. Dangerous particulates are not released into the air as part of the process.

But Doug Myers, senior Maryland scientist with the Chesapeake Bay Foundation points to the fact that Maryland's renewable portfolio standard mandates that only 20 percent of the state's energy come from renewable resources, with 80 percent of Maryland's energy portfolio allowed for fossil fuels. "Even though they've listed anaerobic digestion and biogas as a tier one source, the existing sources like wind and solar feel like their slice of the pie is carved up even smaller, because there's such a small percentage going into the RPS," he said.

According to Myers, some environmental groups in Maryland wanted the renewable fuel standard to widen its renewable targets from 20 percent by 2025 to 40 percent by 2020. That has been met with a great deal of pushback from the fossil fuel industry. However, leading environmentalists and the renewable industry are pushing for 25 percent by 2020 in the upcoming legislative session. If the renewable portfolio standards were to be expanded, Myers said, there would be room for manure-to-energy projects as well as wind and solar.

The anaerobic digester plant proposed for Maryland's Eastern Shore is a joint effort between a New Hampshire-based company, AgEnergyUSA, and [Perdue](#), and would cost \$200 million. Officials with AgEnergyUSA are seeking support and legislation worth tens of millions of dollars for their project.

While some remain wary because little has come of previous plans for dealing with the Shore's poultry pollution, this one comes from a company with a prominent partner, EDF Renewable Energy, an arm of a French power company, that is already building a manure-to-energy facility in Colorado.

The anaerobic digestion plant they want to build near Salisbury could handle up to 200,000 tons of chicken litter a year, which is close to what officials estimate is the excess amount being spread on the Shore each year. Environmentalists like this process better than burning manure because of the much lower air pollution. With Perdue involved, farm groups sound cautiously hopeful. Lawmakers say they're inclined to be supportive, but want more details.

<http://www.baltimoresun.com/features/green/blog/bs-md-poultry-litter-plant-20150320-story.html>, March 22, 2015 gives some of the details of an anaerobic digester plant. It would use bacteria to extract methane-rich bio-gas for industrial use. The residue would be processed so that the bay-fouling nutrients in chicken waste could be separated and used in a more environmentally friendly manner. The nitrogen could be sold back to farmers as liquid fertilizer, which crops need every year, while the problematic phosphorus that's built up in Shore soils could be sold as peat moss.

This is not the first effort to build a manure-to-energy plant on the Shore. In 2013, also in partnership with Perdue, AgEnergyUSA made an unsuccessful bid for a contract to have the state buy electricity from a manure-burning power plant they would have built. The pair lost to a California company, Green Planet Power Solutions of California, a company that has never built such a facility. With just two years to go before it must begin generating power, the company has yet to apply for any permits from the Maryland Department of the Environment. Sen. Thomas Middleton, a Charles County Democrat and Chairman of the Finance Committee said he's convinced it can't meet the deadline and has asked the attorney general's office for an opinion on whether the contract can be nullified. The company's CEO is seeking an extension of the contract.
