



PPL's Coal Fly Ash Catastrophe
Account of Delaware River Pollution Incomplete
Briefing for the United States Congress
Washington, D.C.
October 3, 2012

On August 23, 2005 PPL's coal fly ash storage basin at their Martins Creek power plant on the Delaware River in Northampton County, PA began leaking. By the next day, it was a deluge of sludge and effluent flooding into the Oughoughton Creek and the Delaware River. It took several days to stem the flow, which was slowed down by August 27. In the end, at least 100 million gallons (company estimate) of coal fly ash effluent gushed into the River. The basin, 16 years old, held coal fly ash produced by PPL's two coal fired units. Normally the water-filled waste impoundment settles out fly ash sediment before the effluent is piped to the river but the company reported that a gate in the basin broke apart, causing the uncontrolled discharge of polluted effluent and sludge. The river was an opaque greyish brown for 30 miles and an oil slick type of sheen covered the river's surface; this was especially evident because the river had been crystal clear due to lack of recent rainfall. The cloudy condition lasted for about a week. The dry weather at the time of the blow out and the slow river flow caused much of the sludge to settle on the bottom of the river.

Easton, about 10 miles downstream, had to shut down its water intakes for several days; the river turned from crystal clear to murky with a grayish slick that lasted into September. More water suppliers may have taken action if they had learned in a timely way about the blowout — notification to neighboring communities, the State of NJ and other agencies took days; in fact, NJ was first notified by DRN's Pollution Hotline, not by PADEP or PPL and New Jersey suppliers and the public were unaware of the catastrophe for two full days, during which river pollution occurred. No water quality testing was done until August 25. Since then, PPL was ordered by PADEP to revise its emergency response plan, requiring full notification. PPL has now amended its plan and notification list.

Known components of fly ash include: arsenic, mercury, lead, silica, crystalline silica, barium, chromium, beryllium, thallium, antimony, selenium and possibly sulfur, cadmium, and other heavy metals. The toxin-laden slurry eventually settled, coating the bottom of the river for several miles (reported in pockets as far south as Bulls Island), smothering the creatures that live on the river bottom and form the base of the food chain. A visible slurry of coal ash sludge was caked on the bottom of the river from the Pennsylvania bank across to the New Jersey side for about 10 miles and was found in pockets and between rocks for about 40 miles. Dead underwater vegetation was evident. PPL assessments discovered at least 40 acres between the site and Easton and

additional pools of sludge that they had to vacuum up. A whitish dried ash stuck to the riverbanks for at least 8 miles downstream for weeks. The crystalline silica in the dried ash causes pulmonary disease and is classified as a probable human carcinogen.

Water quality tests done by agencies revealed the presence of several pollutants in the river as a result of the blowout. For instance, PADEP water tests showed arsenic spiked on August 26 from less than 4 ppb upstream to 592 ppb at the outfall (safe drinking water standard -- 10 ppb effective January 2006 nationally, 5 ppb effective January 2006 in NJ; at the time -- 50 ppb). Other significant spikes were: mercury (1.32 ug/l), barium (503 ug/l), selenium (37.7 ug/l), lead (22.2 ug/l), and other heavy metals.

Cleanup efforts after the blowout were excruciatingly slow and riddled with mishaps.

For instance, PADEP approved the use of an old unlined basin at the power plant to store the coal fly ash waste from the cleanup, despite protests from the public and DRN, who also called for the shutdown of the coal-fired units while the basin was disabled. When PPL put the old basin to use, it sprung a leak, polluting groundwater monitoring wells with selenium. Finally, PPL shut down the coal plant, which was closed until December 28.

Luckily, the basin blowout was followed by seven weeks of dry weather and low flows, ideal conditions for vacuuming up the slurry from the river bottom. But PPL and PADEP's slow pace and inability to multi-task meant that this opportunity for effective clean-up was lost forever. High storm flows in the river in October dispersed the toxic ash far and wide downstream. Evidence of this was the spike in arsenic levels as far south as Trenton/Morrisville accompanying the high flows. The chance to vacuum the bulk of the sludge out of the river was gone—and the pollution spread further. PPL had to re-assess where to vacuum and how much volume they would recover. The Oughoughton Creek, through which the slurry was carried from the Martin's Creek site to the river, was destroyed where the slurry flowed. PPL quickly scoured, channelized and widened the creek, even building a bridge across it. The Creek is classified as a cold water fishery and is supposed to be protected so that cold water fish and their habitat.

DRN filed a Petition for a "Preliminary Assessment" under CERCLA with the EPA asking for an independent assessment of the pollution event and cleanup efforts. The EPA granted DRN's request in October and issued a report of their findings in February 2006. The EPA concluded that cleanup efforts were continuing and the NRDA team investigations were ongoing. Because of this and PADEP action, EPA decided to take no further action under CERCLA, the federal Superfund law. However, EPA pointed out that despite cleanup operations by PPL, surface water leaving the PPL site did carry fly ash pollutants to the river and "pockets of fly ash currently remain in the Delaware River", with impacts to the Wild and Scenic river, the fishery, wetlands along the river, endangered species, and potable water supplies at Easton (Final Preliminary Assessment Report for the PPL Martins Creek Site, Bangor, Northampton County, PA, EPA, 2.23.06, page 22). EPA left the door open for further EPA investigations if warranted.

In November 2005, PADEP filed a lawsuit against PPL for damages to the river and its natural resources. Residents filed suits following that, some of which are reportedly still unresolved. PADEP's lawsuit resulted in a fine of \$1.5 million; PPL incurred approximately \$37 million in cleanup costs to date.

PPL's cleanup efforts focused on vacuuming parts of the river bottom between the plant and Easton from a dive barge in the river, which was removed in March 2006. Ash that dried on the riverbanks throughout the year was never effectively addressed; most of it washed downstream; the lightweight ash was re-deposited on the banks with subsequent high flows and when dried, carried into the air.

PPL reported that they took riverbank sediment samples in June 2006 as Phase IV of the cleanup and they continued biological sampling. Also in June 2006 DRBC released a water quality assessment report, available at www.drbc.net.

On August 11, 2006, Basin 4 again released pollutants to the river. Silica cenospheres escaped the basin over a skimmer; normally they float on top of the water in the basin. The release according to PPL was discovered by a plant inspector and entered the river via pipeline. A boom was put up and the spheres suctioned up. A grayish plume about 100 feet long was evident on the river surface.

Silica cenospheres are formed in the smokestack with fly ash when coal is burned. They are carried to the basin and float on the water indefinitely. It is not required that they be removed although several industries do use recycled cenospheres for fill, often in cement. The spheres are hollow and composed typically of silica, alumina, iron oxide, and titania; they are classified as an industrial waste. Cenospheres typically contain 1.5% silica; if the spheres are broken or ground up the silica can be released as a toxic dust. "Prolonged exposure to high levels of respirable crystalline silica is considered a possible cause of silicosis that may lead to lung cancer". (Material Data Safety Sheet, S2B rev 6 July 2005). This additional pollution release may have been avoided if the new skimmer was installed as it was supposed to be.

A Phase IV Completion Report of the cleanup was submitted by PPL to PADEP in June 2007. In September 2007 Martins Creek coal fired units were permanently closed down. Two units remain in operation there using natural gas or oil (alternating) and one natural gas fixed unit. Today, both ash basin #1 (the lined old basin) and Basin #4 have been capped and re-vegetated under PADEP residual waste regulations for impoundments. Long term groundwater monitoring is required at both basins. One industrial waste treatment basin and smaller stormwater basins are still in use at the site and are operated under PPL'S National Pollution Discharge Elimination System permit.

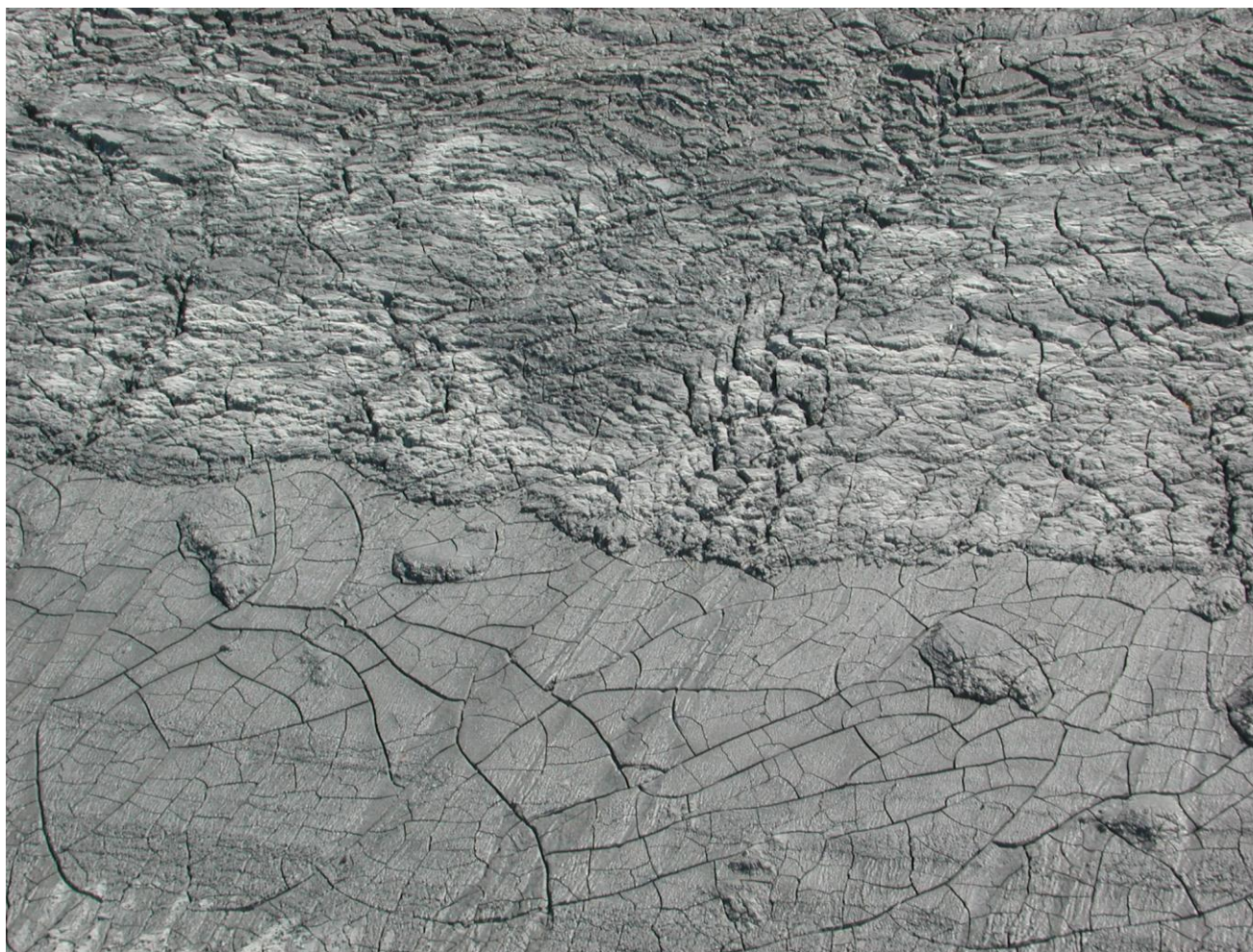
Delaware Riverkeeper Network (DRN) advocated for a Natural Resources Damage Assessment (NRDA) to be conducted when the blowout occurred, which was begun, and the interstate and federal agency team began studying the impacts in September 2005. The goal is to assess retribution for the breadth of natural resource damages at the site, in the river, and downstream, particularly the long term impacts that are not captured by a shorter term damage analysis. Long term assessment is essential, especially considering the far reaching impacts to species such as the migratory shad (juvenile shad were heading south through the pollution plume when the basin blew out in 2005 and the young-of-the-year don't return for about six years) and the time it takes for benthic organisms to re-establish on the river bottom.

NRDA Team members include New Jersey Department of Environmental Protection, US Fish and Wildlife, and the Delaware River Basin Commission and the Team is headed by PADEP, as the host state. The NRDA team has not reached a settlement with PPL and it is unclear if they are still collecting data. No report has been issued. There has been no public participation or disclosure

of the NRDA findings or process; the multi-year assessment has been conducted behind closed doors. The public has no idea of the full impacts the Assessment Team has discovered and there is no public discussion of the remedies that PPL will be required to take to remedy the resource harms.

In conclusion, coal ash needs to be regulated for what it is – toxic material. Federal regulations are needed to set the floor for regulation. Coal ash should be processed to remove all toxics and should not be left in open basins, or in any condition that allows for the release of polluted materials to the environment. In Pennsylvania, millions of people had their water supplies impacted by extremely high levels of dangerous pollutants in the river, aquatic life was extinguished under the slurry, and many miles of river habitat was destroyed or degraded in the short and long term by the blowout of PPL’s coal fly ash basin, affecting fish and wildlife and the exceptional values of the Wild and Scenic Delaware River. The way to avoid further blowouts like this (which have occurred since this pollution event, most notably in Tennessee) across the Nation is to facilitate EPA rulemaking to effectively regulate this material.

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Coal fly ash deposited by coal basin blowout on the Delaware River floodplain at PPL’s Martins Creek Power Plant, August 2005. Photo by Tracy Carluccio, DRN.