

Nancy West-Brake

“Butting Out On Coal Ash”

Literary Arts

Essay

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Ever had your toilet get stopped up? Or even worse, overflow? It's not a pretty sight. The panic, the horror, the unwillingness to get down in there to do the clean-up... And it's not just nasty. It's unhealthy. We are left with the lingering doubt that our bathroom floor may never be as germ-free again.

Imagine this on a much bigger scale- but instead of a toilet overflowing, it's a coal ash pit at an electric plant. And instead of human waste, what's bubbling out is something far more toxic, with a host of chemicals that are known carcinogens and neurotoxins. It's not going on our bathroom floor; it's going in our land, groundwater, rivers and, eventually, our oceans.

There is a massive amount of coal ash generated in the United States. According to the American Coal Ash Association's Coal Combustion Product Production & Use Survey Report, nearly 130 million tons was produced in 2014. That makes it one of the largest types of industrial waste.

North Carolina is **ninth** in the country for coal ash generation, with our 14 coal-fired power plants generating **5.5 million tons** of the stuff. There's a lot of waste in our power plant toilet. And the problem is that it isn't staying there. That waste is *seeping out*.

You may have heard Coal Ash called CCRs, which means coal combustion residuals. It's created by burning coal and the solid parts produced are called CCPs (coal combustion products). These consist of bottom ash, which forms in the bottom of the coal furnaces, or boiler slag, which is molten bottom ash that turns to pellets after cooling in water. There is also a wet sludge called flue gas desulfurization material. The lightest byproduct is fly ash, made mostly of silica.

Electric Utilities in the U.S. burn more than 1 billion tons of coal annually and there are more than 1,000 coal ash sites to handle it. In North Carolina, Coal accounts for 23.3 percent of our Electricity Sources. (The others are Nuclear: 31.8%; Natural Gas: 31.7%; Solar: 5.5%, Hydro:4.7%. The small remaining percentage comes from petroleum, geothermal and biomass.) We have fourteen power plants that run on coal with 50 "impoundments," or places that store the ash.

Coal ash can be disposed of or used in different ways, depending on which by-product it is and government and state regulations. Most power plants put in in surface impoundments, which basically means ash pits, or took it to landfills. Some discharged it into waterways using water discharge permits. , CCPs can be recycled into concrete, wallboard, roofing materials and bricks if it is encapsulated under methodology developed by the EPA in 2013. Another option is to use coal ash in unencapsulated form, which it is used as a loose particulate or sludge, which can be used in structural fills or embankments.

Truly, coal ash is not the kind of thing anybody would want to store because of what's in it. Depending on what's in the coal where it is mined, its typical ingredients include arsenic, mercury, cadmium, lead, and other chemicals.

Arsenic is one of the most common and toxic contaminants; if you have the misfortune to drink well water near an unlined coal ash pond, you have a one in fifty chance of getting cancer from your drinking water. The EPA published findings in 1980 that showed populations in Europe, South America and Taiwan got either skin cancer or gangrene in their hands and feet after drinking water with elevated concentrations of arsenic. Data taken from both humans and animals show that inorganic arsenic can even cross the placenta to cause cancer and mutagenic effects in the unborn.

Mercury affects both reproductive and neurological systems in people and wildlife, and its effects are heightened by water contamination of wetlands, ponds, coastal marshes and forest floors, among other locations. Bugs in moist habitats eat plant debris and it then works up the food chain through fish and birds, the mercury concentration increasing at each level.

And here's something unexpected: waste from coal plant is more radioactive than what comes out of nuclear plants. It's in the fly ash, which sometimes leaches into soil and water around coal plants or is dumped in landfills and abandoned mines. Coal has uranium and thorium (both radioactive). In natural or "whole" coal, there are only trace amounts, but once the coal is burned, they are concentrated at up to ten

times their original levels. People who live within a “stack shadow”, or within a one-mile radius of a coal plant’s smokestacks, could ingest small amounts of radiation just by breathing.

This has not been new information to utility folks, who were talking about environmental risks from coal ash in the 1970s and 1980s. By the 1990s, the Environmental Protection Agency found that many plants, including eight that belonged to Duke Energy, were violating the Clean Air Act by restoring old power plants without installing required pollution control equipment. In December 2000, the EPA sued Duke for 29 illegal modifications made between 1988 and 2000 at the Belews Creek, Buck, Cliffside, Dan River, CG Allen, Marshall and Riverbend plants in North Carolina and the W.S. Lee plant in South Carolina. The suit claimed that groundwater was compromised, as was the French Broad River, Cape Fear River, Catawba River and Mountain Island Lake. Leaking coal ash impoundments at Riverbend are on the drinking water reservoir for 800,000 people in Charlotte.

Still, most of this was not on the public’s radar. That changed in December of 2008, when part of a dike containing coal ash failed at a plant in Harrison, Tennessee. 5.4 million cubic yards of coal ash flooded into a pond and eventually into the Emory River. It covered three hundred acres.

This incident set off alarms for nearby North Carolina, where the ball started rolling to require groundwater monitoring of coal ash dumpsites by 2010. Those results showed high levels of toxic heavy metals well above state health standards. Ominously, most of our state’s coal ash repositories are located above buried streams which link to ground and surface waters. Duke University conducted a 2012 study of Duke Energy’s Asheville plant that concluded that plant discharges exceeded EPA standards and that Duke was thereby in violation of the Clean Water Act.

In February of 2014, it was North Carolina’s turn. The second largest coal ash spill in US history happened at Duke Energy’s retired Dan River plant when a stormwater pipe under coal ash impoundments broke apart. 140,000 tons of coal ash and contaminated wastewater polluted the Dan River, harming fish, birds, and amphibians. And that was just the damage that we could see. The leak

coated about seventy miles of the river. Less than a year later, families living near Duke's unlined coal ash impoundments started getting letters about their wells possibly being unsafe to drink from.

Duke Energy and the NC Department of Environmental Quality (DEQ) both came under the spotlight for their lack of vigil concerning environmental and economic damages. Duke pleaded guilty in 2015 to nine criminal violations of the Clean Water Act. The utility agreed to pay \$102 million to two states (North Carolina and Virginia) in criminal fines and to use some of the money for environmental and conservation projects. The Dan River spill led to passage of the N.C. Coal Ash Management act, which requires Duke to excavate and put coal ash into lined landfills. That same year, the EPA came up with requirements for CCRs in landfills and impoundments, setting corrective actions, rules for closure and post closure, monitoring, recordkeeping and reporting.

The North Carolina General Assembly also passed CAMA, or the Coastal Area Management Act, to come up a process for cleaning up coal ash all over the state. DEQ was thereby required to publish ratings of "high," "low," or "intermediate" risk for 32 coal ash pits at Duke's 14 power plant sites by December 31, 2015. Not surprisingly, the grades for all of Duke's pits were either intermediate or high risk. The state legislature also passed a bill that could buy Duke some cleanup time if it supplied people who lived near coal ash ponds clean drinking water by 2018. On a federal level, the EPA put in national rules for coal ash disposal and water discharges.

But Dan River wasn't the only incident in our state.. There are **thirteen** documented damage cases where power plants in North Carolina have contaminated water resources, and \$1.5 billion in damages was caused to communities at Belews Lake, Hyco Reservoir and Mayo Reservoir.

In September of 2018, Hurricane Florence flooded the Cape Fear River and burst over a dike at Sutton Lake at Duke's retired L.V. Sutton coal-fired power plant in Wilmington. Dams at both ends of Sutton Lake were breached and water from an unlined coal ash dump was seen flooding the lake. It was a

pretty sure bet that the waters made it into the Cape Fear. On the same day, the Neuse River flooded all three of Duke's coal ash ponds at the retired H.F. Lee coal plant in Goldsboro.

2018 was the same year that new standards put in place by the Obama administration required utilities to monitor pollution from coal ash sites *and publish the data*. Sixty-seven coal plants across 22 states had to show and tell: toxic contamination in groundwater exceeding federal health standards.

But how to close the barn door after the horses were out? Many or most of the pits were unlined or uncapped, and what do you do with the sludge and the contaminated water? And with the coal plants that are still burning coal?

Duke announced in January 2020 that it was closing all its ash basins. In the meantime, more than 46 million tons of ash have been dug out and moved to lined and closed landfills, usually on site, or recycled safely into concrete. They've upgraded their dry ash handling systems and have new wastewater treatment systems. New ash recycling facilities at Buck and H.F.Lee, with another at Cape Fear, were supposed to be running by early 2021. The Dan River and Sutton lined landfills have been enclosed with ash at both sites excavated. Duke also says it has completed bulk water removal at all its North Carolina basins and is implementing a pilot for groundwater remediation at several of its locations. Other improvements at Duke properties in South Carolina and Virginia have also been made or are in process, including the purchase of land to be added to state parks.

Duke is under an EPA gun as of April 11, 2021, by which time any unlined coal ash pits too close to aquifers must either retrofit or stop accepting waste. And who is footing the bill? Duke estimates it will cost \$8.5 billion to clean up, line and close coal ash basins at existing and retired coal plants, which will take more than ten years. Cleanup at 31 sites in our state will also take that long, or longer. The N.C. Utilities Commission has been working on a rate case in order to decide who pays: ratepayers or Duke Energy shareholders. Many people say that Duke and its stockholders should pay; others contend that ratepayers, who enjoyed some lesser costs as Duke spent less money while not doing cleanup, should bear

part of the burden. Another factor is how much Duke can pay while also working to transition from coal and natural gas to alternative energies.

At the time of this writing, Duke has published a 2020 15-year IRP (Integrated Resource Plan)- something it does every two years- that has been submitted to the North Carolina Utility Commission. The IRP maps out where Duke will draw its energy sources from. It projects coal usage through 2049 and the construction of up to 16 new gas-fired generation plants. Environmentalists say 2049 is not soon enough. They want Duke to use affordable clean, renewable energy sources and phase out its use of fracked gas plants, but Duke says it can't sacrifice reliability or energy shortages. It also is leery of investing capital in new energy sources while having to drive up its customers' rates. "For the Sierra Club, our goal isn't to weaken Duke or other monopoly utilities," Dave Rogers, who works for the Sierra Club's Beyond Coal campaign and is based in Durham says. "Our goal is to help them transition to a cleaner future as soon as they can."

A public hearing on the IRP was planned for March 16th, but the Utility Commission was flooded with so many speaking requests that the hearing had to be postponed and rescheduled as six evenings for public comment. The NCUC had estimated that roughly 25-30 attendees would deliver 5 minute testimonials, but 211 signed up to speak.

The people of North Carolina are clearly not ready to butt out on coal ash.

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