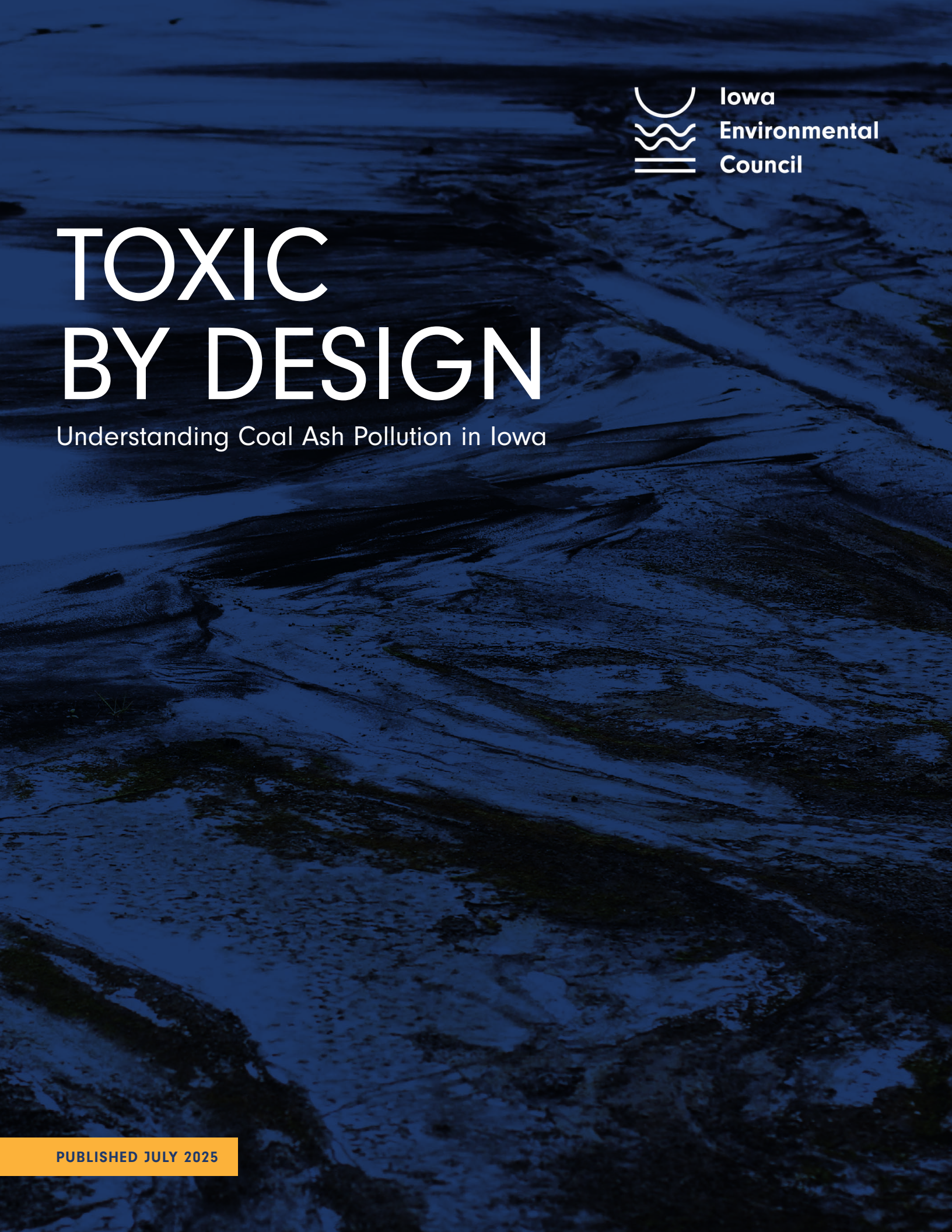

Iowa Environmental Council

TOXIC BY DESIGN

Understanding Coal Ash Pollution in Iowa

PUBLISHED JULY 2025

Iowa Environmental Council

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ACKNOWLEDGEMENT TO REPORT CONTRIBUTORS

David Osterberg
Emeritus Clinical Professor
Department of Occupational and Environmental Health, University of Iowa

Lisa Evans
Senior Counsel
Earthjustice

Caroline Weinberg
Senior Research and Policy Analyst
Earthjustice

Michael Schmidt
General Counsel
Iowa Environmental Council

Steve Guyer
Senior Energy Policy Counsel
Iowa Environmental Council

Jordan Oster
Energy Program Director
Iowa Environmental Council

Authored by:
Raihan Rashidi
Energy Policy Manager
Iowa Environmental Council

GLOSSARY

COAL COMBUSTION RESIDUALS (CCR)
A byproduct of burning coal in power plants and other industrial facilities. It is a mix of solid materials containing heavy metals and other harmful pollutants.

ENVIRONMENTAL PROTECTION AGENCY (EPA)
A U.S. federal agency that enforces regulations based on environmental laws passed by Congress to ensure clean air, land, and water for all Americans.

IOWA DEPARTMENT OF NATURAL RESOURCES (IDNR)
An Iowa state agency that ensures the health of Iowa's natural resources and carries out state and federal laws that protect air, land, and water for all Iowans.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)
The primary federal U.S. law governing the management of solid and hazardous waste, establishing a framework for regulating waste from its creation to disposal.

CLEAN WATER ACT (CWA)
The primary federal U.S. law governing water pollution, regulating discharges of pollutants into U.S. waters and regulating quality standards for surface waters.

EFFLUENT LIMITATION GUIDELINES (ELG)
National standards under the Clean Water Act that set technology-based limits on wastewater discharges from industrial sources into U.S. waters.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
A permitting program under the Clean Water Act that regulates the discharge of pollutants from point sources into U.S. surface waters.

SAFE DRINKING WATER ACT (SDWA)
The primary federal law in the U.S. that safeguards drinking water quality by setting health-based standard for contaminants and regulating public water systems that draw from surface and groundwater sources.

MAXIMUM CONTAMINANT LEVEL (MCL)
The highest level of a contaminant legally permitted in drinking water under the SDWA, which are enforceable standards set by the EPA for public water systems.

GROUNDWATER PROTECTION STANDARD (GWPS)
The maximum allowable concentration of a contaminant in groundwater near CCR disposal sites. It is typically based on the federal MCL. If no MCL exists, the GWPS is set at the background concentration naturally found in the site's groundwater.

ALTERNATE SOURCE DEMONSTRATION (ASD)
A process allowed under the federal CCR Rule that lets coal ash site operators demonstrate that groundwater contamination comes from a source other than their CCR disposal unit, such as natural background levels or a neighboring facility.

EXECUTIVE SUMMARY

Coal ash, also called coal combustion residuals (CCR), is a byproduct of burning coal and is one of the largest industrial waste streams in the United States. Despite containing toxic substances such as arsenic, selenium, mercury, and lead, coal ash is not classified as hazardous waste under federal law. While air pollution controls have reduced smokestack emissions, coal ash continues to silently poison both air and water, often with limited scrutiny.

In Iowa and across much of the U.S., coal plants have generated ash for more than a century, but most monitoring and regulation began only a decade ago. As of today, 69 known utility coal ash disposal sites span 16 Iowa counties, including both active and legacy ash ponds and landfills. Not all are subject to federal CCR regulation, leaving significant gaps in oversight.

This report finds that Iowa's coal ash management system is failing to protect communities and natural resources. Key findings and observed trends include:

- **9 of 12** coal power plants — either operational or recently retired — have regulated coal ash disposal sites with groundwater contamination **exceeding federal health standards,** according to analysis of 2024 data. These sites are operated by **MidAmerican Energy** and **Interstate Power and Light**, both of which have failed to take adequate corrective action for several sites despite years of **documented exceedances.**
- An estimated **19 million cubic yards** of coal ash are currently stored at federally regulated disposal sites in Iowa. This amount could **fill the MidAmerican Energy Field at Jack Trice Stadium nearly 90 times,** though the volume of coal ash is likely underreported.
- **Nearly 75%** of Iowa coal plants with ash sites are in counties with **cancer rates above the state average — and Iowa ranks second nationally** in new cancer diagnoses. This is concerning given that long-term exposure to coal ash pollution is linked to various forms of cancer.
- **Legacy sites** (inactive disposal areas at long-retired coal plants) are often **unlined** and continue to leach toxic pollutants into ground and surface waters. While many sites remain largely outside the scope of federal CCR regulation, even the existing rules face the **threat of weakening or repeal.**
- Coal ash is still being used in **construction, agriculture, and landscaping,** including parks and playgrounds, under the term of "beneficial reuse." In Iowa, nearly 200,000 tons of coal ash were repurposed for construction use in 2024 — enough to fill more than 60 Olympic-sized swimming pools. This practice introduces toxicants into the everyday environment while the reuse industry expands with **minimal to no oversight,** effectively extending the lifespans of dirty and expensive coal power.

These findings signal a pressing call for action. Stronger enforcement, full transparency, and a long-term strategy for managing both active and legacy coal ash sites are urgently needed. Iowa communities — particularly those living near disposal sites — deserve better protection from the ongoing threat of toxic coal ash.

INTRODUCTION

1.1 WHAT IS COAL ASH?

Coal combustion residuals (CCR), commonly known as coal ash, are byproducts created from burning coal to generate electricity. Used as a power source in the United States since the 1800s, coal ash is among the largest forms of industrial waste by volume produced in the country. Coal-fired power plants in the U.S. produce approximately 70 million tons of coal ash every year.[1]

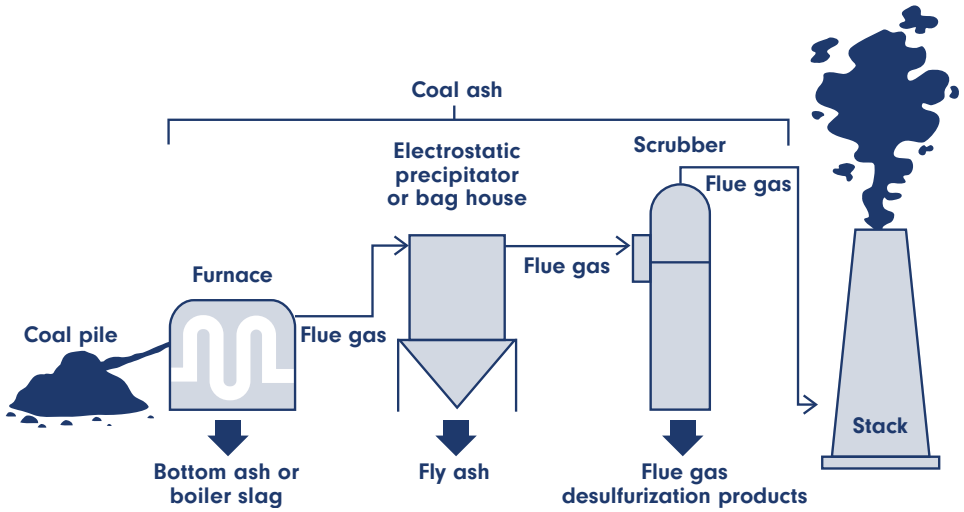


Figure 1: Diagram of coal ash production and emissions controls in a coal plant (Source: Earthjustice)

Coal ash consists of fly ash, bottom ash, boiler slag, and flue gas desulfurization material — wastes that contain harmful pollutants including arsenic, mercury, cadmium, and lead. In many communities, this contamination has gone unchecked for decades, with little to no accountability — silently poisoning both our air and water. The table below describes the different types of coal ash.[2]

TYPE OF COAL ASH	CHARACTERISTICS
FLY ASH	A very fine, powdery substance predominantly made of silica, generated during the combustion of finely ground coal in boiler systems.
BOTTOM ASH	A coarse, angular ash particle that remains in the furnace bottom because it is too large to be carried up through the smokestack.
BOILER SLAG	Molten bottom ash from wet-bottom boilers — such as slag-tap* and cyclone types** — solidifies into smooth, glassy pellets once cooled with water.
FLUE GAS DESULFURIZATION (FGD) MATERIAL	Byproduct of reducing sulfur dioxide emissions in coal-fired boilers that can appear as a wet sludge made of calcium sulfite or sulfate, or as a dry powder containing a mixture of both.

* Slag-tap boilers burn pulverized coal
** Cyclone boilers burn crushed coal

[1] Earthjustice, *Where are Coal Ash Dump Sites?*, April 17, 2025, https://earthjustice.org/feature/coal-ash-map-sites-legacy-inactive-regulated
[2] U.S. Environmental Protection Agency, *Coal Ash Basics*, https://www.epa.gov/coalash/coal-ash-basics

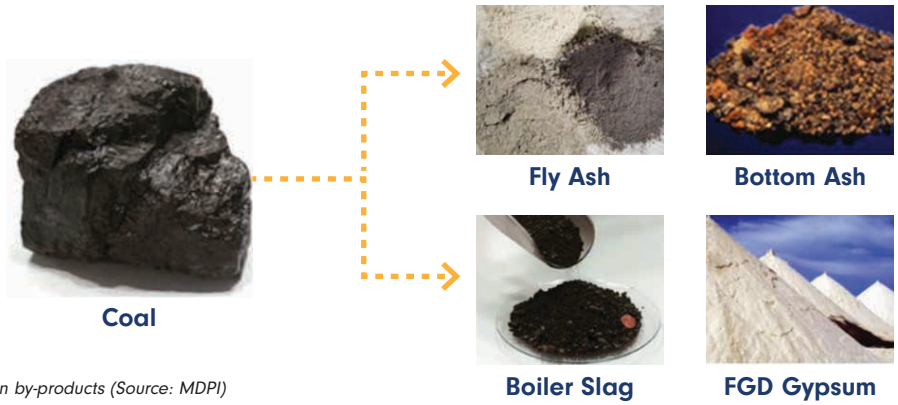


Figure 2: Types of coal combustion by-products (Source: MDPI)

About 62% of all coal ash by weight is fly ash, making it the most common type of CCR. This is followed by FGD material at 19%, and bottom ash and boiler slag at 18%.[3] The physical and chemical characteristics of these solid wastes are shaped by multiple factors, such as the chemical makeup of the source coal, and the combustion and pollution control technologies used.

TYPES OF COAL

The major coal types include anthracite (hard coal), bituminous and subbituminous (soft coal), and lignite (lowest grade). The coal type not only affects the amount of coal ash produced, but also the form and concentration of trace elements and radioactivity found in the coal ash.[4] Anthracite generates the least amount of coal ash, followed by bituminous, subbituminous, and lignite. In Iowa, subbituminous coal is the primary type used.

In the United States, bituminous and subbituminous coal are the most common types, with average ash content of about 5–19%.[5] [6] Coal ash produced from burning this coal contains various chemicals and heavy metals such as arsenic, lead, mercury, chromium, selenium, antimony, and molybdenum.[7] The risks that these substances pose to human and environmental health are explored further in Part 3 of this report.

COMBUSTION TECHNIQUES

Different combustion techniques affect both the form and quantity of coal ash. Fluidized bed combustion (FBC) technology burns coal in a suspended mixture with solid sorbents like limestone, which helps capture pollutants during combustion. Alternately, the more common pulverized coal (PC) boiler — widely used in Iowa — grinds coal into a fine powder that is then burned in a high-temperature combustion chamber.[8]

Pulverized coal (PC) combustion operates at much higher temperatures — typically around 1,400 to 1,500°C — compared to FBC, which can operate at 700–900°C. Because FBC systems often use limestone to capture sulfur dioxide (SO_2) during combustion, they typically generate more coal ash than PC systems.[9]

POLLUTION CONTROL TECHNOLOGIES

Air pollution controls like scrubbers and filters can change the makeup of coal ash. Scrubbers, which reduce sulfur emissions, can increase the total amount of ash by 10–25%.[10] Filters like electrostatic precipitators (ESP) that capture fine ash particles often trap higher levels of toxic metals like arsenic, mercury, and lead. While this keeps harmful particles out of the air, it can make the ash more dangerous if not safely managed, as those metals can leach into groundwater or soil.

[3] The National Academies of Sciences, *Managing Coal Combustion Residues in Mines*, 2006, p. 27, https://www.nap.edu/catalog/11592/managing-coal-combustion-residues-in-mines
[4] The National Academies of Sciences, *Managing Coal Combustion Residues in Mines*, p.33
[5] U.S. Energy Information Administration, *Coal Explained*, https://www.eia.gov/energyexplained/coal/
[6] R.F. Korcak, *Agricultural Uses of Coal Combustion Byproducts*, United States Department of Agriculture, p. 103, https://www.ars.usda.gov/is/np/agbyproducts/agbychap6.pdf
[7] Southeast Coal Ash, *Public Health Impacts*, http://www.southeastcoalash.org/about-coal-ash/public-health-impacts/
[8] Li, Zhengqi and Kronenburg, Andreas, *Pulverised Coal Combustion*, Science Direct, 2014 https://www.sciencedirect.com/topics/engineering/pulverised-coal-combustion#definition
[9] Science Direct, *Fluidized Bed Combustion*, 2020, https://www.sciencedirect.com/topics/engineering/fluidized-bed-combustion
[10] Evans, Lisa, et al., *Coal Ash Primer*, Earthjustice, 2023, p.6, https://earthjustice.org/wp-content/uploads/coal-ash-primer_earthjustice_2023.pdf

1.2 WHERE IS COAL ASH STORED?

Coal plant operators store coal ash in ash landfills or surface impoundments, also known as ash ponds.

The Environmental Protection Agency (EPA) has established standards for these structures along with permitting and monitoring requirements for health and environmental protection. Part 1.3 of this report dives deeper into rules set by the EPA.

For cooling purposes, coal power plants are typically located near rivers or other bodies of water. As a result, associated landfills and ash ponds are often situated nearby to minimize costly transportation; however, this can concentrate coal ash pollution in the area if not managed properly.[11]

Coal ash landfills are large, engineered disposal sites designed to contain coal ash. Typically placed in low areas, landfills may be constructed below ground or built above the ground surface. If the landfill is uncovered and dry, fugitive dust is dispersed by wind, risking airborne pollution. If coal ash comes in contact with rainwater or wastewater, creating leachate, surface and groundwater can potentially be contaminated.[12]

Surface impoundments are natural depressions, excavated ponds, or diked basins designed to hold a mixture of liquid and solid waste. Over time, the solid materials settle to the bottom, leaving a layer of relatively clear water at the surface. These impoundments may be periodically dewatered to allow for the removal of accumulated solids, which are then transported to a landfill for disposal.[13]

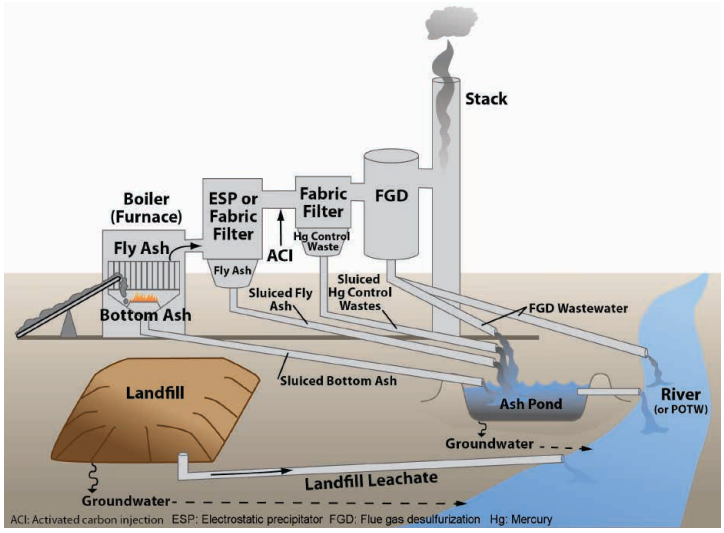


Figure 3: Flow of coal combustion residuals from a power plant and its disposal via a landfill, ash pond, or discharge to a water body. (Source: Environmental Protection Agency)

Figure 4: Iowa's George Neal North Generating Station with its surface impoundments, next to the Missouri River

More than 95% of coal ash ponds in the U.S. are unlined, leading to harmful exposure of coal ash toxins on the surface and groundwaters.[14] An analysis of U.S. Geological Survey data by the Medill News Service revealed a high density of private wells near unlined coal ash impoundments, especially in rural areas of the South and Midwest.[15]

[11] Western Organization of Resource Councils, *The True Cost of Coal: Don't Forget Coal Ash*, February 2016, https://www.worc.org/media/Coal-Ash-Fact-Sheet-FEB-16-FINAL.pdf
[12] Evans, Lisa et al. *Coal Ash Primer*, p. 14
[13] The National Academies of Sciences, *Managing Coal Combustion Residues in Mines*, p. 20
[14] West Virginia Rivers, *Coal Ash: What Is It, Why It Matters, What You Can Do*, https://wvrivers.org/coalash/
[15] Lydersen, Kari, et al., *Cracking Down on Coal Ash*, August 24, 2022, https://www.greatlakesnow.org/2022/08/cracking-down-on-coal-ash/

1.3 HOW IS COAL ASH REGULATED?

From the 1970s through the 2010s, coal ash disposal fell largely under state jurisdiction, leading to inconsistent practices and heightened potential for environmental harm.

COAL COMBUSTION RESIDUALS RULE

Following disastrous coal ash spills in Kingston, Tennessee in 2008 and Eden, North Carolina in 2014 that devastated both communities, the EPA issued the first national Coal Combustion Residuals rule in 2015, addressing the risks from coal ash disposal. Governed under the **Resource Conservation and Recovery Act**, coal ash is categorized as non-hazardous solid waste despite its known toxicity.

The rule applies to active coal plants with new and existing coal ash dump sites operating under a solid waste permit. Its key provisions include location restrictions, structural integrity and liner design specifications, groundwater monitoring and corrective action mandates, closure and post-closure requirements, and operating standards.[16]

In 2018, the EPA finalized amendments to the CCR rule that introduced greater regulatory flexibility.[17] These revisions allow states with EPA-approved CCR permit programs or the EPA itself to apply alternate performance standards, provided that environmental protections are maintained. Additional changes included updating **groundwater protection standards** for coal ash constituents that lack established **Maximum Contaminant Levels** (MCLs), and offering facilities the option to request deadline extensions for site closures.

To close a longstanding regulatory loophole that exempted inactive coal ash sites at retired facilities, the EPA finalized a rule in May 2024 addressing "legacy CCR sites." These are inactive ash ponds and landfills containing CCR at power plants that ceased operations before October 2015, although the rule also includes disposal sites at active power plants that were exempted from the 2015 CCR rule. Under the 2024 legacy CCR regulation, owners and operators of legacy sites must now comply with many of the same requirements that apply to CCR units at active facilities.

This legacy CCR rule is especially critical, as older impoundments are often unlined, unmonitored, and structurally compromised, making them more susceptible to leaks and failures. However, enforcing compliance at these inactive sites presents challenges for ongoing tracking and accountability.

[16] U.S. Environmental Protection Agency, *Hazardous and Solid Waste Management System*; Disposal of Coal Combustion Residuals From Electric Utilities, 17 April 2015, https://www.federalregister.gov/documents/2015/04/17/2015-00257/hazardous-and-solid-waste-management-system-disposal-of-coal-combustion-residuals-from-electric
[17] U.S Environmental Protection Agency, *Disposal of Coal Combustion Residuals from Electric Utilities Rulemakings,* https://www.epa.gov/coalash/coal-ash-rule

EFFLUENT LIMITATIONS GUIDELINES RULE

In addition to solid waste regulations, coal ash pollution is also addressed under the **Clean Water Act** through the **Effluent Limitations Guidelines** (ELG) rule. Established by the EPA, the ELG rule regulates wastewater discharges from steam electric power plants — including coal and natural gas-fired facilities — through the **National Pollutant Discharge Elimination System** (NPDES) permit program. These plants generate wastewater containing chemical pollutants and thermal discharges, which are released into surface waters under NPDES permits.

In 2024, the EPA finalized more stringent discharge limits aimed at reducing toxic coal ash-related contaminants in wastewater streams, specifically targeting flue gas desulfurization (FGD) wastewater, bottom ash transport water, combustion residual leachate, and legacy wastewaters.[18]

THE FUTURE OF COAL ASH REGULATION

With federal environmental protections at risk of rollback and coal industry interests advocating for looser standards, the future of coal ash regulation remains uncertain.[19] [20] Both the CCR and ELG rules are being reevaluated by the EPA, with proposed changes that extend compliance deadlines and weaken pollution limits.[21] [22] These revisions appear to be part of a broader strategy to prolong the operation of outdated and uneconomical coal-fired power plants across the country.

Even though the EPA always retains the authority to revise its rules, neither states nor regulated entities can disregard existing regulations based on the possibility that the EPA may change them in the future. CCR site owners and operators have consistently delayed responsibility for the toxic damages that they have inflicted.[23] Decades of coal ash pollution have already harmed — and will continue to harm — human health and the environment for years to come. This only makes it essential to maintain, and ideally strengthen, federal oversight of CCR management.

[18] U.S. Environmental Protection Agency, *Steam Electric Power Generating Effluent Guidelines*, https://www.epa.gov/eg/steam-electric-power-generating-effluent-guidelines#2024-final
[19] U.S. Environmental Protection Agency, *EPA Launches Biggest Deregulatory Action in U.S. History*, 12 March 2025, https://www.epa.gov/newsreleases/epa-launches-biggest-deregulatory-action-us-history
[20] Lydersen, Kari, *Under Trump, Indiana and other states may decide their own coal ash rules*, 17 June 2025, https://www.canarymedia.com/articles/fossil-fuels/state-coal-ash-rules-trump
[21] U.S. Environmental Protection Agency, *EPA Announce Next Set of Actions on Coal Ash Program*, 17 July 2025, https://www.epa.gov/newsreleases/epa-announces-next-set-actions-coal-ash-program
[22] U.S. Environmental Protection Agency, *EPA Will Revise Wastewater Rules to Support Electric Energy Reliability and Unleash American Energy*, 30 June 2025, https://www.epa.gov/newsreleases/epa-will-revise-wastewater-rules-support-electric-energy-reliability-and-unleash
[23] Gautama, Mehta, *Power companies would rather not clean their toxic messes. Trump's EPA is granting their wish*, Grist, 24 March 2025, https://grist.org/health/coal-ash-epa-lee-zeldin-trump/

2. IOWA'S COAL ASH STORY

Iowa has been burning coal for energy since the mid-1800s, leaving behind a legacy of coal ash spanning more than a century. For decades, this toxic waste went largely unregulated. The introduction of the federal **Coal Combustion Residuals** (CCR) Rule marked a critical shift in how disposal sites are monitored and managed. Yet enforcement and applicability remain inconsistent — raising serious questions about whether current protections are adequate for Iowa's communities.

This section examines the following questions about coal ash in Iowa:

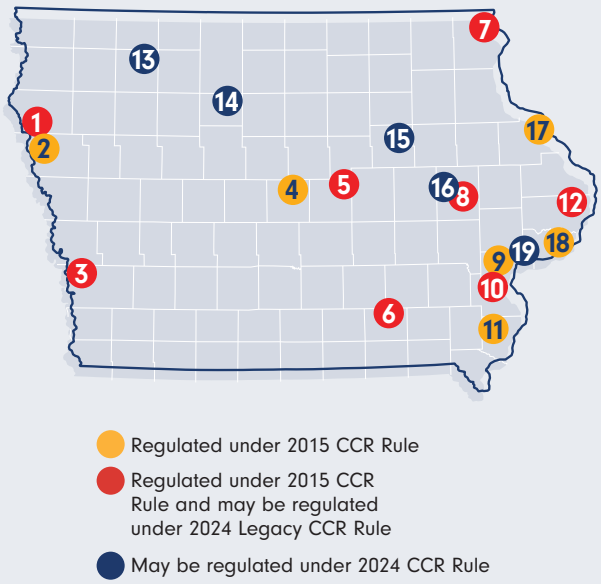
- Who is responsible for coal ash management?
- Where are Iowa's utility coal ash sites, and what regulations apply to them?
- How much ash has been disposed of?
- How is Iowa performing in coal ash oversight and cleanup?

WHO IS RESPONSIBLE FOR COAL ASH MANAGEMENT?

Utilities bear the primary responsibility of managing coal ash landfills and are required to comply with the federal CCR rule. In Iowa, the **Department of Natural Resources** (IDNR) issues permits for solid waste and water discharges and plays a key role in enforcing environmental standards. While EPA retains direct authority over the CCR Rule in Iowa, IDNR is responsible for protecting the state's natural resources by regulating operations of ash disposal sites, monitoring discharges, and addressing contamination risks.

WHERE ARE IOWA'S UTILITY COAL ASH SITES, AND WHAT REGULATIONS APPLY TO THEM?

There are 69 identified utility coal ash sites in Iowa across 16 counties.[24] Of these, 43 are or should be



1 **George Neal North (Woodbury County)** MidAmerican Energy Co.

2 **George Neal South (Woodbury County)** MidAmerican Energy Co.

3 **Walter Scott Jr. (Pottawattamie County)** MidAmerican Energy Co.

4 **Ames (Story County)** City of Ames

5 **Sutherland (Marshall County)** Interstate Power & Light

6 **Ottumwa (Wapello County)** Interstate Power and Light

7 **Lansing (Allamakee County)** Interstate Power and Light

8 **Prairie Creek (Linn County)** Interstate Power and Light

9 **Muscatine (Muscatine County)** Muscatine Power and Water

10 **Louisa (Louisa County)** MidAmerican Energy Co.

11 **Burlington (Des Moines County)** Interstate Power and Light

12 **M.L. Kapp (Clinton County)** Interstate Power and Light

13 **Earl F. Wisdom (Clay County)** Corn Belt Power Co-op

14 **Humboldt (Humboldt County)** Corn Belt Power Co-op

15 **Streeter Station (Black Hawk County)** Cedar Falls Utilities

16 **Sixth Street Station (Linn County)** Interstate Power and Light

17 **Dubuque (Dubuque County)** Interstate Power and Light

18 **Riverside (Scott County)** MidAmerican Energy Co.

19 **Fair Station (Muscatine County)** Central Iowa Power Co-op

Figure 5: Iowa coal power plants that have CCR disposal sites, identifying their owners/operators and the applicable CCR regulations

[24] Iowa Department of Natural Resources, *Solid Waste Permitting*, https://programs.iowadnr.gov/solidwaste/reports/documentdna

regulated under the 2015 CCR Rule, though five have not fulfilled reporting requirements. The remaining 25 sites — most of them older or located at inactive coal plants — may fall under the expanded oversight of the 2024 Legacy CCR Rule.[25]

While Figure 5 on the previous page shows the locations of Iowa coal plants that contain ash disposal sites, it does not display the exact locations of individual ash ponds and landfills. To access and explore aerial imagery of specific ash disposal sites in Iowa, visit the following website: Iowa Utility Coal Ash Sites.

It is critical that the IDNR enforces not only the 2015 CCR Rule, but also the 2024 Legacy CCR Rule. Even though some coal plants and ash disposal sites are no longer active, the threat of contamination persists, especially if coal ash remains in place. The EPA's own risk assessment highlights that peak pollution risk from coal ash disposal sites often occurs decades or even a century after the waste is initially placed.[26]

The coal ash sites covered in this report represent just a portion of Iowa's coal ash problem. In addition to power plants, coal ash is also generated by non-utility sectors, including agricultural operations. Because non-utility sites are not included in this analysis, the true scale and potential risks of coal ash in Iowa may be significantly underestimated. To learn more about non-utility CCR sites, visit Iowa DNR – Solid Waste Map.

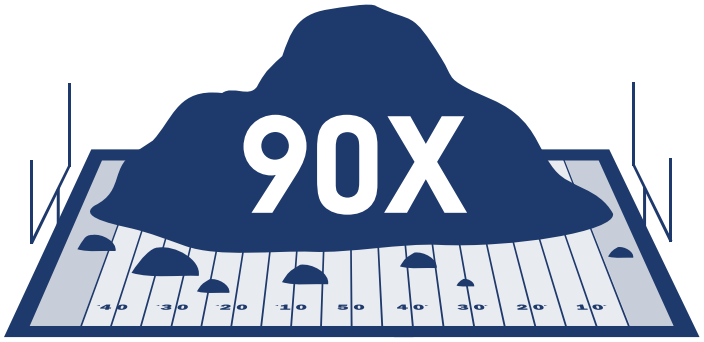
COAL FACILITY	REGULATED UNDER 2015 CCR RULE	MAY BE REGULATED UNDER 2024 LEGACY CCR RULE
GEORGE NEAL SOUTH	1 landfill	
BURLINGTON	4 ash ponds	
MUSCATINE	1 landfill	
AMES	1 landfill (failed to report), 1 ash pond	
DUBUQUE	1 site (failed to report)	
RIVERSIDE	3 sites (failed to report)	
GEORGE NEAL NORTH	1 landfill, 4 ash ponds	5 additional sites
LOUISA	2 landfills, 1 ash pond	1 additional site
WALTER SCOTT JR	1 landfill, 2 ash ponds	2 additional sites
OTTUMWA	1 landfill, 2 ash ponds	1 additional site
LANSING	1 landfill, 1 ash pond	2 additional sites
M.L. KAPP	1 ash pond	3 additional sites
PRAIRIE CREEK	2 landfills, 8 ash ponds	2 additional sites
SUTHERLAND	4 ash ponds	2 additional sites
SIXTH STREET		2 sites
EARL F. WISDOM		1 site
STREETER STATION		1 site
FAIR STATION		3 sites
HUMBOLDT		1 site (likely no reporting is required)

Table 1 lists the number of coal ash sites per coal plant, as shown in Figure 5 on the previous page

[25] Interview with Earthjustice, 13 June 2025
[26] The Environmental Integrity Project and Earthjustice, *Coming Clean: What the EPA Knows About the Dangers of Coal Ash*, May 2009, https://earthjustice.org/wp-content/uploads/final-coming-clean-ejeip-report-20090507.pdf

HOW MUCH COAL ASH IS DISPOSED OF IN IOWA?

As of 2024, Iowa's federally regulated coal ash ponds and landfills are storing approximately 19 million cubic yards of CCR. This is enough toxic coal ash waste to fill the MidAmerican Energy Field at Jack Trice Stadium, a football field in Ames, Iowa, nearly 90 times.



COAL PLANT	OWNER/OPERATOR	CUMULATIVE COAL ASH VOLUME AT ASH PONDS AND/OR LANDFILLS (CUBIC YARDS)
LOUISA	MidAmerican Energy Co.	2,465,900
GEORGE NEAL NORTH	MidAmerican Energy Co.	2,218,994
GEORGE NEAL SOUTH	MidAmerican Energy Co.	856,333
WALTER SCOTT JR	MidAmerican Energy Co.	7,516,617
OTTUMWA	Interstate Power and Light	1,826,645
BURLINGTON	Interstate Power and Light	1,427,100
LANSING	Interstate Power and Light	1,068,900
M.L. KAPP	Interstate Power and Light	580,000
PRAIRIE CREEK*	Interstate Power and Light	1,160
SUTHERLAND*	Interstate Power and Light	34,000
SIXTH STREET	Interstate Power and Light	40,000
MUSCATINE	Muscatine Power and Water	785,000
AMES	City of Ames	178,384
TOTAL ESTIMATED		**18,999,033**

* Most ash ponds at these coal facilities do not have reported CCR volume data, so the actual total coal ash volume at regulated sites is likely higher than what is reflected above

Table 2 lists the cumulative amount of coal ash for each power plant [27]

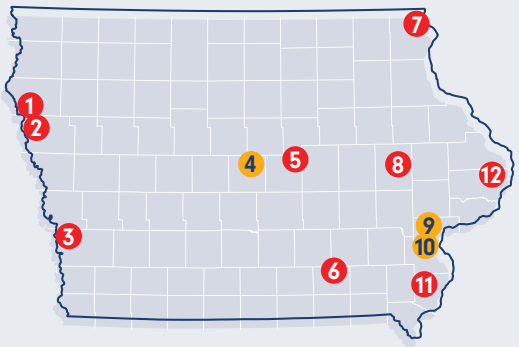
This is a staggering volume with serious implications and does not capture the whole picture, as there are more coal ash disposal sites in the state that do not have available reporting data or are not being regulated. While seven utility coal plants are still operating in Iowa, more coal ash will be disposed into landfills and impoundments. This continues to compound the operating expenses to run these coal facilities, as the cost of cleanup accumulates.

[27] Utility's 2023-2024 Engineering Inspection Report

HOW IS IOWA PERFORMING IN COAL ASH OVERSIGHT AND CLEANUP?

Groundwater monitoring is a core requirement of the CCR Rule, designed to protect groundwater resources by detecting potential contamination from coal ash disposal sites and triggering corrective action.[28] It is one way to analyze CCR management, as owners/operators are required to make their monitoring data publicly available.

The groundwater monitoring reports from 2024 reveal that nine of 12 coal facilities in Iowa have disposal sites that exceed federal health standards for coal ash contaminants. These standards are based on Maximum Contaminant Levels (MCLs) under the **Safe Drinking Water Act**, or site-specific groundwater protection standards where no MCL exists. All nine facilities exceeding federal health standards are owned by Iowa's largest utilities, MidAmerican Energy Company and Interstate Power and Light.



1 George Neal North (Woodbury County)
- MidAmerican Energy Co.
- 1 landfill, 4 ash ponds
- Federal health exceedances: Selenium, Arsenic, Cadmium, Lithium, Cobalt

2 George Neal South (Woodbury County)
- MidAmerican Energy Co.
- 1 landfill
- Federal health exceedances: Arsenic, Selenium, Radium 226/228, Lithium

3 Walter Scott Jr. (Pottawattamie County)
- MidAmerican Energy Co.
- 1 landfill, 2 ash ponds
- Federal health exceedances: Arsenic, Molybdenum

4 Ames (Story County)
- City of Ames
- 1 landfill (no data), 1 ash pond

5 Sutherland (Marshall County)
- Interstate Power & Light
- 4 ash ponds
- Federal health exceedances: Lithium

6 Ottumwa (Wapello County)
- Interstate Power and Light
- 1 landfill, 2 ash ponds
- Federal health exceedances: Cobalt

7 Lansing (Allamakee County)
- Interstate Power and Light
- 1 landfill, 1 ash pond
- Federal health exceedances: Arsenic

8 Prairie Creek (Linn County)
- Interstate Power and Light
- 2 landfills, 8 ash ponds
- Federal health exceedances: Arsenic, Lithium, Molybdenum

9 Muscatine (Muscatine County)
- Muscatine Power and Water
- 1 landfill

10 Louisa (Louisa County)
- MidAmerican Energy Co.
- 2 landfills, 1 ash pond

11 Burlington (Des Moines County)
- Interstate Power and Light
- 4 ash ponds
- Federal health exceedances: Lithium

12 M.L. Kapp (Clinton County)
- Interstate Power and Light
- 1 ash pond
- Federal health exceedances: Molybdenum, Arsenic, Lithium

Figure 6 maps groundwater data at regulated ash sites in Iowa, with red dots marking facilities with 2024 federal health standard exceedances [29]

Some notable concerns include the ash disposal sites at Ottumwa and Lansing. At Ottumwa's surface impoundments, cobalt has exceeded federal health standards for years, yet the assessment of corrective measures has been ongoing since 2019 with no cleanup plan selected. Meanwhile at Lansing CCR sites, arsenic has consistently exceeded the MCL since 2019, with the latest readings showing four to six times above the level considered safe for drinking water. However, despite years of contamination, the corrective measures assessment concluded with no action to address arsenic.

[28] U.S. Environmental Protection Agency, *Frequent Questions about Groundwater Monitoring and Corrective Action and Implementing the Final Rule Regulating the Disposal of Coal Combustion Residuals (CCR),* https://www.epa.gov/coalash/frequent-questions-about-groundwater-monitoring-and-corrective-action-and-implementing
[29] Utility's 2024 Annual Groundwater Monitoring and Corrective Action Report

While cleanup implementation can take time, the lack of urgency in treating groundwater contamination — especially at sites with long-standing pollution — only heightens the risk that harmful chemicals could reach private wells or local drinking water sources.

At some facilities, such as the Walter Scott Jr. Monofill and George Neal North Monofill, a process called an "**Alternate Source Demonstration**" was used to claim that the exceedances came from a different source — not their coal ash sites. As a result, they are not required to conduct additional monitoring or corrective action. This strategy not only delays cleanup, it can also allow owners and operators to avoid accountability, even when the pollution may likely come from multiple, overlapping sources.

In its nationwide review of CCR facilities seeking extensions for closure deadlines or approval of alternative liner designs — both of which require strict compliance with groundwater monitoring standards — the EPA found that 43 out of 44 sites failed to prove their pollution came from an alternative source.[30] This 98% failure rate in Alternate Source Demonstrations (ASDs) reveals a troubling lack of accountability and suggests widespread non-compliance at coal ash disposal sites across the country. ASDs have become a loophole that lets polluters evade cleanup and responsibility, while communities are left to bear the burden of unchecked coal ash contamination.

Failing to implement necessary post-closure cleanup undermines the intent of this CCR rule provision and continues to pose serious risks to communities, especially populations that live near these sites. More than 75% of Iowans rely on groundwater sources for drinking water, including up to 290,000 who use private wells.[31] This leaves many residents vulnerable to contamination from coal ash pollutants.

THIS 98% FAILURE RATE IN ALTERNATE SOURCE DEMONSTRATIONS (ASDs) REVEALS A TROUBLING LACK OF ACCOUNTABILITY AND SUGGESTS WIDESPREAD NON-COMPLIANCE AT COAL ASH DISPOSAL SITES ACROSS THE COUNTRY.

[30] Aiken, Jim and Solie, Kevin, *Navigating CCR compliance under recent EPA determinations*, BARR, 9 June 2023, https://www.barr.com/Insights/Insights-Article/ArtMID/1344/ArticleID/550/Navigating-CCR-compliance-under-recent-EPA-determinations

[31] Iowa Department of Natural Resources, *Groundwater Monitoring*, https://www.iowadnr.gov/environmental-protection/water-quality/water-quality-monitoring-assessment/groundwater

HEALTH HARMS AND ENVIRONMENTAL DEGRADATION

3.1 BREATHING AND INGESTING COAL ASH TOXICANTS

Hazardous substances such as heavy metals and radioactive elements found in coal ash are harmful to human health when not properly disposed of and managed. These toxic contaminants include arsenic, cadmium, chromium, lead, mercury, and other components such as boron and lithium. Regulations exist for coal ash disposal, but without strong enforcement — and lacking an EPA classification as hazardous — those rules often fall short of protecting communities and the environment.

IN IOWA, 75% OF FEDERALLY REGULATED COAL PLANTS HAVE ASH SITES THAT EXCEED FEDERAL HEALTH STANDARDS.

Nationwide, monitoring data showed that 91% of U.S. coal-fired plants have ash landfills or ponds that are leaking arsenic, lead, mercury, selenium, and other metals into groundwater at harmful levels, often poisoning streams, rivers, and drinking water aquifers.[32] In Iowa, 75% of coal plants with reported 2024 data have ash sites that exceed federal health standards, as noted earlier in the report.

Figure 7: While communities invest in costly drinking water filtration systems, polluters often avoid responsibility for decades of contamination (Source: Steve Cukrov)

As air pollutants such as sulfur dioxide (SO2) and particulate matter (PM) are reduced by pollution control devices, the amount of coal ash increases. Essentially, one form of toxic pollution has been traded for another. The risk of breathing fugitive dust and ingesting toxins leaching out of disposal sites is heightened, especially for uncovered landfills and unlined or poorly lined ash ponds.

Short-term exposure to these pollutants can lead to shortness of breath, irritation of nose and throat, and vomiting, while long-term exposure can lead to liver, kidney, and lung failures, as well as a variety of cancers.[33] Notably, residents residing near coal ash ponds have as much as a one in 50 chance of being diagnosed with cancers of the skin, liver, bladder, and lungs when drinking water contaminated by arsenic, one of the most common and most harmful pollutants from coal ash.[34]

[32] Environmental Integrity Project, *New Report: Most Power Plants Violating Federal Rules Mandating Cleanup of Toxic Coal Ash Dumps*, 3 November 2022, https://environmentalintegrity.org/news/most-power-plants-violating-rules-mandating-coal-ash-cleanup/

[33] Turrentine, Jeff, *Coal Ash Is Hazardous. Coal Ash Is Waste. But According to the EPA, Coal Ash Is Not "Hazardous Waste."*, Natural Resources Defense Council, 6 September 2019, https://www.nrdc.org/stories/coal-ash-hazardous-coal-ash-waste-according-epa-coal-ash-not-hazardous-waste

[34] U.S. Environmental Protection Agency, *Human and Ecological Risk Assessment of Coal Combustion Residuals*, December 2014, p. 6-11, https://downloads.regulations.gov/EPA-HQ-OLEM-2019-0173-0008/content.pdf (Page 6-11)

CANCER IN IOWA

Iowa has the second-highest rate of new cancer diagnoses in the country, with nearly all cancer types occurring more frequently in the state compared to the national average, according to the National Cancer Institute.[35] Out of Iowa's 3.2 million residents, an estimated 6,000 die from cancer each year, and Iowa is one of only two states in the nation where cancer rates are rising.[36] Cancer has many complex and overlapping causes, but growing research points to a significant link between environmental risk factors — such as agricultural chemicals — and cancer development. Coal ash may also have a role but there is scant research.

Linn County, which has the second highest number of individual cases and a cancer rate above the state average, is home to the active Prairie Creek and former Sixth Street power plants. The ash disposal sites at Prairie Creek have shown federal health exceedances for arsenic and molybdenum since 2019, yet no definitive treatment strategy has been finalized. Linn County has more coal ash disposal sites than any other in the state, but the total volume of ash remains unknown, as Interstate Power and Light has not fully reported or publicly disclosed this information.

While many factors contribute to Iowa's troubling cancer statistics, strengthening the management and regulation of coal ash is a critical and actionable step toward reducing environmental health risks.

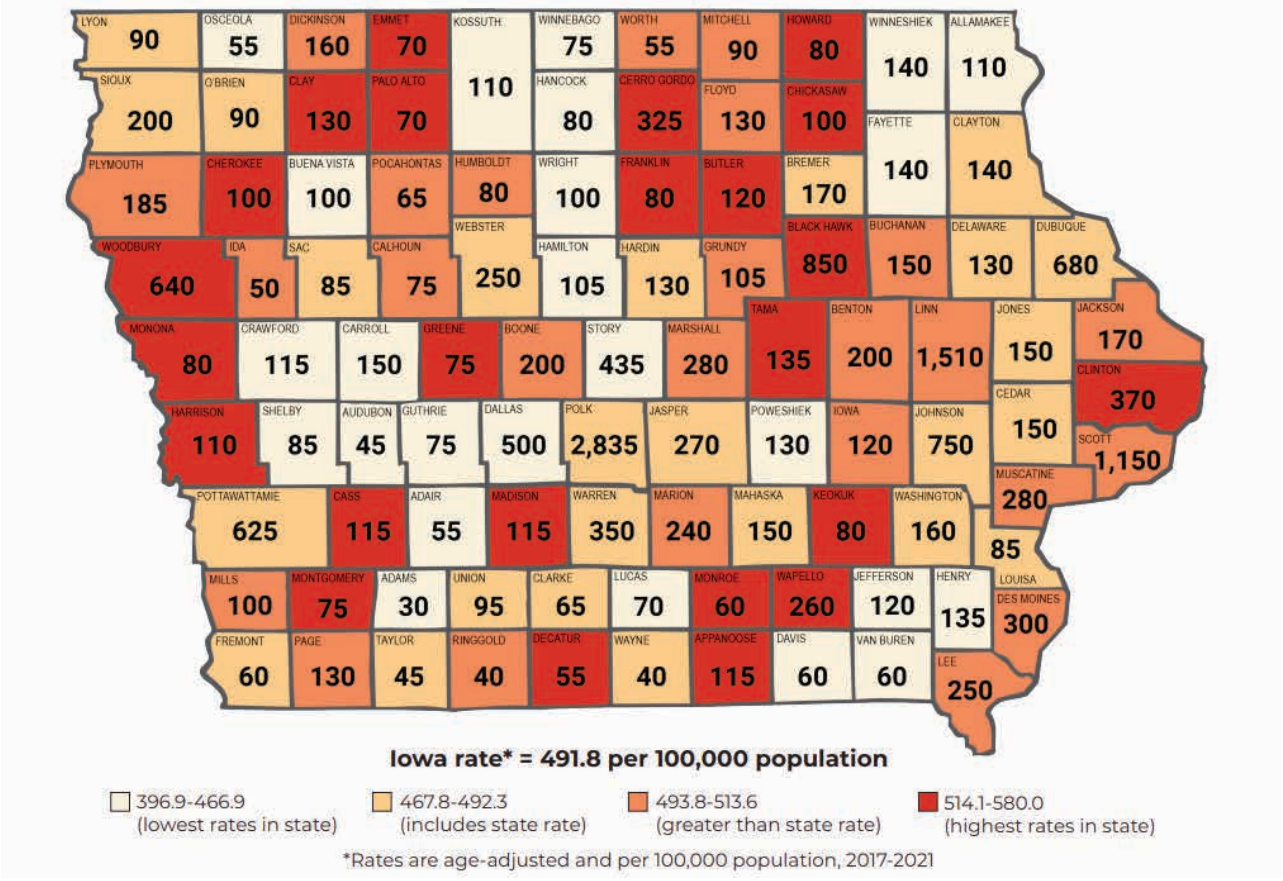
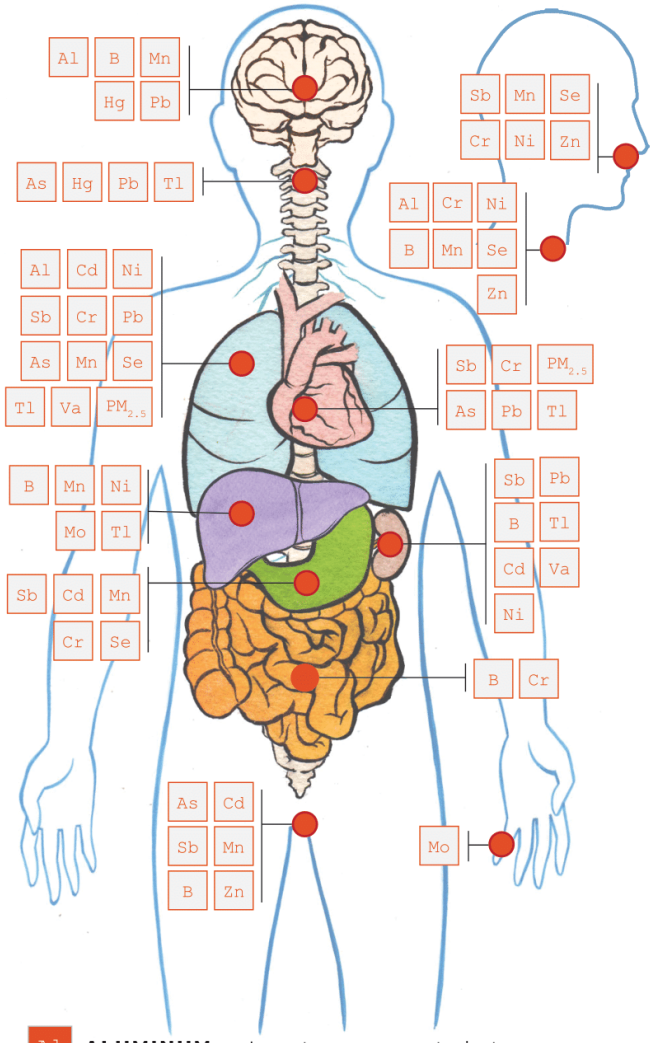


Figure 8: The numbers in each county represent the estimated counts for new cancer diagnoses for 2025, while the color in each county reflects the rate of new cancers for years 2017-2021. (Source: Iowa Cancer Registry)

[35] National Cancer Institute, *State Cancer Profiles: Iowa*, https://statecancerprofiles.cancer.gov/quick-profiles/index.php?statename=iowa
[36] Iowa Cancer Registry, *Cancer in Iowa*, 2025, https://shri.public-health.uiowa.edu/wp-content/uploads/2025/02/cancer-in-iowa-2025.pdf

PRESENTED BY EARTHJUSTICE

Harm to Human Health from Breathing and Ingesting Coal Ash Toxicants



Al **ALUMINUM** Long-term exposure to dust can cause scarring of lungs (pulmonary fibrosis) with symptoms of cough and shortness of breath. May be linked to dementia.

Sb **ANTIMONY** Long-term inhalation can cause a hole in the septum dividing the inner nose and lead to permanent lung damage. May harm female fertility and damage liver, kidneys and heart.

As **ARSENIC** Ingestion can lead to nervous system damage, cardiovascular harm, and urinary tract cancers. Inhalation and absorption through skin can cause lung cancer and skin cancer, respectively.

B **BORON** Inhalation can lead over the short term to eye, nose, and throat irritation. Ingestion of large amounts can result in damage to the testes, intestines, liver, kidneys, and brain, and eventually lead to death.

Cd **CADMIUM** May cause lung and prostate cancer and damage the reproductive system. Inhalation can irritate lungs. Ingestion can cause nausea, vomiting, diarrhea and abdominal pain.

Cr **CHROMIUM** Ingestion can cause stomach and intestinal ulcers, anemia, and stomach cancer. Frequent inhalation can cause asthma, wheezing, and lung cancer. Inhalation can also irritate the nose and throat, resulting in asthma-like symptoms and damage the nose's septum.

Pb **LEAD** Exposure can result in brain swelling, kidney disease, cardiovascular problems, nervous system damage, and death. It is accepted that there is no safe level of lead exposure, particularly for children.

Mn **MANGANESE** Long-term exposure can cause permanent brain damage. Inhalation irritates nose, throat and lungs, causing coughing, wheezing and shortness of breath. May cause harm to the liver and testes and decrease fertility in males.

Hg **MERCURY** Impacts include nervous system damage and developmental harm, such as reduced IQ. Poses particular risk to children, infants and fetuses.

Mo **MOLYBDENUM** Ingestion causes gout (joint pain) and increased blood uric acid levels and is linked to high blood pressure and liver disease. Slowed growth, low birth weight and infertility found in animals.

Ni **NICKEL** Inhalation can irritate and damage the nose, throat and lungs. Acute exposure can cause headache, dizziness, nausea and vomiting. A probable carcinogen for lung cancer. Can cause chronic bronchitis and scarring of the lungs. Long-term exposure may harm liver and kidneys.

$PM_{2.5}$ **PM2.5** Particles less than 2.5mm can lodge deep in the lungs and cause premature death, as well as lung and heart disease, decreased lung function, asthma attacks, heart attacks and cardiac arrhythmia.

Se **SELENIUM** Inhalation can irritate the nose, throat, and lungs, causing coughing, wheezing, and shortness of breath. Can also cause nausea, diarrhea, abdominal pain, and headache. Repeated exposure can cause irritability, fatigue, dental cavities, loss of nails and hair, and depression.

Tl **THALLIUM** Ingestion causes nervous system damage and lung, heart, liver and kidney problems. Main ingredient in rat poison.

Va **VANADIUM** Lung irritant. Long-term exposure can cause asthma attacks with shortness of breath, wheezing, cough, and chest tightness. May damage the kidneys. Repeated high exposure may cause anemia.

Zn **ZINC** Inhalation can irritate the nose and throat, and cause wheezing and coughing. Appears to affect the male reproductive system, including sperm count.

SOURCE: AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY (ATSDR), U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES. TOXICOLOGICAL PROFILES. WWW.ATSDR.CDC.GOV/TOXPROFILES

ILLUSTRATION: JOSHUA HERBOLSHEIMER. HEAD PROFILE: SERGEY NIVENS / SHUTTERSTOCK.

Figure 9: Human Health Impacts of Coal Ash Pollutants (Source: Earthjustice)

Figure 9 on the previous page demonstrates how different parts of the human body are impacted by each coal ash toxic chemical. In short, the toxic substances in coal ash can harm nearly every major organ system, impair physical health and development, and in some cases, contribute to premature death, especially to vulnerable populations such as children, pregnant women, Indigenous communities, and cleanup workers.

YOUNG CHILDREN

Arsenic, lead, and mercury pose serious developmental risks for children living near coal ash sites. Research shows that children exposed to coal ash are more likely to suffer from health issues like asthma and attention-deficit hyperactivity disorder (ADHD) compared to their unexposed peers.[37]

Lead ranks second only to arsenic on the latest Toxic Substance Priority List developed by the Agency for Toxic Substances and Disease Registry and EPA.[38] This neurotoxin is especially dangerous for children, as they absorb it more easily than adults and can severely damage the central nervous system during early childhood.[39]

PREGNANT WOMEN

Mercury, arsenic, and selenium are bioaccumulative toxins, which means they build up and concentrate in organisms over time. Fish absorb these substances through their gills or skin and store them in their bodies. As these toxins move up the food chain, their concentrations increase, posing serious health risks to humans, particularly pregnant women who consume contaminated water or seafood.[40] High prenatal exposure to these trace elements can result in serious health outcomes, including miscarriage, stillbirth, preterm birth, and increased risk of neurodevelopmental disorders and cancer later in life.[41]

Figure 10: On the Winnebago Reservation, generations have lived in deep connection with the land and water that continue to sustain community, culture, and resilience (Source: Ho-Chunk, Inc.)

INDIGENOUS COMMUNITIES

The identity and wellbeing of Indigenous communities are connected to their ancestral lands, natural ecosystems, and interconnected sociocultural and economic values.[42] However, they disproportionately bear the brunt of industrial pollution — including coal ash — that consistently degrades their surrounding environment and threatens their health.[43] Coal plant operations continue to contaminate vital water sources that Indigenous peoples rely on for drinking, agriculture, and cultural practices.

Woodbury County — home to two MidAmerican Energy coal plants—has the highest proportion of Native American and Alaska Native residents in Iowa, at 17%.[44] The Winnebago Reservation, which extends into the county, lies just downstream of these plants and adjacent coal ash disposal sites — both of which sit next to the Missouri River. Beyond meeting basic needs like drinking water and farming, the Missouri River also holds deep cultural and spiritual significance for the Winnebago community.

[37] Sears, Clara, and Zierold, Kristina, *Health of Children Living Near Coal Ash, National Library of Medicine*, 25 July 2017, https://pmc.ncbi.nlm.nih.gov/articles/PMC5533260/#bibr17-2333794X17720330
[38] Agency for Toxic Substances and Disease Registry, *Substance Priority List*, 12 November 2024, https://www.atsdr.cdc.gov/programs/substance-priority-list.html
[39] The Environmental Integrity Project and Earthjustice, *Coming Clean: What the EPA Knows About the Dangers of Coal Ash*, p. 5
[40] Soucheray, Stephanie, *How Do Elements of Coal Ash Affect Human Health?*, North Carolina Health News, 23 April 2014, https://www.northcarolinahealthnews.org/2014/04/23/how-the-elements-in-coal-ash-affect-human-health/
[41] American Academy of Pediatrics, *Arsenic Exposure*, https://www.aap.org/en/patient-care/environmental-health/promoting-healthy-environments-for-children/arsenic/?srsltid=Afm-BOopzKuUHw3kXbNCHRaJEDuKEOOfyqUO0aGojDXpq0gQcvpwv1Hm1
[42] Sangha, Kamaljit et al., *Ecosystems and indigenous well-being: An integrated framework,* ScienceDirect, July 2015, https://www.sciencedirect.com/science/article/pii/S2351989415000700
[43] Dávila-Ruhaak, Sarah, *Making the Case for a Right to a Healthy Environment for the Protection of Vulnerable Communities: A Case of Coal-Ash Disaster in Puerto Rico,* Michigan Journal of Environmental and Administrative Law, 2020, https://repository.law.umich.edu/cgi/viewcontent.cgi?article=1108&context=mjeal
[44] State Data Center of Iowa, *Native Americans in Iowa: 2024,* November 2024, https://www.iowadatacenter.org/application/files/1517/4189/3785/AmericanIndianHeritageMonth2024.pdf

Yet, this community faces compounded challenges. The Iowa Department of Health and Human Services has designated Woodbury County as a medically underserved area, with both cancer incidence and mortality rates exceeding state averages.[45] The Winnebago Tribe continues to experience critical gaps in healthcare access, including chronic staff shortages and poor-quality care.[46] At the same time, the poverty rate for Iowa Native Americans and Alaska Natives is 22.6% — double the statewide rate — further entrenching disparities between Indigenous communities and the broader population.[47]

CLEANUP WORKERS

The 2008 coal ash spill in Kingston, Tennessee — still the largest industrial disaster by volume in U.S. history — continues to have devastating repercussions.[48] Roughly 900 workers were hired to clean up the site and were falsely assured of its safety. Since then, more than 50 deaths and over 200 illnesses have been linked to direct and prolonged exposure to the heavy metals and radioactive materials found in coal ash.[49]

Figure 11: The aftermath of the 2008 Kingston coal ash spill remains a burden for affected communities (Source: Brian Stansberry)

Figure 12: Closure of Walter Scott Jr. Surface Impoundments in 2021 (Source: Ames Construction)

As federal regulations now require the cleanup or closure of coal ash sites exceeding water and health quality standards, it is critical to establish clear, enforceable standards to protect worker health and safety. These guidelines must include access to proper personal protective equipment (PPE), comprehensive training on coal ash hazards, routine health monitoring, and robust emergency response procedures, among others.

As noted earlier in the report, peak pollution from coal ash disposal sites may not occur until 78 to 105 years after the initial waste placement.[50] This reinforces the need for comprehensive closure and post-closure management, as closed or inactive sites can remain a threat to human health and the environment far into the future.

In Iowa, an estimated 22 coal ash disposal sites — located within just five feet of groundwater — are officially closed, which means they no longer accept new waste but still hold vast amounts of toxic coal ash that threaten nearby water supplies.[51] Without proper cleanup and remediation, these sites could continue to harm nearby communities and cleanup workers for generations, leaving coal ash in the groundwater or dangerously close to groundwater.

[45] Iowa Department of Health and Human Services, *HHS System Snapshot: Woodbury County*, 27 January 2025, https://hhs.iowa.gov/media/12080/download?inline
[46] Kitcheyan, Victoria, *Testimony regarding S. 1250, "Restoring Accountability in the Indian Health Service Act of 2017"*, 13 June 2017, https://www.indian.senate.gov/wp-content/uploads/upload/6.13.17%20Victoria%20Kitcheyan%20Testimony.pdf
[47] State Data Center of Iowa, *Native Americans in Iowa*: 2024
[48] Southeast Coal Ash, *The Kingston Disaster*, http://www.southeastcoalash.org/about-coal-ash/coal-ash-disasters/the-kingston-disaster/
[49] Eggers, Caroline, *Workers got sick after cleaning up TVA's coal ash. A new book recounts their fight for justice*, WPLN News, 13 March 2025, https://wpln.org/post/workers-got-sick-after-cleaning-up-tvas-coal-ash-a-new-book-recounts-their-fight-for-justice/
[50] The Environmental Integrity Project and Earthjustice, *Coming Clean: What the EPA Knows About the Dangers of Coal Ash*, p. 4
[51] The Environmental Integrity Project and Earthjustice, *Poisonous Coverup*, 3 November 2022, p. 179, https://environmentalintegrity.org/wp-content/uploads/2022/10/Poisonous-Coverup-11.03.22.pdf

3.2 COAL ASH THREATS TO THE ENVIRONMENT

GROUNDWATER AND SURFACE WATER

Beyond its impact on human health, coal ash poses serious risks to ecosystems. Direct discharges of leachate or wastewater from coal ash sites, along with the migration of contaminated groundwater, can pollute lakes, rivers, and streams, threatening the wildlife and ecosystems that depend on them.

Discharges of polluted wastewater from coal ash disposal sites are a major source of contamination to rivers and lakes.[52] Coal-fired power plants are the nation's largest contributors of water pollution by toxicity, releasing billions of pounds of contaminants into waterways under the assumption that dilution will minimize harm. In reality, waters near coal ash ponds are often heavily contaminated with arsenic, cadmium, selenium, mercury, and other toxic trace elements.

Figure 13: The three major rivers in Iowa. From top to bottom; Missouri, Des Moines, and Mississippi Rivers

[52] Evans, Lisa, et al., *Coal Ash Primer*, p.11

Figure 14: An aerial view of the Ottumwa Generating Station and its ash ponds, both located near the Des Moines River

In early 2025, it was revealed that the Ottumwa Generating Station in Iowa had been discharging polluted groundwater from its landfill into a nearby wetland. That wetland drains into a creek, ultimately flowing into the Des Moines River, which is upstream of Ottumwa's drinking water intake. They have been dumping this toxic wastewater without a proper permit for decades, contaminating the water with arsenic, cobalt, manganese, and molybdenum, at levels exceeding federal health standards.

While Interstate Power and Light agreed to pause the illegal discharge, the company's temporary solution — trucking the contaminated water to the city's treatment facility — is ineffective and costly.[53] Regulators must hold the utility accountable for implementing a long-term solution to treat coal ash-contaminated water and preventing further risk to the health and safety of Ottumwa and downstream residents.

Figure 15: A person fishing by the Missouri River in DeSoto National Wildlife Refuge, Iowa.

AQUATIC LIFE

Beyond burdening our water systems, studies show that arsenic accumulates in lake sediments and can be released back into the water as temperatures rise in the summer when people are more likely to swim, fish, and recreate in waterways. Contaminants like arsenic and selenium, which show exceedances in several Iowa ash sites, not only threaten aquatic life but also bioaccumulate, moving up the food chain. At high levels, they can deform or kill fish, putting entire species at risk.

Multiple coal ash spills in North Carolina have contaminated vital water bodies such as the Dan River and Sutton Lake with toxic chemicals. Research shows that pollution from Duke Energy's coal ash operations killed more than 900,000 fish and caused deformities in thousands more.[54] Elevated selenium levels led to premature death and severe mutations in aquatic species. These environmental damages have serious consequences not only for ecosystems, but also for outdoor recreation, natural resources, and public health.

[53] Iowa Environmental Council, *Alliant Agrees to Stop Toxic Discharges after Environmental Groups Announce Intent to Sue*, 13 May 2025, https://www.iaenvironment.org/newsroom/council-news/alliant-toxic-discharges
[54] Southern Environmental Law Center, *Duke Energy Coal Ash Pollution Deforms Fish in Sutton Lake*, 3 December 2013, https://www.selc.org/press-release/duke-energy-coal-ash-pollution-deforms-fish-in-sutton-lake/

SOIL

In addition to being stored in landfills and ash ponds, coal ash is often used as a substitute for soil or raw materials in construction and landscaping. The American Coal Ash Association reported that 69% of coal ash produced in 2023 was recycled.[55] Fly and bottom ash, as well as flue gas desulfurization (FGD) materials, are commonly reused in the production of roads, bridges, buildings, in cement and block manufacturing, structural fills, as well as agricultural soils to reduce fertilizer and pesticide runoff.

IN IOWA, NEARLY 200,000 TONS OF COAL ASH WERE REPURPOSED FOR CONSTRUCTION USE IN 2024, ACCORDING TO IOWA UTILITIES' SOLID BY-PRODUCT MANAGEMENT PLANS — ENOUGH TO FILL MORE THAN 60 OLYMPIC-SIZED SWIMMING POOLS.

What is often labeled as "beneficial reuse" has made coal ash a common presence in our everyday environment, including hospitals, parks, schools, and playgrounds.

In Town of Pines, Indiana, coal ash used in a public playground and nearby neighborhood led to surface soil arsenic levels ranging from 450 to nearly 900 parts per million — more than 1,300 times the EPA's safe limit for residential soil.[56] Alarmingly, coal ash was also made available for homeowners as a soil substitute, further contaminating private wells and residential soil.[57]

EPA's risk assessment found that even a small amount of coal ash, when mixed with clean surface soil, results in elevated cancer risks and other health harms. However, the reuse industry lacks effective federal regulations. This encourages utilities to sell their coal ash as substitute for clean fill that further degrades the environment, instead of taking responsibility to properly store or remove toxic coal ash.

Figure 16: While coal ash has been reused as a soil substitute, it raises concerns for long-term soil health - what we put into the ground matters.

[55] American Coal Ash Association, *Beneficial Use of Coal Combustion Products*, May 2025, https://acaa-usa.org/wp-content/uploads/2025/05/25-ACAA-Brochure_5-20v2.pdf
[56] Evans, Lisa and Weinberg, Caroline, *Toxic Coal Ash Used in Neighborhoods Poses Health Risks Even Decades Later*, Earthjustice, 9 October 2024, https://earthjustice.org/experts/lisa-evans/toxic-coal-ash-used-in-neighborhoods-poses-health-risks-even-decades-later
[57] Kukulka, Alexandra, *EPA adjusts some arsenic data for coal ash in Town of Pines after environmental organization finds flaws*, Chicago Tribune, 26 July 2024, https://www.chicagotribune.com/2024/07/26/epa-adjusts-some-arsenic-data-for-coal-ash-in-town-of-pines-after-environmental-organization-finds-flaws/

CONCLUSION

This report aimed to assess the current state of coal combustion residuals in Iowa, with a focus on its impact on public health and the environment. Our analysis found that nine of 12 coal plants in Iowa with CCR disposal sites exceed federal health standards for contaminants such as arsenic, molybdenum, selenium, cadmium, cobalt, radium 226/228, and lithium. Despite these documented exceedances, the utilities have failed to implement adequate corrective actions to clean up coal ash pollution.

These exceedances represent an ongoing risk to public health and the environment, particularly for vulnerable communities living near ash disposal sites. Further research into the long-term impacts of coal ash on local drinking water systems is also needed to fully understand the scope of contamination.

Owners and operators of coal ash disposal sites must be held accountable for the ongoing pollution of Iowa's natural resources. The public health and environmental costs of coal ash contamination have long been externalized onto communities. These harms underscore that continuing to operate dirty coal-fired power is not only unnecessary, but increasingly expensive and unjustified.

Proper coal ash management is not just an environmental obligation; it is a public health necessity to ensure that current and future generations of Iowans can live in safe, healthy communities.

Stronger enforcement of the 2015 CCR Rule, increased transparency in monitoring and reporting, and a comprehensive strategy for implementing the 2024 Legacy CCR and ELG Rules are essential to protect Iowa's residents from coal ash hazards. Rolling back these regulations turns back the clock on hard-fought health and environmental safeguards.

Iowa Environmental Council

505 Fifth Ave, Ste. 850 | Des Moines, IA 50309
515-244-1194 | iaenvironment.org
iecmail@iaenvironment.org

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