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November 3, 2022

# Mapping the Coal Ash Contamination

746 coal ash units in 43 states and Puerto Rico have reported information in compliance with federal coal ash safeguards since 2015. Here's what the data said.

Beginning in 2018, coal-fired electric utilities were compelled to publicly report groundwater monitoring data for the first time ever, following transparency requirements imposed by federal coal ash regulations, known formally as the <u>Coal Combustion Residuals Rule (https://www.epa.gov/coalash/coal-ash-rule)</u>.

#### **ON THIS PAGE**

- Coal ash map
- Drinking water impacts
- Aquatic impacts
- Cleanup plans & toolkit
- Most contaminated
- <u>Demographic data</u>
- Reports (/feature/campaigns-coal-ash-reports-and-publications)

For decades, utilities have disposed of coal ash dangerously, dumping it in unlined ponds and landfills where the toxins leak into groundwater.

According to industry's own data, 94% of the coal ash ponds in the United States are unlined.

Almost all of them are contaminating groundwater with toxins above levels that the U.S. Environmental Protection Agency deems safe for drinking water.

Much of industry's disclosure of the data has been in abstruse and non-standard formats. The data can be difficult to find, despite the requirement that the information be publicly accessible. Some utilities fail to post the required information entirely or conceal it behind sign-in walls to prevent search engines from locating the disclosures.

Legal and technical experts from Earthjustice, <u>Environmental Integrity Project</u> (<a href="https://www.environmentalintegrity.org/">https://www.environmentalintegrity.org/</a>), and partner organizations located and analyzed the data disclosures.

292 plants reported groundwater monitoring data.

Based on that data, 91% of these plants are contaminating groundwater with toxic substances at levels exceeding federal safe standards.



A separate map identifies <u>coal plants closing coal ash ponds in place within 5ft. of groundwater</u> (<a href="https://earthjustice.org/features/map-coal-plants-failing-monitor-contaminated-water">https://earthjustice.org/features/map-coal-plants-failing-monitor-contaminated-water</a>) and that have admitted contamination of groundwater with heavy metals and other toxins from coal ash but haven't begun to address the mess.

FULLSCREEN MAP (https://earthjustice.carto.com/builder/1ca699b0-aebf-417f-a006-89435ea1b05f)

DOWNLOAD DATA (https://earthjustice.org/coalash /data-2022)

Mapping the Coal Ash Contamination - Earthjustice	https://earthjustice.org/feature/coal-ash-contaminated-sites-ma

UNDERSTANDING THE DATA IN THIS MAP

Most data included on the map are found in industry disclosures posted on individual owner/operator websites. Starting with the column "Did EPA Identify The Pond as Close To or In Groundwater?," outside data sources were used, as explained in <a href="mailto:the-Definitions tab">the Definitions tab</a> (<a href="https://docs.google.com/spreadsheets/d/1qUsd5C\_8|IZ1a5pX-sel1WFST5SjVmx4ZzfS6DjfEVU">the Definitions tab</a> (<a href="https://docs.google.com/spreadsheets/d/1qUsd5C\_8|IZ1a5pX-sel1WFST5

To the best of our knowledge, neither U.S. EPA nor any other entity has attempted to collect, review, and make public this information comprehensively.

By providing these data, we are not confirming that the industry disclosures and documents are compliant with the CCR Rule or contain true, accurate, current, and complete information.

In addition, while these data are the result of careful review of thousands of documents, <u>we appreciate any information (/coalash/inquiry)</u> about data that may be out of date, or other errors and omissions.

The 2015 CCR Rule contained a loophole exempting from any protections the "legacy" coal ash ponds (/blog/2020-june/legacy-coal-ash-ponds-are-a-disaster-in-waiting-is-there-one-near-you) located at retired power plants that closed before the effective date of the Rule (October 2015). These "legacy" ponds are included on a separate map (/blog/2020-june/legacy-coal-ash-ponds-are-a-disaster-in-waiting-is-there-one-near-you). In addition, landfills that stopped receiving waste prior to the effective date of the Rule are exempted and are also included on a separate map (/document/map-of-inactive-landfill-plants).

In August 2018, the D.C. Circuit Court of Appeals concluded (https://earthjustice.org/from-the-experts/2018-august/coal-ash-victory) that the Rule's exemptions for "legacy" ash ponds fell short of statutory requirements to protect human health and the environment, and ordered U.S. EPA to strengthen the Rule.

Map data updated on Oct. 12, 2022

**HOW TO USE THIS MAP** Best experienced on larger screens, given the amount of data presented.

- · Hover over each marker to see the number of coal ash units at that site.
- · Zoom in to see the individual markers for each coal ash unit. Click on markers to display full information for each unit.
- Filter map data by clicking on sidebar charts to select criteria. For example, click on "Complete Draft Plan Available" chart item to only display units with links to cleanup plans.

**GROUNDWATER CONTAMINATION SUMMARY** Describes the status of groundwater monitoring and whether the operator has found groundwater contamination from coal ash.

In the map, Toxic Metal Contamination is per formal industry disclosures. Based on groundwater data available for 292 plants, 91 percent of these plants are contaminating groundwater with toxic substances exceeding federal safe standards.

Toxic Metal Contamination from [X Metals] Significant increases above drinking water standards were found for the listed metals. Cleanup plan required by the CCR Rule to stop the release and restore groundwater to original conditions, if no alternative source demonstration was made.

Significant Contamination, but monitoring problems likely mask extent of contamination Significant increases in contamination were detected, and enhanced monitoring for toxic metals such as arsenic, lead, and radium has been initiated, if no alternative source demonstration was made.

Groundwater Monitoring in Process, but no exceedances found. Monitoring violations may exist No statistically significant increases in coal ash contaminants detected above background levels to date. Toxic metals may still, however, be present.

Unknown Monitoring is not required at this unit.

Alternative Source Demonstration (ASD) For units with significant contamination and/or toxic metal contamination, some operators have shown that an alternate source is allegedly responsible for all the contamination. Any demonstrations are usually posted in the annual groundwater monitoring reports due in March of every year.

For more detailed information about specific levels of contamination, please refer to <u>Ashtracker (https://ashtracker.org)</u>. The Ashtracker website allows citizens to find monitoring wells at these sites and review data on specific concentrations of pollutants such as arsenic, selenium and lead that have accumulated in groundwater above federal drinking water standards and advisories.

**CLEANUP PLAN STATUS** A cleanup plan (Assessment of Corrective Measures or "ACM") is required for all units that have made a determination of toxic metal contamination without demonstrating that a source other than the regulated coal ash dumps caused the contamination (or in other words, making an "Alternative Source Demonstration").

The Assessment of Corrective Measures must be initiated within 90 days of a contamination finding, and notice of initiation may be publicly posted up to 60 days after initiation. Cleanup plans must be completed within 90 to 150 days of initiation, and publicly posted 30 days after completion.

**NA** The unit never entered groundwater assessment monitoring, or never demonstrated a statistically significant level of groundwater pollution in assessment monitoring.

Operator Claims No Cleanup Required Although the unit demonstrated a significant level of pollution in groundwater, the operator then made an Alternative Source Demonstration alleging that the pollution did not come from the coal ash unit.

No Information Available Yet The unit is in assessment monitoring. The operator has neither posted an Alternative Source Demonstration, nor posted a notification that an Assessment of Corrective Measures (also known as a "cleanup plan") has begun.

Complete Draft Plan Available The draft cleanup plan has been posted by the operator. See unit information for link to the draft plan.

INITIATION OF CLEANUP PLAN DATE Date of initiation of remedy research for the cleanup plan.

**CLEANUP PLAN DATE** Date of the document proposing a remedy (or a selection of remedies) to address contaminated groundwater.

**CLEANUP STRATEGY SELECTED** A description of the cleanup strategy that has been selected to address contaminated groundwater at this unit. Or, a note of whether the unit has yet to select a remedy.

**LINER STATUS** Refers to whether the disposal unit was constructed with an impermeable barrier that meets the requirements of the CCR Rule.

A liner must include both a synthetic membrane and a two-foot-thick layer of compacted soil, or an equivalent system.

Unlined The unit lacks a liner, or the utility has failed to prove that it does have one, which are legally the same.

Lined The unit has a liner that satisfies the CCR Rule.

NA The CCR Rule did not require landfills to disclose their liner status, so for most landfills, we do not have liner information. Some ponds have "NA" because they have closed by removal.

**CLOSURE TYPE** Specifies the method by which the operator intends to close the coal ash unit, according to disclosures made pursuant to the CCR Rule, or if the unit is already closed, the method the operator actually used.

Operators must include this information in a public closure plan even if the impoundment is not yet closed.

In Place Closing the landfill or pond by leaving the coal ash where it is and "capping" it with a cover. If a unit is closed in place, the operator must continue groundwater monitoring and other post-closure care for the unit for at least 30 years.

Removal Excavating all the coal ash and transporting it to a different disposal unit for (onsite or offsite) permanent disposal.

In Place & Removal Closing the unit by partial excavation and leaving the remainder of coal ash in place. Post-closure care for 30 years, including groundwater monitoring, is required for any coal ash closed in place.

Undetermined The operator has failed to disclose its closure method for the coal ash disposal unit.

**CLOSURE STATUS** Indicates whether the dump is still operating and, if so, whether the operator has provided notice that it intends to close the unit in the near future.

Open The default status for landfills or lined ponds that have not posted any closure notices. Although activities may vary, we assume these sites are actively receiving new loads of coal ash.

Open, No Notice of Intent to Close The default status for unlined ponds that have not posted any closure notices. All unlined ponds were required to initiate closure by April 11, 2021, except those that applied for extensions to operate under Part A and Part B of the CCR Rule.

Open, Part A Unlined ponds that have sought out an extension to the April 2021 deadline for initiation of closure under the CCR Part A Final Rule. See <u>EPA's Coal Combustion Residuals (CCR) Part A Implementation (https://www.epa.gov/coalash/coal-combustion-residuals-ccr-part-implementation)</u>.

Open, Part B Unlined ponds that have sought out an extension to the April 2021 deadline for initiation of closure under the CCR Part B Final Rule. EPA's Coal Combustion Residuals (CCR) Part B Implementation (https://www.epa.gov/coalash/coal-combustion-residuals-ccr-part-b-implementation).

Notice of Intent to Close The operator has submitted a formal notice that it will stop dumping coal ash into the unit and begin the closure process in the near future.

Closed The operator has indicated that the closure process is complete. For units that closed in place, post-closure care should be ongoing.

Closed, no certification There are data indicating that the unit is closed, but the owner has not posted a formal certification of closure.

**LOCATION RESTRICTION COMPLIANCE** Indicates whether the unit complies with the five location restrictions established by the CCR Rule.

Aquifer New landfills, expansions and all ponds must sit at least five feet above the uppermost aquifer. Every pond was required to submit certification that its base was greater than five feet above the uppermost aquifer, but many ponds that have closed by removal failed to post this documentation.

**Wetlands** New landfills, expansions and all ponds must not be located in wetlands, unless operators can demonstrate that the unit does not degrade the wetlands, among other requirements.

Fault Areas New landfills, expansions and all ponds must not be located with 200 feet of a fault active within the last 12,000 years.

Seismic Impact Zones New landfills, expansions and all ponds must not be located in a place that has at least a 2% chance of a significant earthquake in the next 50 years.

Unstable Areas All landfills and ponds must not be located in places that could result in structural damage because of poor foundations (e.g., karst terrain).

A value of NA indicates that the requirement does not apply to the unit in question, or that disclosure is not yet required.

A value of Failure to Post indicates that industry has failed to post such information for a unit and can be interpreted as non-compliance.

HAZARD RATING Describes the potential for loss of life or damage if there is a dam failure at a coal ash impoundment.

Based on the same criteria as the Army Corps of Engineers National Inventory of Dams. U.S. EPA defines the ratings, as follows:

HIGH Failure or mis-operation of these dams will probably cause loss of human life.

SIGNIFICANT Failure or mis-operation of these dams would probably not cause any deaths, but it would cause economic loss, environmental damage, and disruption of lifeline facilities.

LOW Failure or mis-operation would be unlikely to cause loss of life or significant economic or environmental losses, with losses principally limited to the owner's property.

INCISED These impoundments do not have dams because they are entirely below ground level. Therefore they have no dam ratings, although underground failures can and do occur.

UNKNOWN The operator of the surface impoundment failed to post the required information.

NA This requirement only applies to surface impoundments, not landfills.

**OPERATOR'S COMPLIANCE WEBSITE** The publicly accessible website required by the CCR Rule where the operator's compliance documents must be posted.

Most of these data were drawn from industry websites.

**VOLUME** Indicates the quantity of CCR and, if applicable, water held in the unit as of 2021/2022. All measurements are in cubic yards. Please note: this field indicates the combined CCR and impounded water volume. Some units report these measurements separately, and this information can be found by going to the CCR website for the unit and finding the most recent "Annual Inspection Report."

Some quantities are converted from acre-feet, gallon, and ton values provided by industry. For ton to cubic yard conversions, we assumed a unit weight of 1.2 tons/cubic yard, an estimate used in Duke Energy compliance documents for wet ash. Estimates are given based on historical data where annual data are not available.

Blanks in this field represent units where all CCR has been removed, new units with no current CCR, or units where their volume is reported as a group so that volume is captured in a different row.

**EIP GROUNDWATER CONTAMINATION SUMMARY** Environmental Integrity Project reviewed groundwater monitoring results from samples taken in 2015-2019 at the plants in this database. They compared results to the health-based thresholds below. A detailed explanation of their methodology can be found the report by Earthjustice and Environmental Integrity Project, *Poisonous Coverup* (https://earthjustice.org/documents/report/poisonous-coverup).

[Antimony: 6 μg/L, Arsenic: 10 μg/L, Barium: 2 mg/L, Beryllium: 4 μg/L, Boron: 1.8 mg/L, Cadmium: 5 μg/L, Chromium: 100 μg/L, Cobalt: 6 μg/L, Fluoride: 4 mg/L, Lead: 15 μg/L, Lithium: 40 μg/L, Mercury: 2 μg/L, Molybdenum: 40 μg/L, Radium: 5 pCi/L, Selenium: 50 μg/L, Sulfate: 500 mg/L, Thallium: 2 μg/L]

DEMOGRAPHIC DATA Demographic estimates were generated using the 2016-2020 American Community Survey (ACS) from the United States Census Bureau and are available in <a href="EJScreen">EJScreen</a> (https://earthjustice.org/news/press/2015/epa-releases-new-national-environmental-justice-screening-tool-for-communities)'s Standard Reports, along with information about other demographic indicators, EJ Indexes, and environmental indicators. EJScreen is an EPA's environmental justice mapping and screening tool that provides EPA with a nationally consistent dataset and approach for combining environmental and demographic socioeconomic indicators. For the purpose of this dataset, Earthjustice defines Disproportionately Low-Income or People of Color (POC) in the following way: the community receives this designation if the population within a 1-, 2-, 3-, or 4-mile radius of the plant has a higher rate of low-income or POC populations compared to the state average. EJScreen defines these two demographic metrics in the following way:

Low-Income An estimate of the percent of individuals in households where the household income is less than or equal to twice the federal poverty level.

People-of-Color An estimate of the percent of individuals who list their racial status as a race other than white alone and/or list their ethnicity as Hispanic or Latino.

EJScreen was designed in the context of EPA's environmental justice policies and is a screening tool that can help identify areas that may warrant additional consideration, analysis, or outreach.

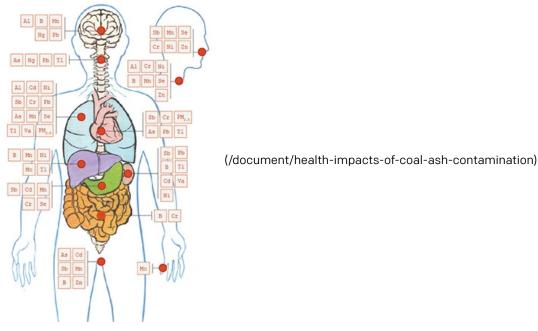
More information about EJScreen's methods and purpose, ACS data, and their caveats and limitations, especially when looking at small geographic and low-density areas, is available in U.S. EPA's 2017 Documentation (https://www.epa.gov/sites/production/files/2017-09/documents/2017\_ejscreen\_technical\_document.pdf).

**The 2015 Coal Combustion Residuals Rule** is the first-ever federal safeguards against coal ash pollution. The protections were the result of <u>more than a decade of litigation by Earthjustice (https://earthjustice.org/our\_work/cases/2012/legal-fight-for-long-overdue-coal-ash-protections), on behalf of our clients and alongside our partners.</u>

Earthjustice fights in the courts (//earthjustice.org/from-the-experts/2018-august/coal-ash-victory) for a long-term solution to this toxic menace. And we act on behalf of dozens of clients and coalition partners to defeat legislative attempts to subvert federally enforceable safeguards of coal ash.

Coal ash, the toxic remains of coal burning in power plants, contains a hazardous brew of toxic pollutants including arsenic, boron, cadmium, chromium, lead, radium, selenium, and more.

<u>The toxics in coal ash (/document/health-impacts-of-coal-ash-contamination)</u> can cause cancer, heart disease, reproductive failure, and stroke, and can inflict lasting brain damage on children.



Harm to human health from breathing and ingesting coal ash toxicants. <u>View infographic. (/document/health-impacts-of-coal-ash-contamination)</u>

# Is Drinking Water Safe Near Contaminated Coal Ash Sites?

Both U.S. EPA and public interest groups have identified at least 24 sites where private wells have been contaminated by coal ash.

Most often, neither power companies nor state regulators test private drinking water wells. Most state regulations and U.S. EPA's CCR Rule require plant owners to test only onsite groundwater.

As a result, contamination may go undetected in private wells for years, because most coal ash pollutants have no telltale taste or color.

While there is ample groundwater data for most coal plants sufficient to establish that groundwater is contaminated above levels that are safe to drink, determining the quality of drinking water in nearby communities is much more difficult due to lack of data. Consequently, we cannot at this time determine the safety of drinking water near the hundreds of coal ash dumps covered by the CCR Rule.

Even with scant data available nationally, there is nevertheless historical evidence that coal ash ponds, landfills, and "beneficial use" have contaminated residential drinking water wells.

## **Case Study: Town of Pines**

The most widespread drinking water contamination occurred in Town of Pines, Indiana, from a leaking landfill and coal ash used as "fill" throughout the town.

As a result of the water contamination, U.S. EPA declared Town of Pines a Superfund site in 2001, and NIPSCO, the utility responsible, eventually provided municipal water to most residents and removed coal ash and contaminated soil from the town.



Vac truck excavation work near the town pavillion in Town of Pines, Indiana. (U.S. EPA)

## **List of Contaminated Private Drinking Water Wells**

Below are the 24 sites, known at this time, where coal ash ponds, landfills, and "fill" sites contaminated private drinking water wells.

City / County, State	Apollo Beach, FL
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup>	Arsenic, thallium, boron, molybdenum
Operator and Site	Tampa Electric Co.: <u>Big Bend Power Station</u> (https://www.tampaelectric.com/company/environment/wastemanagement/)
Release From Pond, Landfill, Or "Beneficial" Use	Unlined pond
Citation	EPA, (2014c), EIP (2010a)
City / County, State	Juliette, GA
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup>	Cobalt, potentially uranium
Operator and Site	Georgia Power: <u>Plant Scherer</u> (https://www.georgiapower.com/company/environmental-compliance/ccr-rule-compliance-data/ccr-rule-compliance-plant-list.html)
Release From Pond, Landfill, Or "Beneficial" Use	Unlined pond
Citation	CNN (2012); GA Power (2018)
City / County, State	Joliet, IL
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup>	Boron
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup> Operator and Site	NRG: Joliet #9 Generating Station (http://www.nrg.com/legal/coal-combustion-residuals) (Lincoln Stone Quarry Landfill)
	NRG: <u>Joliet #9 Generating Station (http://www.nrg.com/legal/coal-combustion-residuals)</u> (Lincoln Stone Quarry
Operator and Site	NRG: <u>Joliet #9 Generating Station (http://www.nrg.com/legal/coal-combustion-residuals)</u> (Lincoln Stone Quarry Landfill)
Operator and Site  Release From Pond, Landfill, Or "Beneficial" Use	NRG: Joliet #9 Generating Station (http://www.nrg.com/legal/coal-combustion-residuals) (Lincoln Stone Quarry Landfill) Unlined pond in quarry
Operator and Site  Release From Pond, Landfill, Or "Beneficial" Use  Citation	NRG: Joliet #9 Generating Station (http://www.nrg.com/legal/coal-combustion-residuals) (Lincoln Stone Quarry Landfill)  Unlined pond in quarry  EIP (2010b)
Operator and Site  Release From Pond, Landfill, Or "Beneficial" Use  Citation  City / County, State	NRG: Joliet #9 Generating Station (http://www.nrg.com/legal/coal-combustion-residuals) (Lincoln Stone Quarry Landfill)  Unlined pond in quarry  EIP (2010b)  Oakwood, IL
Operator and Site  Release From Pond, Landfill, Or "Beneficial" Use  Citation  City / County, State  Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup>	NRG: Joliet #9 Generating Station (http://www.nrg.com/legal/coal-combustion-residuals) (Lincoln Stone Quarry Landfill)  Unlined pond in quarry  EIP (2010b)  Oakwood, IL  Arsenic, lead, iron, manganese, chromium  * Bunge North America Corp.: Rocky Acres Coal Combustion
Operator and Site  Release From Pond, Landfill, Or "Beneficial" Use  Citation  City / County, State  Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup> Operator and Site	NRG: Joliet #9 Generating Station (http://www.nrg.com/legal/coal-combustion-residuals) (Lincoln Stone Quarry Landfill)  Unlined pond in quarry  EIP (2010b)  Oakwood, IL  Arsenic, lead, iron, manganese, chromium  * Bunge North America Corp.: Rocky Acres Coal Combustion By-Product Disposal Site
Operator and Site  Release From Pond, Landfill, Or "Beneficial" Use  Citation  City / County, State  Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup> Operator and Site  Release From Pond, Landfill, Or "Beneficial" Use	NRG: Joliet #9 Generating Station (http://www.nrg.com/legal/coal-combustion-residuals) (Lincoln Stone Quarry Landfill)  Unlined pond in quarry  EIP (2010b)  Oakwood, IL  Arsenic, lead, iron, manganese, chromium  * Bunge North America Corp.: Rocky Acres Coal Combustion By-Product Disposal Site  "Beneficial" use fill project
Operator and Site  Release From Pond, Landfill, Or "Beneficial" Use  Citation  City / County, State  Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup> Operator and Site  Release From Pond, Landfill, Or "Beneficial" Use  Citation	NRG: Joliet #9 Generating Station (http://www.nrg.com/legal/coal-combustion-residuals) (Lincoln Stone Quarry Landfill)  Unlined pond in quarry  EIP (2010b)  Oakwood, IL  Arsenic, lead, iron, manganese, chromium  * Bunge North America Corp.: Rocky Acres Coal Combustion By-Product Disposal Site  "Beneficial" use fill project  EIP (2010a)

	Dano Liioigy, Ciboon Concidenty Station (https://minagite
	energy.com/environment/reports/ccr-compliance.asp)
Release From Pond, Landfill, Or "Beneficial" Use	Unlined ponds and landfill
Citation	EPA (2014a); EIP (2010a)
City / County, State	Town of Pines, IN
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup>	Arsenic, boron, molybdenum, lead, selenium, sulfate
Operator and Site	* NIPSCO: Yard 520 (Town of Pines Superfund Site)
Release From Pond, Landfill, Or "Beneficial" Use	Unlined landfills and fill projects
Citation	EPA (2014a)
City / County, State	Gambrills, MD
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup>	Arsenic, cadmium, lead, thallium, beryllium, nickel, aluminum, manganese, sulfate, lithium
Operator and Site	* Constellation Energy: BBSS S&G Quarries (Gambrills Site)
Release From Pond, Landfill, Or "Beneficial" Use	"Beneficial" use (unlined quarry fill)
Citation	EPA (2014a)
City / County, State	Colstrip, MT
City / County, State  Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup>	Colstrip, MT  Boron, molybdenum, arsenic, selenium, sulfate
	•
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup>	Boron, molybdenum, arsenic, selenium, sulfate  Talen Energy: Colstrip Steam Electric Station (https://www.talenenergy.com/generation/fossil-
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup> Operator and Site	Boron, molybdenum, arsenic, selenium, sulfate  Talen Energy: Colstrip Steam Electric Station (https://www.talenenergy.com/generation/fossil-fuels/colstrip)
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup> Operator and Site  Release From Pond, Landfill, Or "Beneficial" Use	Boron, molybdenum, arsenic, selenium, sulfate  Talen Energy: <u>Colstrip Steam Electric Station</u> (https://www.talenenergy.com/generation/fossilfuels/colstrip)  Unlined ponds
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup> Operator and Site  Release From Pond, Landfill, Or "Beneficial" Use  Citation	Boron, molybdenum, arsenic, selenium, sulfate  Talen Energy: Colstrip Steam Electric Station (https://www.talenenergy.com/generation/fossil-fuels/colstrip)  Unlined ponds  EPA (2014a); EIP (2010a)
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup> Operator and Site  Release From Pond, Landfill, Or "Beneficial" Use  Citation  City / County, State	Boron, molybdenum, arsenic, selenium, sulfate  Talen Energy: Colstrip Steam Electric Station (https://www.talenenergy.com/generation/fossil-fuels/colstrip)  Unlined ponds  EPA (2014a); EIP (2010a)  Waterflow, NM
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup> Operator and Site  Release From Pond, Landfill, Or "Beneficial" Use  Citation  City / County, State  Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup>	Boron, molybdenum, arsenic, selenium, sulfate  Talen Energy: Colstrip Steam Electric Station (https://www.talenenergy.com/generation/fossilfuels/colstrip)  Unlined ponds  EPA (2014a); EIP (2010a)  Waterflow, NM  Arsenic, boron, lead, sulfates and selenium
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup> Operator and Site  Release From Pond, Landfill, Or "Beneficial" Use  Citation  City / County, State  Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup> Operator and Site	Boron, molybdenum, arsenic, selenium, sulfate  Talen Energy: Colstrip Steam Electric Station (https://www.talenenergy.com/generation/fossilfuels/colstrip)  Unlined ponds  EPA (2014a); EIP (2010a)  Waterflow, NM  Arsenic, boron, lead, sulfates and selenium  * Public Service New Mexico: San Juan Generating Station
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup> Operator and Site  Release From Pond, Landfill, Or "Beneficial" Use  Citation  City / County, State  Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup> Operator and Site  Release From Pond, Landfill, Or "Beneficial" Use	Boron, molybdenum, arsenic, selenium, sulfate  Talen Energy: Colstrip Steam Electric Station (https://www.talenenergy.com/generation/fossilfuels/colstrip)  Unlined ponds  EPA (2014a); EIP (2010a)  Waterflow, NM  Arsenic, boron, lead, sulfates and selenium  * Public Service New Mexico: San Juan Generating Station  Unlined pond

Operator and Site	* AES: Cayuga Coal Ash Disposal Landfill
Release From Pond, Landfill, Or "Beneficial" Use	Landfill
Citation	EPA (2014a); EIP (2010b)
City / County, State	Gaston County, NC
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup>	Arsenic, beryllium, cadmium, cobalt, lithium, thallium
Operator and Site	Duke Energy: <u>Allen Steam Station (https://www.duke-energy.com/environment/reports/ccr-compliance.asp)</u>
Release From Pond, Landfill, Or "Beneficial" Use	Unlined pond
Citation	EPA (2014b)
City / County, State	Wilmington, NC
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup>	Thallium, Antimony, boron, selenium, TDS, sulfate, manganese, iron, lead, arsenic, and pH
Operator and Site	Duke Energy: <u>L.V. Sutton Energy Complex</u> (https://www.duke-energy.com/environment/reports/ccr-
	compliance.asp)
Release From Pond, Landfill, Or "Beneficial" Use	
Release From Pond, Landfill, Or "Beneficial" Use Citation	compliance.asp)
	compliance.asp) Unlined ponds
Citation	compliance.asp) Unlined ponds EPA (2014d)
Citation City / County, State	compliance.asp)  Unlined ponds  EPA (2014d)  Arden, NC
Citation  City / County, State  Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup>	compliance.asp)  Unlined ponds  EPA (2014d)  Arden, NC  Iron, manganese  Duke Energy: Asheville Steam Electric Plant (https://www.duke-energy.com/environment/reports/ccr-
Citation  City / County, State  Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup> Operator and Site	Compliance.asp)  Unlined ponds  EPA (2014d)  Arden, NC  Iron, manganese  Duke Energy: Asheville Steam Electric Plant (https://www.duke-energy.com/environment/reports/ccr-compliance.asp)
Citation  City / County, State  Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup> Operator and Site  Release From Pond, Landfill, Or "Beneficial" Use	compliance.asp)  Unlined ponds  EPA (2014d)  Arden, NC  Iron, manganese  Duke Energy: Asheville Steam Electric Plant (https://www.duke-energy.com/environment/reports/ccr-compliance.asp)  Unlined ponds
Citation  City / County, State  Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup> Operator and Site  Release From Pond, Landfill, Or "Beneficial" Use  Citation	Compliance.asp)  Unlined ponds  EPA (2014d)  Arden, NC  Iron, manganese  Duke Energy: Asheville Steam Electric Plant (https://www.duke-energy.com/environment/reports/ccr-compliance.asp)  Unlined ponds  EIP (2010a); Citizen Times (2014)
Citation  City / County, State  Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup> Operator and Site  Release From Pond, Landfill, Or "Beneficial" Use  Citation  City / County, State	compliance.asp)  Unlined ponds  EPA (2014d)  Arden, NC  Iron, manganese  Duke Energy: Asheville Steam Electric Plant (https://www.duke-energy.com/environment/reports/ccr-compliance.asp)  Unlined ponds  EIP (2010a); Citizen Times (2014)  Shippingport, PA  Arsenic, cadmium, lead, Fluoride, barium, boron, hexavalent
City / County, State  Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup> Operator and Site  Release From Pond, Landfill, Or "Beneficial" Use  Citation  City / County, State  Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup>	Unlined ponds  EPA (2014d)  Arden, NC  Iron, manganese  Duke Energy: Asheville Steam Electric Plant (https://www.duke-energy.com/environment/reports/ccr-compliance.asp)  Unlined ponds  EIP (2010a); Citizen Times (2014)  Shippingport, PA  Arsenic, cadmium, lead, Fluoride, barium, boron, hexavalent chromium, thallium  First Energy: Bruce Mansfield Plant (Little Blue Run)

City / County, State	South Heights, PA
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup>	TDS, Fluoride, manganese, chloride, aluminum
Operator and Site	* Duquesne Light Co.: Phillips Power Plant
Release From Pond, Landfill, Or "Beneficial" Use	Unlined ponds
Citation	EIP (2010a)
City / County, State	Camden, TN
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup>	Mercury, boron, sulfate
Operator and Site	* Trans Ash, Inc. Landfill
Release From Pond, Landfill, Or "Beneficial" Use	Unlined landfill
Citation	EIP (2010a)
City / County, State	Yorktown, VA
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup>	Nickel, selenium, vanadium, sulfate
Operator and Site	Dominion: Yorktown Power Station (https://www.dominionenergy.com/community /environment/reports-and-performance/ccr-rule- compliance-data-and-information)
Release From Pond, Landfill, Or "Beneficial" Use	Unlined ponds and gravel pit
Citation	EPA (2014a)
City / County, State	Dumfries, VA
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup>	Lead, aluminum, pH, cobalt
Operator and Site	Dominion: Possum Point Power Station (https://www.dominionenergy.com/community /environment/reports-and-performance/ccr-rule- compliance-data-and-information)
Release From Pond, Landfill, Or "Beneficial" Use	Unlined ponds
Citation	ECC Report (2016)
City / County, State	Chesapeake, VA
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup>	Boron, arsenic chromium, copper, lead vanadium
Operator and Site	* Dominion Virginia Power: Battlefield Golf Course

Release From Pond, Landfill, Or "Beneficial" Use	"Beneficial" use fill project
Citation	EPA (2014b)
City / County, State	Waukesha, WI
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup>	Arsenic, boron, molybdenum, manganese, iron, sulfate, chloride
Operator and Site	* We Energies: Highway 59 Landfill
Release From Pond, Landfill, Or "Beneficial" Use	Unlined landfill (sand and gravel pit)
Citation	EPA (2014a)
City / County, State	Oak Creek, WI
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup>	Boron, molybdenum
Operator and Site	We Energies: <u>Oak Creek Power Plant, Caledonia Landfill</u> (https://www.we-energies.com/environmental/coal-combustion.htm)
Release From Pond, Landfill, Or "Beneficial" Use	Unlined landfills and "beneficial" use fill project
Citation	EPA (2014d), EIP (2010b)
City / County, State	Sheboygan, WI
City / County, State  Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup>	Sheboygan, WI  Boron, arsenic, selenium, chloride, sulfate, iron, TDS
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup>	Boron, arsenic, selenium, chloride, sulfate, iron, TDS  WPL: Edgewater Generating Station
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup> Operator and Site	Boron, arsenic, selenium, chloride, sulfate, iron, TDS  WPL: Edgewater Generating Station (http://ccr.alliantenergy.com/Edgewater/index.htm)
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup> Operator and Site  Release From Pond, Landfill, Or "Beneficial" Use	Boron, arsenic, selenium, chloride, sulfate, iron, TDS  WPL: Edgewater Generating Station (http://ccr.alliantenergy.com/Edgewater/index.htm)  Unlined ponds, landfill
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup> Operator and Site  Release From Pond, Landfill, Or "Beneficial" Use  Citation	Boron, arsenic, selenium, chloride, sulfate, iron, TDS  WPL: Edgewater Generating Station (http://ccr.alliantenergy.com/Edgewater/index.htm)  Unlined ponds, landfill  EPA (2014b)
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup> Operator and Site  Release From Pond, Landfill, Or "Beneficial" Use  Citation  City / County, State	Boron, arsenic, selenium, chloride, sulfate, iron, TDS  WPL: Edgewater Generating Station (http://ccr.alliantenergy.com/Edgewater/index.htm)  Unlined ponds, landfill  EPA (2014b)  Cassville, WI
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup> Operator and Site  Release From Pond, Landfill, Or "Beneficial" Use  Citation  City / County, State  Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup>	Boron, arsenic, selenium, chloride, sulfate, iron, TDS  WPL: Edgewater Generating Station (http://ccr.alliantenergy.com/Edgewater/index.htm)  Unlined ponds, landfill  EPA (2014b)  Cassville, WI  Boron, Fluoride, sulfate and TDS  WPL: Nelson Dewey Station (http://ccr.alliantenergy.com
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup> Operator and Site  Release From Pond, Landfill, Or "Beneficial" Use  Citation  City / County, State  Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup> Operator and Site	Boron, arsenic, selenium, chloride, sulfate, iron, TDS  WPL: Edgewater Generating Station (http://ccr.alliantenergy.com/Edgewater/index.htm)  Unlined ponds, landfill  EPA (2014b)  Cassville, WI  Boron, Fluoride, sulfate and TDS  WPL: Nelson Dewey Station (http://ccr.alliantenergy.com/NelsonDewey/index.htm)
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup> Operator and Site  Release From Pond, Landfill, Or "Beneficial" Use  Citation  City / County, State  Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup> Operator and Site  Release From Pond, Landfill, Or "Beneficial" Use	Boron, arsenic, selenium, chloride, sulfate, iron, TDS  WPL: Edgewater Generating Station (http://ccr.alliantenergy.com/Edgewater/index.htm)  Unlined ponds, landfill  EPA (2014b)  Cassville, WI  Boron, Fluoride, sulfate and TDS  WPL: Nelson Dewey Station (http://ccr.alliantenergy.com/NelsonDewey/index.htm)  Unlined ponds
Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup> Operator and Site  Release From Pond, Landfill, Or "Beneficial" Use  Citation  City / County, State  Contaminants Found In Drinking Water/Groundwater <sup>[1]</sup> Operator and Site  Release From Pond, Landfill, Or "Beneficial" Use  Citation	Boron, arsenic, selenium, chloride, sulfate, iron, TDS  WPL: Edgewater Generating Station (http://ccr.alliantenergy.com/Edgewater/index.htm)  Unlined ponds, landfill  EPA (2014b)  Cassville, WI  Boron, Fluoride, sulfate and TDS  WPL: Nelson Dewey Station (http://ccr.alliantenergy.com/NelsonDewey/index.htm)  Unlined ponds  EPA (2014b)

Operator and Site	* Druecker Quarry Fly Ash Site- WEPCO Port Washington Facility
Release From Pond, Landfill, Or "Beneficial" Use	Unlined landfill
Citation	EPA (2014b)

EPA (2014a): U.S. EPA, Damage Case Compendium, Technical Support Document, Volume I, Proven Damage Cases (Dec. 18, 2014)

**EPA (2014b):** U.S. EPA, Damage Case Compendium, Technical Support Document, Volume IIa, Potential Damage Cases (Dec. 18, 2014)

**EPA (2014c):** U.S. EPA, Damage Case Compendium, Technical Support Document, Volume IIb, Part One, Potential Damage Cases (Dec. 18, 2014)

**EPA (2014d):** U.S. EPA, Damage Case Compendium, Technical Support Document, Volume IIb, Part Two, Potential Damage Cases (Dec. 18, 2014)

**EIP (2010a):** Environmental Integrity Project and Earthjustice, Out of Control: Mounting Damages from Coal Ash Waste Sites (Feb. 24, 2010)

**EIP (2010b):** Environmental Integrity Project, Earthjustice and Sierra Club, In Harm's Way: Lack of Coal Ash Regulations Endangers Americans and their Environment (Aug. 26, 2010)

Earthjustice (2009): Earthjustice. Waste Deep (/document/earthjusticewastedeep) (2009).

**Citizen Times:** Clarke Morrison, *Citizen Times*, <u>Groups seek to join Duke coal ash lawsuits (https://www.citizen-times.com/story/news/nation/2014/01/17/groups-seek-to-join-duke-coal-ash-lawsuits-/4544517/)</u> (Jan. 17, 2014).

ECC Report (2016): Environmental Consultants and Contractors, Report of Findings, Potable Well Findings (April 6, 2016).

**CNN (2012):** John Sepulvado, *CNN Radi*o, <u>A power plant, cancer and a small town's fears (http://www.cnn.com/2012/03/31/us/georgia-coal-power)</u>. (April 1, 2012).

**GA Power:** Georgia Power, <u>Plant Scherer CCR Rule Compliance Information (https://www.georgiapower.com/content/dam/georgia-power/pdfs/company-pdfs/plant-scherer/20181114\_gwps\_exceedance\_sch\_ap1.pdf), Appendix IV SSI Notification, Golder Associates (Nov. 14, 2018).</u>

## **Damage to Aquatic Life from Coal Ash Disposal**

For decades, discharges of coal ash-contaminated water to reservoirs, lakes, rivers, and streams have caused significant harm to fish and wildlife.

The release of bioaccumulative toxins from coal ash, including arsenic, cadmium, chromium, lead, mercury,

 $<sup>^{</sup>m 1}$ The groundwater contaminants represent the constituents found in groundwater both onsite and offsite.

<sup>\*</sup> Asterisked sites and sources do not appear in this website's CCR Rule Compliance map dataset, either because they are related to "legacy" ash ponds that will need to come into compliance per the <u>Aug. 2018 D.C. Circuit Court order (/documents/legal-document /coal-ash-rule-petition-for-review-opinion)</u>, or to disposal sites that are not subject to the CCR Rule for other reasons. For example, the CCR Rule does not regulate landfills that ceased receiving coal ash before October 2015.

and selenium, has caused fish kills, deformities in fish and amphibians, and health hazards to people consuming contaminated fish.

Selenium is a particularly dangerous contaminant because it is toxic to aquatic life at very low levels.









simplot-s-fish-story)

A study commissioned by the J.R. Simplot Company on selenium contamination in creeks in southeast Idaho includes photos of deformed Yellowstone cutthroat trout (top) and brown trout (bottom). Selenium is one of the most common coal ash contaminants found near coal ash dumps — frequently at levels higher than those measured in the Idaho stream that <a href="mailto:spawned-the-two-headed-tish">spawned-the-two-headed-tish (/blog/2012-february/tr-ash-talk-simplot-s-fish-story)</a>. (J.R. Simplot / Idaho DEQ)

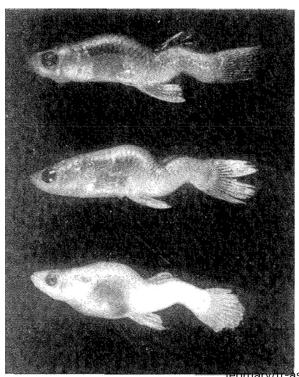
In addition, selenium bioaccumulates in food chains and passes from parents to offspring in eggs, where it causes a variety of skeletal deformities and other abnormalities in the developing embryos. This can lead to massive reproductive failure and local extinction of species.

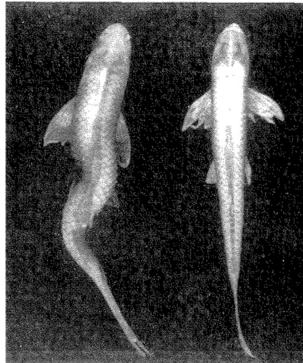
At least three toxins common to coal ash, including arsenic, methyl mercury, and selenium, can result in biomagnification in aquatic organisms, thereby increasing the danger of ingestion by humans and other animals.

A review of documented environmental damage since 1967 reveals that harm from coal ash has injured fish, birds, amphibians, and wildlife at multiple locations across the United States.

## Case Study: Belews Lake

The most studied case of coal ash damage occurred at Belews Lake in North Carolina in the 1970s, when coal ash-contaminated water from an ash pond at Duke Energy's Belews Creek Steam Station caused a long-term catastrophic toxic event. Selenium poisoning killed 19 of the 20 fish species in 3800-acre Belews Lake. Adverse impacts in fish and birds persisted at the lake for decades.





(/blog/2012-

One of the most visible effects of selenium in Belews Lake, N.C., was spinal deformities, as shown in mosquitofish (left) and a red shiner (right). Individual on the far right is normal. (A. Dennis Lemly. Aquatic Toxicology 57 (2002) 39 49)

### **List of Contaminated Waterbodies**

The following list of contaminated waterbodies, documented by U.S. EPA and scientists, is not comprehensive of all the coal ash-impaired waters in the United States, because water quality data for surface water and fish tissue data is available for only a limited number of sites.

This list, nevertheless, comprises 28 sites in 15 states and provides a limited snapshot of the toll of coal ash on aquatic environments.

The damage to fish and wildlife is both dramatic and costly. One expert estimates that the combined direct and indirect cost of poisoned fish and wildlife at 21 of the 28 sites below has exceeded \$2.3 billion.<sup>1</sup>

Name of Waterbody	Widows Creek Stevenson, AL
Source of Coal Ash Contamination	* TVA: Widows Creek Fossil Fuel Plant
Citation	Lemly (2012)
Name of Waterbody	Euharlee Creek Cartersville, GA
Source of Coal Ash Contamination	Georgia Power: <u>Plant Bowen</u> (https://www.georgiapower.com/company/environmental-compliance/ccr-rule-compliance-data/ccr-rule-compliance-plant-list.html)
Citation	EPA (2014a); Lemly (2012)
Name of Waterbody	Gibson Lake Princeton, IN
Source of Coal Ash Contamination	Duke Energy: <u>Gibson Generating Station (https://www.duke-energy.com/environment/reports/ccr-compliance.asp)</u>
Citation	EPA (2014a); Lemly (2012)
Name of Waterbody	Herrington Lake Harrodsburg, KY
Source of Coal Ash Contamination	E.W. Brown Generating Station (https://ccr.lge-ku.com/BR)
Citation	Lemly (2018)
Name of Waterbody	<b>Lake Erie</b> Erie, MI
Source of Coal Ash Contamination	Consumers Energy: <u>J.R. Whiting Power Plant</u> ( <a href="https://www.consumersenergy.com/community/sustainability/environment/waste-management/coal-combustion-residuals">https://www.consumersenergy.com/community/sustainability/environment/waste-management/coal-combustion-residuals</a> )
Citation	EPA (2014a); Lemly (2012)
Name of Waterbody	Lake Huron Essexville, MI
Source of Coal Ash Contamination	Consumer Energy: <u>DE Karn and JC Weadock Power Plants</u> ( <a href="https://www.consumersenergy.com/community/sustainability/environment/waste-management/coal-combustion-residuals">https://www.consumersenergy.com/community/sustainability/environment/waste-management/coal-combustion-residuals</a> )
Citation	EIP (2010a)
Name of Waterbody	Belews Lake Walnut Cove, NC

Source of Coal Ash Contamination	Duke Energy: <u>Belews Creek Steam Station</u> (https://www.duke-energy.com/environment/reports/ccr-compliance.asp)
Citation	EPA (2014a); Lemly (2012)
Name of Waterbody	<b>Hyco Lake</b> Semora, NC
Source of Coal Ash Contamination	Duke Energy: Roxboro Steam Electric Plant
Citation	EPA (2014a); Lemly (2012)
Name of Waterbody	Sutton Lake Wilmington, NC
Source of Coal Ash Contamination	Duke Energy: <u>L.V. Sutton Generating Energy Complex</u> (https://www.duke-energy.com/environment/reports/ccr-compliance.asp)
Citation	Lemly (2013)
Name of Waterbody	Mayo Reservoir Roxboro, NC
Source of Coal Ash Contamination	Duke Energy: Mayo Steam Electric Station (https://www.duke-energy.com/environment/reports/ccr-compliance.asp)
Citation	EPA (2014a); Lemly (2012)
Name of Waterbody	Kyger Creek/Stingy Run Gavin Power, OH
Source of Coal Ash Contamination	Gavin Power LLC: <u>Gavin Power Plant</u> (http://gavinpowerccr.com/)
Citation	Lemly (2012); EIP (2010b)
Name of Waterbody	<b>Delaware River</b> Mt. Bethel Township, PA
Source of Coal Ash Contamination	* Talen Energy: Martins Creek Power Plant
Citation	EPA (2014a); Lemly (2012)
Name of Waterbody	Monongahela River Masontown, PA
Source of Coal Ash Contamination	First Energy: <u>Hatfield's Ferry power Station</u> (http://cordocs.firstenergycorp.com/)
Citation	Lemly (2012)
Name of Waterbody	Wateree River Eastover, SC

Source of Coal Ash Contamination	SCE&G: Wateree Generating Station (https://www.sceg.com/about-us/power-generation/coal/ccr-rule)
Citation	Lemly (2012); EPA (2014d)
Name of Waterbody	Beaver Dam Creek
Source of Coal Ash Contamination	Savannah River"
Citation	Savannah River, SC
Name of Waterbody	McCoy Branch Oak Ridge, TN
Source of Coal Ash Contamination	* DOE: Oak Ridge Y-12 Power Plant
Citation	EPA (2014a); Lemly (2012)
Name of Waterbody	Melton Hill Reservoir Lenoir City, TN
Source of Coal Ash Contamination	TVA: <u>Kingston Fossil Plant (https://www.tva.gov/Environment/Environmental-Stewardship/Coal-Combustion-Residuals)</u>
Citation	Lemly (2012)
Name of Waterbody	Clinch and Emory Rivers
	Harriman, TN
Source of Coal Ash Contamination	TVA: Kingston Fossil Plant (https://www.tva.gov /Environment/Environmental-Stewardship/Coal- Combustion-Residuals)
Source of Coal Ash Contamination  Citation	TVA: Kingston Fossil Plant (https://www.tva.gov/Environment/Environmental-Stewardship/Coal-
	TVA: Kingston Fossil Plant (https://www.tva.gov/Environment/Environmental-Stewardship/Coal-Combustion-Residuals)
Citation	TVA: Kingston Fossil Plant (https://www.tva.gov /Environment/Environmental-Stewardship/Coal- Combustion-Residuals)  Lemly (2012)  Brady Branch Reservoir
Citation Name of Waterbody	TVA: Kingston Fossil Plant (https://www.tva.gov /Environment/Environmental-Stewardship/Coal- Combustion-Residuals)  Lemly (2012)  Brady Branch Reservoir Marshall , TX  AEP-SWEPCO: H.W. Pirkey Power Plant (http://www.aep.com
Citation Name of Waterbody Source of Coal Ash Contamination	TVA: Kingston Fossil Plant (https://www.tva.gov /Environment/Environmental-Stewardship/Coal- Combustion-Residuals)  Lemly (2012)  Brady Branch Reservoir Marshall , TX  AEP-SWEPCO: H.W. Pirkey Power Plant (http://www.aep.com/about/codeofconduct/CCRRule/)
Citation  Name of Waterbody  Source of Coal Ash Contamination  Citation	TVA: Kingston Fossil Plant (https://www.tva.gov /Environment/Environmental-Stewardship/Coal- Combustion-Residuals)  Lemly (2012)  Brady Branch Reservoir Marshall , TX  AEP-SWEPCO: H.W. Pirkey Power Plant (http://www.aep.com/about/codeofconduct/CCRRule/)  EPA (2014a); Lemly (2012)  Martin Lake
Citation  Name of Waterbody  Source of Coal Ash Contamination  Citation  Name of Waterbody	TVA: Kingston Fossil Plant (https://www.tva.gov /Environment/Environmental-Stewardship/Coal-Combustion-Residuals)  Lemly (2012)  Brady Branch Reservoir Marshall , TX  AEP-SWEPCO: H.W. Pirkey Power Plant (http://www.aep.com/about/codeofconduct/CCRRule/)  EPA (2014a); Lemly (2012)  Martin Lake Tatum, Rusk, Manola Counties, TX  Luminant Generation: Martin Lake Steam Electric Station

Source of Coal Ash Contamination	AEP: <u>J. Robert Welsh Power Plant (http://www.aep.com/about/codeofconduct/CCRRule/)</u>
Citation	EPA (2014a); Lemly (2012)
Challon	LFA (2014a), Lettily (2012)
Name of Waterbody	Smithers Lake Thompsons, TX
Source of Coal Ash Contamination	NRG: <u>W.A. Parish Electric Generating Station</u> (http://www.nrg.com/legal/coal-combustion-residuals/)
Citation	EIP (2011)
Name of Waterbody	Clinch River Cleveland, VA
Source of Coal Ash Contamination	AEP-Appalachian Power: <u>Clinch River Power Plant</u> ( <a href="http://www.aep.com/about/codeofconduct/CCRRule/">http://www.aep.com/about/codeofconduct/CCRRule/</a> )
Citation	EPA (2014a); Lemly (2012)
Name of Waterbody	<b>Adair</b> Glen Lynn, VA
Source of Coal Ash Contamination	* AEP: Glen Lyn Plant
Citation	Lemly (2012); EIP (2010b)
Name of Waterbody	Rocky Run Creek Pardeeville, WI
Source of Coal Ash Contamination	WPL: <u>Columbia Energy Center (http://ccr.alliantenergy.com/Columbia/index.htm)</u>
Citation	Lemly (2012); EIP (2010b)
Name of Waterbody	Connor's Run Moundsville, WV
Source of Coal Ash Contamination	AEP: Mitchell Generating Plant (http://www.aep.com/about/codeofconduct/CCRRule/)
Citation	Lemly (2012)
Name of Waterbody	Little Scary Creek Winfield, WV
Source of Coal Ash Contamination	AEP: <u>John E. Amos Power Plant (http://www.aep.com/about/codeofconduct/CCRRule/)</u>
Citation	Lemly (2012); EIP (2010a)
Name of Waterbody	<b>Evaporation ponds at Bridger Plant</b> Point of Rocks, WY

Source of Coal Ash Contamination PacifiCorp: Jim Bridger Power Plant (http://www.pacificorp.com/env/ccr-data.html)

Citation Lemly (2012)

# Requirements for Industry to Clean Up Groundwater & A Toolkit to Advocate for Coal Ash Cleanups

Hundreds of coal ash ponds must be closed over the next several years, and many plant owners are proposing inadequate and sometimes illegal and dangerous closures.

The report <u>Cleaning Up Coal Ash For Good (/features/coal-ash-closure-cleanup)</u> provides regulators, policymakers, and communities with the resources to choose effective coal ash pond closures that protect the environment and public health while also creating jobs and benefiting the economy.

When comparing the economic, environmental, and community impacts of different closure methods, the analysis finds that there are significantly higher benefits from a clean closure when all ash is removed from leaking ponds and the local community is engaged in closure and redevelopment planning processes. <u>Learn more</u>. (/features/coal-ash-closure-cleanup)

Owners of at least 124 plants in 28 states and Puerto Rico (as of Oct. 5, 2020) have posted public notifications that leaking coal ash ponds and landfills at their sites, *without* an alternative source demonstration, have contaminated groundwater above state and/or federal heath limits for one or more of the following toxic substances: Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Lead, Lithium, Molybdenum, Selenium, Thallium, and Radium 226 and 228 combined.

- See the list of 124 plants with available cleanup plans (/documents/reference/list-of-plants-where-coalash-contaminated-groundwater-exceeds-allowable-state-andor-federal-limits) (PDF)
- See the full map data, (/coalash/data-2022) which includes information on available and upcoming cleanup plans and alternative source demonstration (spreadsheet)

These admissions trigger requirements under the federal CCR Rule for the companies to clean up groundwater and engage the public, as follows:

1. Cleanup Plan: Each plant owner must develop a cleanup plan ("corrective measures assessment") designed to remediate any coal ash releases and to restore the contaminated area to its original condition. These cleanup plans must be completed within 180 days of discovering the contamination, and must be posted on the industry's publicly accessible website 30 days later. The utility owner can qualify for a 60-day extension in certain cases. Cleanup plans are now available at over 100 plants, and

more should be posted on industry websites this year.

- 2. Public Meeting: The plant owner must discuss the results of the corrective measures assessment with interested and affected parties at least 30 days before the company selects a remedy. While there is no strict deadline for remedy selection, the utility must select a cleanup plan "as soon as feasible." Thus, the exact date of a public meeting will be determined on a site-by-site basis.
- 3. Public Engagement in the Cleanup Process: It is critical for affected communities to play an active role in the review of the cleanup plan and in the cleanup selection process. Because there is no required oversight role for U.S. EPA or state regulators, active community members are the frontline for ensuring adequate cleanup at these contaminated sites. Community evaluation of the cleanup plans will be necessary to ensure timely, comprehensive, and health-protective remediation.

## Your Guide to Advocating for Coal Ash Cleanups

The success of any individual coal ash cleanup will depend on the strength of the engagement of the local community in the cleanup process.

If you live in a community where a cleanup process will take place (see most recent list, as <u>PDF</u> (/documents /reference/list-of-plants-where-coal-ash-contaminated-groundwater-exceeds-allowable-state-andor-federal-limits) or spreadsheet (/coalash/data-2022)), use the information and resources in <u>A Toolkit to Advocate for Coal Ash Cleanups (/coalash/toolkit/doc)</u> for tools and tips to advocate for the most protective outcome.

**READ THE GUIDE** (https://earthjustice.org/coalash/toolkit/doc)

If you read our toolkit guide, please let us know. We want to hear from you! (https://forms.office.com/Pages /ResponsePage.aspx?id=WLTtrePoTkyb7fp5KvZstk3g9WS6aARAsAmskRK0q81UMjJKSk1QSEk0RDdONEIzUj daTk5DMVdESi4u) It is helpful for communities fighting coal ash to know that other communities across the country are also getting involved. You'll also have the opportunity to keep in touch and learn about the experiences of communities who engage in coal ash cleanups

I USED THE GUIDE (https://forms.office.com/Pages/ResponsePage.aspx?id=WLTtrePoTkyb7fp5KvZstk3g9WS6aARAsAmskRK0q81UMjJKSk1QSEk0RDdONEIzUjdaTk5DMVdESi4u)

## **Cleanup Status Report Form**

If the cleanup is not occurring according to the schedule established by the polluter or if data reveal contamination is not being abated, alert local, state, and federal authorities, as well as the media.

You can also alert Earthjustice to the problem by using the <u>Cleanup Status Form (https://earthjustice.org</u>/coalash/cleanupstatus).

## The 10 Most Contaminated Sites

The Environmental Integrity Project and Earthjustice have identified the 10 most contaminated sites nationwide, based on a combined measure of the extent to which each pollutant exceeded safe levels at each site.

The report <u>Poisonous Coverup</u>: The <u>Widespread Failure of the Power Industry to Clean Up Coal Ash Dumps</u> (<a href="https://earthjustice.org/documents/report/poisonous-coverup">https://earthjustice.org/documents/report/poisonous-coverup</a>) (2022) explains the methods for ranking the sites and discusses each site contamination in detail.

This table summarizes the pollutants that were present at unsafe levels and the degree to which each pollutant exceeds a safe level.

Exceedances greater than 50 times a safe level are in red.

Rank & Name of Site	#1: San Miguel Plant Christine, TX
Pollutants Exceeding Safe Levels (and by how much)	Arsenic (x8), Beryllium (x127), Boron (x41), Cadmium (x114), Cobalt (x488), Fluoride (x2), Lithium (x90), Mercury (x3), Radium 226+228 (x6), Selenium (x8), Sulfate (x20), Thallium (x4)
Rank & Name of Site	<b>#2: Reid Gardner Generating Station</b> Moapa, NV
Pollutants Exceeding Safe Levels (and by how much)	Antimony (x1), Arsenic (x121), Boron (x84), Cadmium (x2), Cobalt (x16), Fluoride (x3), Lead (x8), Lithium (x161), Molybdenum (x87), Selenium (x1), Sulfate (x228), Thallium (x5)
Rank & Name of Site	<b>#3: Naughton Power Plant</b> Kemmerer, WY
Pollutants Exceeding Safe Levels (and by how much)	Antimony (x2), Arsenic (x10), Barium (x1), Beryllium (x2), Boron (x16), Cadmium (x2), Chromium (x3), Cobalt (x13), Lead (x16), Lithium (x242), Molybdenum (x3), Radium 226+228 (x1), Selenium (x150), Sulfate (x66), Thallium (x9)
Rank & Name of Site	#4: Jim Bridger Power Plant Point of Rocks, WY
Pollutants Exceeding Safe Levels (and by how much)	Antimony (x1), Arsenic (x4), Boron (x9), Cadmium (x3), Cobalt (x92), Fluoride (x3), Lead (x4), Lithium (x164), Molybdenum (x10), Radium 226+228 (x2), Selenium (x85), Sulfate (x125), Thallium (x11)
Rank & Name of Site	<b>#5: Allen Steam Station</b> Belmont, NC
Pollutants Exceeding Safe Levels (and by how much)	Arsenic (x7), Beryllium (x6), Boron (x1), Cadmium (x1), Cobalt (x466), Lithium (x12), Selenium (x5), Sulfate (x3), Thallium (x1)
Rank & Name of Site	<b>#6: New Castle Generating Station</b> New Castle, PA
Pollutants Exceeding Safe Levels (and by how much)	Arsenic (x372), Boron (x4), Cobalt (x5), Lithium (x54), Molybdenum (x1), Sulfate (x3)
Rank & Name of Site	<b>#7: Brandywine Ash Management Facility</b> Brandywine, MD
Pollutants Exceeding Safe Levels (and by how much)	Arsenic (x5), Beryllium (x2), Boron (x29), Cobalt (x47), Lithium (x222), Molybdenum (x111), Selenium (x9), Sulfate (x11)
Rank & Name of Site	<b>#8: R.D. Morrow, Sr. Generating Station</b> Purvis, MS
Pollutants Exceeding Safe Levels (and by how much)	Arsenic (x3), Beryllium (x2), Boron (x19), Lead (x1), Lithium (x167), Molybdenum (x176), Sulfate (x6), Thallium (x1)

Rank & Name of Site	#9: Hunter Power Plant Castle Dale, UT
Pollutants Exceeding Safe Levels (and by how much)	Boron (x16), Cobalt (x28), Lithium (x210), Molybdenum (x11), Radium 226+228 (x2), Selenium (x7), Sulfate (x62)
Rank & Name of Site	<b>#10: Allen Fossil Plant</b> Memphis, TN
Pollutants Exceeding Safe Levels (and by how much)	Arsenic (x294), Boron (x4), Fluoride (x1), Lead (x3), Molybdenum (x9)

# **Demographic Data Surrounding Coal Ash Contaminated Sites**

Nationwide, the burden of coal ash pollution is carried disproportionately by communities of color and low-income communities.

Populations of people of color and/or low-income residents are higher than the state average at six of the 10 most contaminated sites with residential populations within three miles of the coal ash dumps.

These communities are unlikely to have the resources to routinely test their drinking water, and they often lack access to adequate medical care and legal assistance. In addition, these communities frequently confront multiple toxic threats that accentuate health risks. Finally, such communities often lack the political power necessary to garner the attention and assistance of regulatory agencies and elected officials.

Coal ash creates issues of environmental injustice, where harm falls disproportionately on our nation's most vulnerable communities.

Percentages in red ‡ are above state averages. Please see map notes above for methods and sources in generating demographic data.

Rank & Name of Site	#1: San Miguel Plant Christine, TX
% Poople of Color Fot within 7 mit	
% People-of-Color Est. within 3-mi ‡	31%
% Low-Income Est. within 3-mi ‡	9%
Rank & Name of Site	#2: Reid Gardner Generating Station ‡ Moapa, TX
% People-of-Color Est. within 3-mi‡	89%‡
% Low-Income Est. within 3-mi‡	55%‡
Rank & Name of Site	<b>#3: Naughton Power Plant</b> Kemmerer, WY
% People-of-Color Est. within 3-mi ‡	9%
% Low-Income Est. within 3-mi ‡	21%
Rank & Name of Site	#4: Jim Bridger Power Plant Point of Rocks, WY
% People-of-Color Est. within 3-mi ‡	NA (No population within 3 miles)
% Low-Income Est. within 3-mi ‡	NA (No population within 3 miles)
Rank & Name of Site	#5: Allen Steam Station ‡ Belmont, NC
% People-of-Color Est. within 3-mi ‡	42%‡
% Low-Income Est. within 3-mi ‡	16%
Rank & Name of Site	#6: New Castle Generating Station ‡ New Castle, PA
% People-of-Color Est. within 3-mi ‡	9%
% Low-Income Est. within 3-mi ‡	38%‡
Rank & Name of Site	<b>#7: Brandywine Ash Management Facility ‡</b> Brandywine, MD
% People-of-Color Est. within 3-mi ‡	63%‡
% Low-Income Est. within 3-mi‡	15%
Rank & Name of Site	#8: R.D. Morrow, Sr. Generating Station ‡ Purvis, MS
% People-of-Color Est. within 3-mi ±	31% <b>†</b>

p	V./V+
% Low-Income Est. within 3-mi‡	33%
Rank & Name of Site	#9: Hunter Power Plant ‡ Castle Dale, UT
% People-of-Color Est. within 3-mi ‡	2%
% Low-Income Est. within 3-mi‡	30%‡
Rank & Name of Site	#10: Allen Fossil Plant ‡ Memphis, TN
% People-of-Color Est. within 3-mi‡	99%‡
% Low-Income Est. within 3-mi‡	49%‡

## **The Fight Against Coal Ash Continues**

Even as the U.S. Environmental Protection Agency, under the Trump administration, moved to weaken protections from coal ash pollution, the D.C. Circuit Court of Appeals handed a pivotal victory to the American public in August 2018, in a lawsuit brought by Earthjustice, on behalf of public interest groups.

In a lifesaving move, the court's order requires the agency to *increase* protections for coal ash waste sites, casting serious doubt on the legality of the U.S. EPA's ongoing attempts to undermine current standards. (Read an explanation of the court decision.) (//earthjustice.org/from-the-experts/2018-august/coal-ash-victory)

Earthjustice — with the Environmental Integrity Project and Sierra Club — <u>filed a petition for review</u> (<a href="https://earthjustice.org/news/press/2018/environmental-groups-challenge-trump-administration-coal-ash-rule-rollback-in-court">https://earthjustice.org/news/press/2018/environmental-groups-challenge-trump-administration-coal-ash-rule-rollback-in-court</a>) challenging the U.S. EPA rule that modifies the 2015 CCR Rule to, among other changes, give power plant owners more time to clean up leaking coal ash sites that have been shown to have contaminated groundwater.

**For coal ash, the winds are shifting.** We will continue to work alongside impacted communities to bring industry and federal agencies accountable to the law.

#### CLEAN ENERGY PROGRAM (HTTPS://EARTHJUSTICE.ORG/OFFICE/CLEAN-ENERGY)

Earthjustice's Clean Energy Program uses the power of the law and the strength of partnership to accelerate the transition to 100% clean energy.

# THE LEGAL CASE: <u>COAL ASH REGULATIONS (HTTPS://EARTHJUSTICE.ORG/CASE/LEGAL-FIGHT-FOR-LONG-OVERDUE-COAL-ASH-PROTECTIONS)</u>

"The food we choose to produce — and how we produce it, use it and dispose of it — all have an impact on climate pollution and so have the potential to become climate solutions."

#### -PETER LEHNER

Managing Attorney, Sustainable Food & Farming Program, Earthjustice

#### THE STORIES TO READ ON FOSSIL FUELS (HTTPS://EARTHJUSTICE.ORG/GOALS/FOSSIL-FUELS)

How We Stopped a Gas Utility's Scheme to Propagandize Children (https://earthjustice.org/article/how-we-stopped-a-gas-utilitys-scheme-to-propagandize-children)

What Biden and Trudeau's Meeting Tells Us About Climate Hypocrisy (https://earthjustice.org/article/what-biden-and-trudeaus-meeting-tells-us-about-climate-hypocrisy)

 ${\sf TAKE\ ACTION\ (https://earthjustice.org/action/tell-biden-to-shut-down-the-line-5-pipeline?ms=web\_footer)}$ 

Tell Biden to shut down the Line 5

pipeline (https://earthjustice.org/action/tell-biden-to-shut-down-the-line-5-pipeline?ms=web\_footer)

#### WHAT YOU NEED TO KNOW THIS WEEK (HTTPS://EARTHJUSTICE.ORG/LIBRARY)

New Protections Coming for 'Climate Forests' (https://earthjustice.org/brief/2023/new-protections-coming-for-climate-forests)

New Ruling Weakens Protections for Waterways in Nearly Half of Nation's States (https://earthjustice.org/brief /2023/new-ruling-weakens-protections-for-waterways-in-nearly-half-of-nations-states)

Meet the Texas Bird that is a Bulwark for Biodiversity (https://earthjustice.org/article/meet-the-texas-bird-that-is-a-bulwark-for-biodiversity)

**ABOUT** 

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Become a Justice Partner (/donate/justice-partners?ms=web\_menu\_footer)

Legacy Gift Planning (https://legacy.earthjustice.org)

Earthjustice Store (https://stores.kotisdesign.com/earthjusticeshop?utm\_source=ej&utm\_medium=referral&utm\_content=footer)

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#### THE LAW MAKES CHANGE

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