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Pennsylvania and Coal Ash Disposal in Ponds and Landfills

Summary of Coal Ash Generating Facilities in PA[i]

Facility	Operator	Site	County
Bruce Mansfield Power Station	First Energy Generation Corp.	5 ponds	Beaver
PPL Brunner Island Power Station	PPL Generation LLC	3 ponds	York
PPL Martins Creek Power Station	PPL Generation LLC	5 ponds	Northampton
PPL Montour Power Station	PPL Generation LLC	5 ponds	Montour
WPS Energy Services Sunbury Generating Station	Corona Power LLC	1 pond/landfill*	Snyder
Homer City Station	Midwest Generations EME LLC	14 ponds	Indiana
Hunlock Power Station	UGI Development Co.	2 ponds	Luzerne
Seward (RRI)	Reliant Energy Inc.	data indeterminate	Indiana
Conemaugh	Reliant Energy Inc.	landfill*	Indiana
Keystone (RRI)	Reliant Energy Inc.	landfill*	Armstrong
Northamption Generating Company	US Operating Services Co.	landfill*	Northampton
Colver Power Project	Inter-Power/AhlCon Partners, L.P.	data indeterminate	Cambria
Mitchell Power Station	Allegheny Energy Supply Co. LLC	landfill*	Washington
Hatfields Ferry Power Station	Allegheny Energy Supply Co. LLC	landfill*	Greene
Shawville	Reliant Energy Inc.	landfill*	Clearfield
AES Beaver Valley Partners	AES NUGs	data indeterminate	Beaver
Elrama Power Plant	Reliant Energy Inc.	data indeterminate	Washington
Cheswick Power Plant	Reliant Energy Inc.	landfill*	Allegheny
Armstrong Power Station	Allegheny Energy Supply Co. LLC	landfill*	Armstrong
Eddystone Generating Station	Exelon Energy	data indeterminate	Delaware
New Castle Plant	Reliant Energy Inc.	landfill*	Lawrence
P. H. Glatfelter	P. H. Glatfelter	data indeterminate	York
Titus	Reliant Energy Inc.	data indeterminate	Berks
Portland (RRI)	Reliant Energy Inc.	data indeterminate	Northampton
G. F. Weaton Power Station	Horsehead Corp.	landfill*	Beaver
Cromby Generating Station	Exelon Energy	data indeterminate	Chester

*indicates one or more coal ash landfills.[ii]

Amount of coal ash generated per year: Over 15.4 million tons. PA ranks 1st in the country for coal combustion residuals generation.[iii]

According to a 2007 EPA risk assessment, five surface impoundments and landfills in Pennsylvania are unlined.[iv]

Information on Pennsylvania Coal Ash Storage Units

***Number of Coal Ash Storage Units*:** 35 ponds at 7 plants.[v]

Pond Ratings: Three ponds rated "high hazard," meaning their failure would cause loss of life, and three rated "significant," meaning their failure would cause major economic loss and environmental damage.[vi]

***Age of Ponds*:** Almost all ponds are over 35 years old and one is 60 years old.[vii] The age of these ponds makes it unlikely that they have safeguards like liners and leachate collection systems.

Capacity and releases: There are five waste ponds of substantial size in PA, including one that is undergoing closure. The 2009 EPA database of coal ash surface impoundments did not contain much information on storage capacity for these sites. One impoundment at the Bruce Mansfield station (a designated high hazard potential site) did not report any information due to a Confidential Business Information claim. Two other sites reported minor seepages along their basins and berms.[viii]

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Details on Select Coal Ash Ponds:

(1) **FirstEnergy Bruce Mansfield Plant, Shippingport, PA:** The Little Blue Run coal ash impoundment, built in 1975, is one of the largest unlined coal ash impoundments in the U.S. The 1000-acre unlined reservoir receives fly ash, bottom ash, boiler slag, flue gas emission control residuals, coal pile runoff, and boiler cleaning materials from the Bruce Mansfield Power Station. The waste pond is contained by a 400 ft. tall, 2200-foot long rock-and-earth high hazard dam. Because of a "confidential business information" claim filed with EPA by FirstEnergy, the total amount of waste disposed in the impoundment cannot be disclosed to the public. However, calculating from industry estimates of 625,000 tons of coal combustion waste disposed annually, the total waste disposed in the pond over its 34 years of operation would be approximately 21 million tons. FirstEnergy admitted "several seeps in the Little Blue Run dam and in the surrounding hillsides." According to FirstEnergy, "the seeps and their management is [sic] the subject of a Consent Order and Agreement between FirstEnergy and PaDEP." Furthermore, following the most recent inspection of the dam in March 2009, "PaDEP has made some recommendations for our consideration." It appears that FirstEnergy and PADEP have not yet come to a meeting of the minds regarding what actions FirstEnergy is willing to take pursuant to the inspection. The inspection report was not made available to Earthjustice. FirstEnergy also has three smaller asphalt-lined holding ponds, each approximately 3 acres, for storing liquid waste. The three ponds hold volumes of 11 million, 13.6 million and 12.7 million gallons.

(2) **PPL Martins Creek Station, Bangor PA:** Martins Creek Station was shut down in 2007 and is currently being demolished. The main ash basin is in the process of being dewatered and closed. It contains 65 feet of waste over 37 acres (43 feet above grade), amounting to over 1 million tons of coal combustion waste. In 2005, the ash basin failed, releasing over 100 million gallons of water and fly ash onto surrounding fields and into the Oughoughton Creek and Delaware River. Arsenic in the river rose to levels far above the federal drinking water standard after the event, forcing a local water system to shut down temporarily after the spill. PPL was fined $1.5 million by PADEP and incurred approximately $37 million in cleanup costs. Long-term impacts on the Delaware River from the spill are currently being studied.

(3) **PPL Montour Power Station, Washingtonville, PA:** Built in 1968, the primary ash basin contains over 7.7 million tons of waste with a dam height of 40 feet. As a result of seeps discovered in 2004, PPL is under a 2007 Administrative Consent Order with PADEP to take abatement actions. PPL Montour operates four smaller waste ponds built between 1968-1980.

(4) **PPL Brunner Island Power Station, York Haven, PA:** The Brunner Island's 70-acre coal ash impoundment contains approximately 3.6 million tons of ash. The maximum height of the dam is 39 feet. An inspection of the dam in June 2008 "revealed the need to further evaluate the structural integrity of the impoundment." Despite the passage of over a year, the results of the evaluation are still "pending."

(5) **PPL Generation Holtwood Plant, Holtwood, PA:** In 1999, Holtwood's coal fired unit was shut down and its impoundment closed. No information on the size or volume of waste contained in the impoundment was provided. According to PPL, the "impoundment was closed under PADEP oversight."

Documented Damage at Coal Ash Disposal Sites: There are 11 documented cases of coal ash environmental contamination in NC, including:

- **Bruce Mansfield Power Station:** Discharges to groundwater and surface water from the 1,300-acre "Little Blue" surface impoundment have exceeded MCLs for arsenic and other parameters in multiple off-site residential drinking wells (prompting several property buyouts by FirstEnergy), exceeded Pennsylvania Water Quality Criteria (PA WQC), including the Criteria Continuous Concentration (CCC) and Criteria Maximum Concentration (CMC), in Mark's Run and other off-site surface water sources, and pervasively exceeded federal Maximum Contaminant Levels (MCLs) at many on-site groundwater monitoring wells.[ix]
- **Elrama Power Plant:** Identified by EPA as a potential damage case. Concentrations of cadmium in downgradient wells exceeded the primary MCL; the highest concentrations were found in the well closest to the landfill.

- **Fern Valley Landfill:** The Fern Valley CCW Landfill, on the west side of the Monongahela River across from Elizabeth PA, received coal ash from the Elrama Power Plant from 1989 to 2003. Arsenic levels 2.8 times higher than primary MCL (0.010 mg/L) were first noted in groundwater monitoring in 1995, and peaked in 2001 when the arsenic concentration was 36 times the primary MCL in one downgradient well and 29 times the primary MCL in another. Concentrations of boron, chloride, sulfate and total dissolved solids (TDS) in monitoring wells regularly exceeded health-based levels or secondary MCLs.[x]
- **Hatfields Ferry Station:** An unlined CCW landfill located off-property from the Hatfield's Ferry Power Plant has contaminated groundwater, polluted surface water, and damaged aquatic ecosystems since at least 2001. Federal groundwater Maximum Contaminant Levels (MCLs) standards for arsenic, aluminum, boron, chromium, manganese, molybdenum, sulfate, and total dissolved solids (TDS) have been exceeded since at least 2001. Concentrations of groundwater contaminants mirror those in CCW leachate samples from the landfill collected at the same time. The horizontal extent of contamination has not yet been defined.[xi]
- **Hunlock Power Station:** A coal ash surface impoundment at this small power plant on the Susquehanna River has contaminated the underlying groundwater with concentrations of arsenic, iron, and manganese that are several to hundreds of times the primary MCLs. Dissolved arsenic has been found at 3 to 12 times primary MCLs in multiple downgradient wells. Iron has been measured at up to 131 times the secondary MCL and manganese up to 314 times the secondary MCL in downgradient water.[xii]
- **Mitchell Power Station:** In 1998, Allegheny Power initiated groundwater investigations of its Mitchell Power Plant CCW wastewater lagoons with the expectation that no impacts would be found and that no ongoing monitoring would be required. However, the investigation found degradation of groundwater downgradient from the two lagoons by multiple parameters. Most significantly, concentrations of arsenic were measured at twice the federal primary MCL and concentrations of boron reached more than twice the EPA Child Health Advisory of 3.0 mg/L. Groundwater monitoring data for the year 2007 shows that maximum levels of arsenic and boron are twice as high as the maximum levels found in 1998.[xiii]
- **Phillips Power Station Landfill:** In the late 1980s, two coal ash ponds at the Phillips Power Plant contaminated several public water wells operated by the Cresswell Heights Joint Authority with high levels of total dissolved solids (TDS) which were ruining residents' hot water heaters. Legal action initiated by the Pennsylvania Department of Environmental Protection (PADEP) in 1990 led to decommissioning the Ash Ponds and paying a $50,000 fine. Groundwater contamination was later identified at the Ash Landfill west of the Phillips Power Plant at sufficient levels to require ongoing groundwater monitoring after the landfill was closed in the 1990s. Ten years later, samples from wells located where the groundwater is moving off-site regularly exceed secondary Drinking Water Standards (DWS) for TDS, chloride, fluoride, manganese and aluminum.[xiv]
- **Portland Station's Bangor Ash Disposal Site:** Groundwater concentrations in downgradient wells at this landfill exceed primary and secondary MCLs and groundwater standards for arsenic, aluminum, fluoride, boron, iron, manganese, sulfate, and total dissolved solids (TDS), and the landfill's consultant concedes that the landfill is responsible for the degradation.
- **Seward:** The Seward Generating Station's unlined coal ash and coal refuse pit, as well as its closed ash sites, have leached and continue to leach pollutants into the underlying aquifer at levels that far exceed state and federal MCLs, as well as upgradient concentrations. For example, groundwater levels of antimony exceed the primary MCL of 0.006 mg/L, including a concentration of 0.1 mg/L (nearly 17 times the standard); and cadmium exceeded the primary MCL of 0.005 mg/L, including a concentration of 0.041 (over eight times the standard). In addition, surface water data from 2005 to 2009 contained 27 exceedances of Pennsylvania's Water Quality Criteria, for such pollutants as aluminum, nickel, and zinc.
- **Homer City Station:** Groundwater monitoring data obtained through a recent Freedom of Information Act request show a history of exceedances of state and/or federal standards for arsenic, boron, chromium, manganese, molybdenum, sulfate, and TDS at Homer City.
- **New Castle Power Plant:** Groundwater monitoring data obtained through a recent Freedom of Information Act show a history of exceedances of state and/or federal standards for arsenic.

[i] United States Environmental Protection Agency (U.S. EPA). Database of coal combustion waste surface impoundments (2009). Information collected by EPA from industry responses to Information Collection Request letters issued to the companies on March 9, 2009.
[ii] U.S. Department of Energy's Energy Information Administration, Form EIA-767, Annual Steam-Electric Plant Operation and Design Data. 2005.
[iii] U.S. EPA, *Regulatory Impact Analysis for EPA's Proposed RCRA Regulation of Coal Combustion Residues (CCR) Generated by the Electric Utility Industry*, Exhibit 3D (August 2010).
[iv] RTI International. *Human and Ecological Risk Assessment of Coal Combustion Wastes, Draft* (August 6, 2007), prepared for the US Environmental Protection Agency.
[v] U.S. EPA. Database of coal combustion waste surface impoundments (2009).
[vi] *Id.*
[vii] *Id.*
[viii] *Id.*
[ix] Earthjustice, *In Harm's Way* 161 (Aug. 2010), *available at* http://www.environmentalintegrity.org/news_reports/documents/INHARMSWAY_FINAL.pdf.
[x] Earthjustice, *Out of Control* 76 (Feb. 2010), *available at* http://www.environmentalintegrity.org/news_reports/documents/OutofControl-MountingDamagesFromCoalAshWasteSites.pdf.
[xi] Earthjustice, *In Harm's Way* at 174.
[xii] Earthjustice, *Out of Control* at 81.
[xiii] *Id.* at 65.
[xiv] *Id.* at 68.