



Forty-Nine Coal-Fired Plants Acknowledge Groundwater Contamination in Response to EPA Data Collection

April 2012

At least 49 coal-fired power plants have acknowledged that one or more of their ash ponds or landfills have exceeded either Safe Drinking Water Act “Maximum Contaminant Limits” or state groundwater protection standards. The information was provided to the U.S. Environmental Protection Agency (EPA) in response to an information collection request,¹ and obtained by the Environmental Integrity Project (EIP) through a Freedom of Information Act request. The data indicates that multiple contaminants at 116 coal ash disposal units at the 49 plants exceed federal or state standards, including arsenic (a potent carcinogen) reported at no fewer than 22 sites; manganese (a metal that can damage the nervous system in high concentrations) at 22; boron (a pollutant that can cause damage to the stomach, intestines, liver, kidney, and brain when ingested in large amounts) at 12; selenium (a toxic pollutant that causes adverse health effects at high exposures) at 13; and cadmium (a toxic pollutant that can damage the kidneys, lungs, and bones) at 10.

The contamination at 28 of these had not been previously identified in EPA’s inventory of sites damaged by coal ash, or included in data submitted to EPA by EIP and Earthjustice based on our review of state files.² The new evidence comes from plants in 15 states, including five in West Virginia, three in Iowa, North Carolina, and Texas, and two each in Colorado and South Carolina. Table A includes the list of all 49 plants reporting pollutants exceeding federal or state groundwater standards at one or more ash or scrubber sludge disposal sites. The 28 plants not previously identified are highlighted in yellow and report contamination at 63 coal ash ponds and landfills. Table B identifies specific contaminants that were exceeded at six or more sites.

The EPA asked 91 coal-fired power plants to provide information related to groundwater pollution to help the Agency evaluate the toxicity of discharges to surface waters from coal-fired power plants.³ Forty-two plants reported that groundwater monitoring data was not available, that no standards had been exceeded, did not respond to the question, claimed their answers as confidential

business information, or did not report exceedances of contaminants that are subject to health based standards. But groundwater monitoring information obtained from state files show that contamination above federal or state standards have in fact been exceeded for toxic pollutants at some of these plants. For example, Plant Crist in Florida reported that it had no exceedances at any of its coal ash disposal sites. Yet groundwater monitoring data from state files show levels of arsenic and cadmium above federal drinking water standards at the Crist site, as well as manganese and sulfate above federal health advisories, in 2008-2010.⁴

Readers should understand the limitations of this data, which was submitted in response to EPA's request for information related to exceedances of federal and state groundwater standards in monitoring wells associated with coal ash ponds and landfills. Plants responding to EPA's survey may be measuring some, but not all, contaminants subject to health-based standards, and lack of uniform monitoring standards for coal ash disposal sites means that methods of detection and measurement may vary from state to state. In addition, several plants claimed that levels of pollution above federal or state standards occurred at up-gradient (i.e. background) wells, as well as downgradient monitoring wells: Coyote, Portland, and Walter Scott Energy Center.⁵

Table A is limited to plants that reported exceedances of federal or state standards of pollutants that are subject to a health-based standard under the Safe Drinking Water Act or a federal Health Advisory.⁶ It does not include contaminants subject only to "secondary standards" based on aesthetics (i.e. bad odor or taste)—although EPA asked for information related to exceedances of these standards as well.

EIP included pollutants subject to Health Advisories in Table A because Health Advisories address certain contaminants – like boron and manganese – that are found in private wells that serve fifteen percent of the US population, but which are less likely to appear in public water supplies.⁷ For example, the US EPA has advised that children limit their intake of manganese in drinking water to no more than an average of 1 milligram per liter (mg/L) because research indicates that manganese at higher concentrations can adversely impact the nervous system.⁸

No data on actual contaminant levels was provided to EPA by the plants so it is impossible to determine which limits have been exceeded (i.e. state or federal) or how long ago an exceedance occurred. As indicated on Attachment A, some plants reported contamination at sites that are identified as closed.⁹

¹ See U.S. Env'tl. Prot. Agency, Questionnaire for the Steam Electric Power Generating Effluent Guidelines (2010), available at http://water.epa.gov/scitech/wastetech/guide/steam_index.cfm.

² See Office of Solid Waste, U.S. Env'tl. Prot. Agency, Coal Combustion Waste Damage Case Assessments (July 9, 2007); Env'tl. Integrity Project, Risky Business: Coal Ash Threatens America's Groundwater Resources at 19 More Sites (Dec. 12, 2011), available at

<http://www.environmentalintegrity.org/documents/121311EIPThirdDamageReport.pdf>; Env'tl. Integrity Project et al., In Harm's Way: Lack of Federal Coal Ash Regulations Endangers Americans and Their Environment (Aug. 26, 2010), available at http://www.environmentalintegrity.org/news_reports/documents/INHARMSWAY_FINAL.pdf; Env'tl. Integrity Project & Earthjustice, Out of Control: Mounting Damages From Coal Ash Waste Sites (Feb. 24, 2010), available at http://www.environmentalintegrity.org/news_reports/documents/OutofControl-MountingDamagesFromCoalAshWasteSites.pdf.

³ EPA's response to EIP's Freedom of Information Act request included information for 89 plants. EPA stated it was not providing information for two plants because the plants claimed that their responses to the survey are "confidential business information."

⁴ Env'tl. Integrity Project, Risky Business at A.7–A.12.

⁵ Readers should be aware that a phenomenon known as "mounding" is common at coal ash disposal sites; natural groundwater flow is disrupted by the large amounts of coal ash disposal and so-called upgradient or background wells become impacted by pollution from the disposal site.

⁶ See U.S. Env'tl. Prot. Agency, 2011 Edition of the Drinking Water Standards and Health Advisories (820-R-11-002) (Jan. 2011), available at <http://water.epa.gov/action/advisories/drinking/upload/dwstandards2011.pdf>.

⁷ U.S. Env'tl. Prot. Agency, Drinking Water from Household Wells (816-K-02-003) (Jan. 2002), available at http://water.epa.gov/drink/info/well/upload/2003_06_03_privatewells_pdfs_household_wells.pdf. The MCLs are supposed to provide an "ample margin of safety" for public water supply systems, but EPA estimates that fifteen percent of U.S. households draw their drinking water from private wells that are not subject to MCLs for pollutants associated with coal ash disposal. See U.S. Env'tl. Prot. Agency, "Private Drinking Water Wells," at <http://water.epa.gov/drink/info/well/index.cfm>.

⁸ For more information, see http://water.epa.gov/action/advisories/drinking/drinking_index.cfm for information on EPA Drinking Water Standards and Health Advisories or http://www.epa.gov/ogwdw/ccl/pdfs/reg_determine1/support_ccl_magnese_dwreport.pdf for information on the manganese health advisory.

⁹ Readers should note that "closed" sites may still pose a risk to public health and the environment because they can continue leaching pollution into groundwater long after ash and scrubber sludge disposal have stopped. EPA has stated that peak exposure from coal ash ponds and landfills can occur decades after the waste is dumped. See U.S. Env'tl. Prot. Agency, Human and Ecological Risk Assessment of Coal Combustion Wastes 4–7, 4–8 (Aug. 6, 2007).

TABLE A: FACILITIES REPORTING EXCEEDANCES OF FEDERAL HEALTH STANDARDS OR STATE GROUNDWATER CRITERIA

State	Plant Name	Pond/Landfill Plant Identifier	Pollutants Exceeding MCL or State Groundwater Standards
AR	Independence Plant	ISES Landfill	Manganese
AZ	Coronado Generating Station	Wastewater Reservoir	Chromium (Primary), Sulfate
CO	Comanche Station	Comanche ADF	Cadmium, Selenium, Sulfate
CO	Craig Station	CBI	Arsenic, Boron, Manganese, Nickel, Selenium, Sulfate
FL	C D McIntosh Jr. Power Plant	Landfill (active)	Arsenic, Cadmium, Chromium, Manganese, Nickel, Sodium, Sulfates
		Northeast Landfill	Cadmium, Manganese, Sodium, Sulfates
FL	JEA- St. Johns River Power Park	Area 1	Arsenic, Beryllium, Sulfate
		Area 2	Sulfate
		Waste Water Flow Equalization Basin	Sulfate
IA	George Neal South	Neal 4 Landfill	Arsenic
IA	Interstate Power and Light - Sutherland Generating Station	Marshalltown East	Boron, Manganese
		Marshalltown West	Boron, Manganese
IA	Riverside Generating Station	North Pond	Lead
		South Pond/ Bottom Ash Pond	Antimony
IA	Walter Scott Jr. Energy Center	Ash Impoundment	Arsenic
		Monofill	Arsenic, Lead, Selenium
		North Surface Impoundment	Selenium
		South Surface Impoundment	Arsenic, Thallium
IL	Duck Creek Power Plant	Landfill	Nitrate (Dissolved As N)
IL	Joliet Station 9	Lower Quarry	Arsenic, Barium, Boron, Cadmium, Copper, Fluoride, Lead, Manganese, Molybdenum, Nitrate, Sodium, Sulfate, Zinc
		Upper Quarry	Arsenic, Barium, Boron, Cadmium, Copper, Fluoride, Lead, Manganese, Molybdenum, Nitrate, Zinc
IN	Cayuga	Inactive FGD Area, Inactive NE Area, Lines Ash Disposal Pond - Cell #1, Ash Disposal Area #1, and Primary Ash Settling Basin	Sulfates
IN	Gibson Generating Station	Aggregate Landfill (26-02)	Arsenic, Manganese, Sulfate
		Industrial Surface Impoundment East Ash System (Cells 1, 2, and 3) and Industrial Surface Impoundment East Ash Basin	Arsenic, Manganese, Sulfate
		Industrial Surface Impoundment North Ash Pond and Industrial Surface Impoundment North Basin	Arsenic, Manganese, Sulfate
		S Aggregate Landfill (26-06)	Arsenic, Manganese, Sulfate
KS	Tecumseh Energy Center	Landfill 322	Sulfate
KY	EKPC Spurlock Station	CBI	Arsenic, Cadmium
KY	Shawnee	Active Ash Disposal Area (Ash Pond 2)	Sulfate
		AFBC Fly Ash &	Sulfate
MI	JH Campbell Power Plant	CBI	Antimony, Boron, Chromium, Lead, Selenium, Vanadium
		CBI	Boron, Nickel, Selenium, Thallium, Vanadium
		CBI	Boron, Nickel, Selenium, Thallium, Vanadium
		CBI	Boron, Cadmium, Lead, Manganese, Selenium, Zinc
		CBI	Boron, Cadmium, Lead, Manganese, Selenium, Zinc
MN	Boswell Energy Center	1-4 Bottom Ash Pond, SE Unit 3 Fly Ash Pond, SE Units 1, 2, and 4 Fly Ash and Scrubber Slurry Pond, Old SE Units 1, 2, and 3 Bottom Ash Pond, and Old SE Units 1, 2, and 3 Fly Ash Pond	Boron, Sulfate
NC	Belews Creek Steam Station	Ash Basin	Arsenic, Boron, Chlorine, Manganese
		Chemical Holding Pond	Arsenic, Boron, Chlorine, Manganese
		Closed Pine Hall Road Landfill	Antimony, Arsenic, Boron, Cadmium, Chromium, Lead, Manganese, Mercury, Selenium, Sulfate, Thallium, Vanadium
		Craig Road Ash Landfill	Chromium, Manganese
		FGD Residual Landfill	Arsenic, Barium, Chromium, Lead, Manganese, Nickel
NC	Buck Steam Station	Primary Ash Basin	Boron, Manganese
		Secondary Ash Basin	Boron, Manganese
		Tertiary Ash Basin	Boron, Manganese
NC	Cape Fear Steam Electric Plant	1985 Ash Pond	Manganese, Sulfate
NC	Cliffside Steam Station	Ash Basin	Chromium, Manganese
NC	Marshall Steam Station	Ash Basin	Barium, Boron, Chlorine, Manganese
		Ash Landfill	Boron, Chromium, Manganese, Nickel, Selenium

WV	Mount Storm Power Station	Phase A Landfill (ASH)	Nitrogen Nitrate
		Phase B Landfill	Nickel
WV	Mountaineer Plant	Little Broad Run Landfill	Arsenic, Barium
WV	Philip Sporn	Fly Ash Storage Area (Units 1-4)	Nickel

Notes:

- 1) Source: EPA Response to EIP FOIA Request, Steam Electric ELG Information Collection Request, Part F Section 5, *available upon request*
- 2) Table A is limited to plants that reported exceedances of federal or state standards of pollutants that are subject to a health-based standard under the Safe Drinking Water Act or a federal Health Advisory.
- 3) The highlighted plants are those which had not been previously identified in EPA or EIP and Earthjustice reports.

NC	Marshall Steam Station	FGD Residue Landfill	Chromium, Lead, Manganese
ND	Antelope Valley Station	Ash Landfill Cell 1	Arsenic, Manganese, Sulfate
		Ash Landfill Cell 3	Arsenic, Manganese, Sulfate
		Decantation	Arsenic, Manganese, Sulfate
		SDA	Arsenic, Manganese, Sulfate
		SP-025	Arsenic, Manganese, Sulfate
		SP-160	Arsenic, Manganese, Sulfate
ND	Coyote Station	Ash Pond	Manganese, Sulfate
		Black Pit	Manganese, Sulfate
		Blue Pit	Manganese, Sulfate
		Green Pit	Arsenic, Manganese, Sulfate
NM	Escalante Station	CBI	Arsenic, Boron, Cobalt, Manganese, Selenium, Sulfate
NY	Danskammer Generating Station	Danskammer Solid Waste Management Facility	Arsenic, Manganese, Selenium, Sodium
OH	General James M. Gavin	Fly Ash Pond	Arsenic, Barium, Chlorine, Manganese, Sulfate, Thallium
OH	Walter C. Beckjord Station	Ash Pond B	Selenium, Sulfate
		Ash Pond C and Ash Pond C Ext	Manganese, Sulfate
		Pond Run Ash Disposal	Barium, Chlorine, Manganese, Sulfate
PA	Bruce Mansfield Plant	Little Blue Run Impoundment Area	Arsenic
PA	EME Homer City Generation L.P.	"Not Reported"	Lead, Manganese
		"Not Reported"	Lead, Manganese
		Ash Disposal Site	Lead, Manganese, Sulfate
		Ash Recycle Pond #1	Lead, Manganese, Sulfate
		Ash Recycle Pond #2	Lead, Manganese, Sulfate
		Ash Recycle Pond #3	Lead, Manganese, Sulfate
		Ash Recycle Pond #4	Lead, Manganese, Sulfate
		Ash Valley - Polishing Pond	Lead, Manganese, Sulfate
		Ash Valley - Treatment Pond #1	Lead, Manganese, Sulfate
PA	Hatfield's Ferry Power Station	Ash Disposal Site	Chromium (State-Issued Standard), Selenium
		Disposal Site Expansion	Chromium (State-Issued Standard), Selenium
PA	New Castle Power Plant	Existing Leachate Impoundment	Arsenic
		Fly Ash Landfill	Arsenic
PA	RRI Energy Inc. Portland Generating Station	Bangor Landfill	Manganese, Sulfate
		Bangor Landfill Leachate Pond	Manganese, Sulfate
		Bangor Landfill Sed. Pond	Manganese, Sulfate
		East Sedimentation Basin	Manganese, Sulfate
		IWT Sediment Basin	Manganese, Sulfate
		Quarry 1	Manganese, Sulfate
		Quarry 2 & 3	Manganese, Sulfate
SC	Canadys Station	95-acre Active Pond, Polish Pond and 85-Acre Inactive Pond	Arsenic, Nickel, Sulfates
		Low Volume Waste Pond C and Coal Pile Runoff Pond 1	Arsenic, Cadmium, Nickel, Selenium, Sulfates
SC	Cope	Cope Landfill	Nitrates
		Wastewater Treatment Basin	Arsenic
SC	Cross Generating Station	Ash Pond #2	Cadmium, Sulfate
		Gypsum Filtrate Pond	Sulfate
SC	Jefferies Generating Station	Ash Pond A	Arsenic, Uranium
TN	John Sevier	Copper Pond	Cadmium, Manganese, Sulfate
		Dry Fly Ash Stack	Cadmium, Manganese, Sulfate
		Intermediate Pond for Dry Stack	Cadmium, Manganese, Sulfate
		Pond	Cadmium, Manganese, Sulfate
		Main Ash Pond (Bottom Ash)	Cadmium, Manganese, Sulfate
		Stilling Pond for Dry Stack	Cadmium, Manganese, Sulfate
TX	Big Brown Steam Electric Station	Ash Disposal Area 1	Sulfate, Manganese
		Ash Disposal Area 2	Boron, Manganese, Sulfate
		Bottom Ash Pond(s)	Cadmium
TX	Pirkey	East Ash Pond	Arsenic, Chromium, Lead
TX	Sandow Steam Electric Station	B Pit	Boron
		SO2 Ponds 1-3	Boron
		Y Pit	Boron
WI	Wisconsin Power and Light - Nelson Dewey Generating Station	Ash Disposal Facility	Arsenic, Boron, Selenium
WV	Albright Power Station	Active CCB Landfill	Chromium, Nickel, Thallium (State-issued Standard)
		Closed CCB Landfill	Thallium (State-issued Standard)
WV	Kanawha River Plant	Closed Pond	Selenium

TABLE B: FACILITIES WITH GROUNDWATER CONTAMINATION OF MOST COMMONLY EXCEEDED POLLUTANTS										
Plant Name	Arsenic	Boron	Cadmium	Chromium	Lead	Manganese	Nickel	Selenium	Sulfate	
Albright Power Station				✓			✓			
Antelope Valley Station	✓					✓				✓
Belews Creek Steam Station	✓	✓	✓	✓	✓	✓	✓	✓		✓
Big Brown Steam Electric Station		✓	✓			✓				✓
Boswell Energy Center		✓								✓
Bruce Mansfield Plant	✓									
Buck Steam Station		✓				✓				
C D McIntosh Jr. Power Plant	✓		✓	✓		✓	✓			✓
Canadys Station	✓		✓				✓	✓		✓
Cape Fear Steam Electric Plant						✓				✓
Cayuga										✓
Cliffside Steam Station				✓		✓				
Comanche Station			✓					✓		✓
Cope	✓									
Coronado Generating Station				✓						✓
Coyote Station	✓					✓				✓
Craig Station	✓	✓				✓	✓	✓		✓
Cross Generating Station			✓							✓
Danskammer Generating Station	✓					✓		✓		
EKPC Spurlock Station	✓		✓							
EME Homer City Generation L.P.					✓	✓				✓
Escalante Station	✓	✓				✓		✓		✓
General James M. Gavin	✓					✓				✓
George Neal South	✓									
Gibson Generating Station	✓					✓				✓
Hatfield's Ferry Power Station				✓				✓		
Independence Plant						✓				
Interstate Power and Light - Sutherland Generating Station		✓				✓				
IEA- St. Johns River Power Park	✓									✓
Jefferies Generating Station	✓									
JH Campbell Power Plant		✓	✓	✓	✓	✓	✓	✓		
John Sevier			✓			✓				✓
Joliet Station 9	✓	✓	✓		✓	✓				✓
Kanawha River Plant								✓		
Marshall Steam Station		✓		✓	✓	✓	✓	✓		
Mount Storm Power Station							✓			
Mountaineer Plant	✓									
New Castle Power Plant	✓									
Philip Sporn							✓			
Pirkey	✓			✓	✓					
Riverside Generating Station					✓					
RRI Energy Inc. Portland Generating Station						✓				✓
Sandow Steam Electric Station		✓								
Shawnee										✓
Tecumseh Energy Center										✓
Walter C Beckjord Station						✓		✓		✓
Walter Scott Jr. Energy Center	✓				✓			✓		
Wisconsin Power and Light - Nelson Dewey Generating Station	✓	✓						✓		

Notes:

- 1) Source: EPA Response to EIP FOIA Request, Steam Electric ELG Information Collection Request, Part F Section 5, *available upon request*
- 2) This chart includes pollutants that were found at levels above federal or state groundwater standards at six or more sites.
- 3) The highlighted plants are those which had not been previously identified in EPA or EIP and Earthjustice reports.