



STATE OF **FAILURE**

HOW STATES FAIL TO PROTECT
OUR HEALTH AND DRINKING
WATER FROM TOXIC COAL ASH

37 COAL ASH REGULATORY PROGRAMS THAT PLACE OUR AIR, WATER AND HEALTH IN DANGER

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Cover Photo: Coal ash spill in Forward Township, PA, January 2005.

STATE OF FAILURE

How States Fail to Protect Our Health and Drinking Water from Toxic Coal Ash

Introduction: An Unhealthy Union

Coal ash is the second largest industrial waste stream in the United States. More than 140 million tons of coal ash, comprised of fly ash, bottom ash, boiler slag and flue gas desulfurization (FGD) sludge, are generated annually by the nation's coal-fired power plants. Coal ash contains a long list of carcinogenic and neurotoxic chemicals such as arsenic, lead, hexavalent chromium, cadmium and mercury. The toxic brew is stored in more than a thousand unstable ponds and landfills, which are located in nearly every state in the nation. **Yet most states don't have regulations in place to keep these toxic chemicals safely entombed and out of our air and drinking water.**

Earthjustice and Appalachian Mountain Advocates (AMA) uncovered the details of this state of failure in an exhaustive review of state regulations in 37 states, which together comprise over 98 percent of all the coal ash generated nationally. Our analysis debunks the oft-repeated myth that state programs are doing a good job of safeguarding our air and water and protecting communities from catastrophic dam failure.

Our review reveals that most states do not require all coal ash landfills and ponds to employ the most basic safeguards required at household trash landfills, such as composite liners, groundwater monitoring, leachate collection systems, dust controls and financial assurance; nor do states require that coal ash ponds be operated to avoid catastrophic collapse. In addition, most states allow the placement of toxic coal ash *in* water tables and the siting of ponds and landfills in wetlands, unstable areas and floodplains. When measured against basic safeguards that the U.S. Environmental Protection Agency (EPA) identified as essential to protect health and the environment,¹ state regulatory programs fail miserably to guarantee safety from contamination and catastrophe.

Although no rational person would question the necessity of lining and monitoring coal ash dumps to prevent the escape of toxic chemicals or the need to inspect the nation's aging fleet of nearly 700 coal ash dams, we found in the 37 states examined:

- Only 3 states require composite liners for all new coal ash ponds;
- Only 5 states require composite liners for all new coal ash landfills;
- Only 2 states require groundwater monitoring of all coal ash ponds;
- Only 4 states require groundwater monitoring of all coal ash landfills;
- Only 6 states prohibit siting of coal ash ponds into the water table; and
- Only 17 states require regulatory inspections of the structural integrity of coal ash ponds.

In view of the widespread absence of critical protections in most states, it is absolutely essential

that the EPA establish a national coal ash rule under subtitle C of the Resource Conservation and Recovery Act (RCRA). Currently, the EPA is at the threshold of a decision—it can continue to leave the regulation of this toxic waste entirely to states under subtitle D of RCRA, or it can establish national minimum standards under subtitle C of RCRA. Our analysis shows that it is far too dangerous to continue to allow states sole discretion over coal ash dumping. Nothing short of federally enforceable standards will protect our most vulnerable communities from continuing harm.

Amazingly, even the EPA readily admits that a state-controlled subtitle D scheme will continue to leave most communities without protections against precarious ponds and cancer-causing chemicals in their air and water. In fact, the EPA concludes that, based on the entrenched, decades-long state resistance to regulating coal ash, it expects **less than half** of the total ash generated in the U.S. to be governed by adequate state regulations, unless these regulations are made mandatory under a RCRA subtitle C rule.²

Part I of this report provides a brief overview of the threats posed by the widespread lack of state requirements for coal ash disposal. Part II explains how most state programs do not adequately protect public health and the environment from these threats by specifically identifying the regulatory gaps in 37 states. Part III identifies the 12 worst states; where regulations fail most completely to protect communities located near coal ash disposal sites, particularly coal ash ponds. Criteria for determining the most dangerous states include gross lack of basic regulatory safeguards, widespread dangerous disposal practices (especially wet disposal), and huge amounts of coal ash generated annually. By this measurement, the 12 worst states for coal ash disposal are (in alphabetical order): Alabama, Georgia, Illinois, Indiana, Kentucky, Missouri, North Carolina, Ohio, South Carolina, Tennessee, Texas, and Virginia.

PART I. WHAT'S AT STAKE:

Major Dam Failures, Unhealthy Air & Poisoned Water

Dangerous Dams: Another Accident Waiting to Happen

In Harriman, Tennessee on December 22, 2008, a coal ash dam at the Tennessee Valley Authority (TVA) Kingston Fossil Plant broke, releasing **1.1 billion** gallons of coal ash into the Emory and Clinch Rivers, destroying three homes and damaging a dozen others. By volume, this spill is the largest environmental disaster in U.S. history—100 times greater than the Exxon Valdez oil spill and 5 times larger than the BP Deepwater Horizon spill of 2010. While the cataclysmic disaster in Kingston is well known, few realize that **at least every three years since 2002, major breaks in coal ash ponds have occurred**, causing the release of millions of pounds of toxic sludge to waterways and drinking water sources. For example:

- In Euharlee, Georgia on July 28, 2002, a four-acre sinkhole fractured a coal ash pond at Georgia Power's Plant Bowen and caused the release of more than **2 million**

pounds of arsenic-laden coal ash to the Etowah River, a drinking water source for Rome, Georgia,³ a city with a population of nearly 35,000 residents. The discharge contained arsenic at concentrations more than 100 times the federal safe drinking water standard.

- In Martins Creek, Pennsylvania on August 23, 2005, a coal ash dam broke at PPL Generation's Martin's Creek Power Plant, releasing over **100 million gallons** of ash into the Delaware River.⁴ The spill could not be contained for four days.
- In Martinsville, Indiana on February 14, 2007, internal and external levees breached at the Indianapolis Power and Light's Eagle Valley Generating Station, resulting in a discharge of **30 million gallons** of coal ash sludge liquid to the White River.⁵
- In Martinsville, Indiana on January 30, 2008, a second breach occurred at the 52-year-old earthen dam resulting in another **30 million gallon** discharge of coal ash sludge to the White River.⁶ None of the released ash was recovered.
- And these were not the only major breaks. About a week after the 2008 spill in Kingston, a gypsum pond at TVA's Widow's Creek Fossil Plant in Alabama released 10,000 gallons of coal ash to the Tennessee River.⁷ And just last fall, approximately 10 tons of coal ash flowed from an 8-foot by 22-foot breach in the ash pond at Progress Energy's Sutton Electric Plant near Wilmington, North Carolina.⁸

It has been almost three years since the last massive coal ash disaster—which means the clock is ticking on the next multi-million-gallon spill. Unfortunately, not nearly enough has been done to avert the next disaster. In the years following the Kingston spill, neither the EPA nor any state legislature has overhauled coal ash pond regulations. Hundreds of dangerous ponds remain virtually unregulated, and basic requirements for safe dam and pond management, such as routine inspections and emergency action plans are still not required at ash ponds across the U.S.

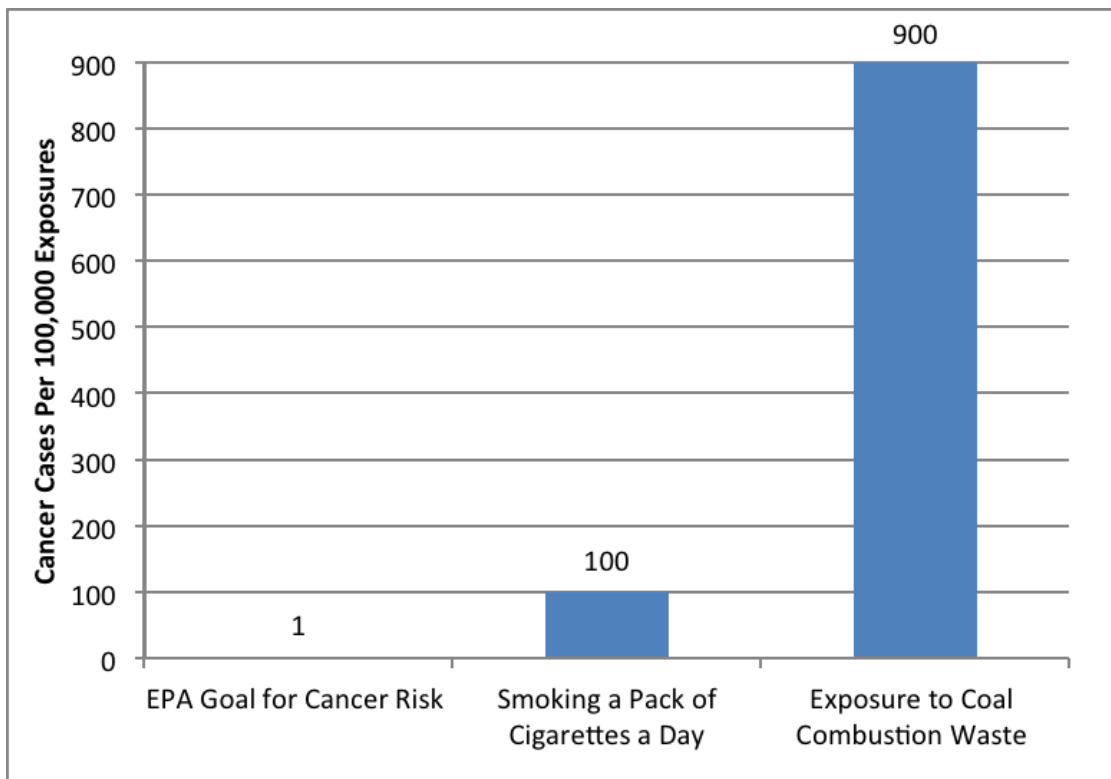
Poisoned Water and Air

While dramatic events like the coal ash spills garner national media attention, dangerous pollutants are quietly seeping from hundreds of improperly lined and unmonitored coal ash dumps into drinking water supplies and streams across the nation, exposing people and wildlife to toxic and cancer-causing substances. The vast majority of states do not require adequate monitoring or liners to stop or even detect the migration of pollution.

Coal ash contains numerous hazardous chemicals, including arsenic, cadmium, hexavalent chromium, lead, mercury and selenium.⁹ The contaminants can cause cancer and damage the nervous system or other organs, especially in children. When coal ash comes into contact with water, these hazardous chemicals leach out of the ash and contaminate drinking water.¹⁰ Over

137 cases of water contamination from coal ash have been documented. This is only the tip of the iceberg, since most dumps are not monitored.¹¹ [Appendix 1 contains a list of the 137 contaminated sites in 35 states.]

In 2010, the EPA published a risk assessment that found extremely high risks to human health and the environment from the disposal of coal ash in waste ponds and landfills.¹² The chart below compares the EPA's findings on the cancer risk from arsenic in coal ash disposed in some unlined waste ponds to several other cancer risks, along with the highest level of cancer risk that the EPA finds acceptable under current regulatory goals.¹³ The risk from coal ash is **2,000 times greater** than that regulatory goal.



Despite the high threat, as this report explains, most states fail to require basic measures to prevent the release of toxic chemicals from coal ash into our air, water supplies, lakes and streams. In fact, most states do not even require coal ash dumps to take measures to detect such releases.

PART II. EXPOSING STATE SECRETS

Grossly Inadequate State Programs

Missing Safeguards at Coal Ash Ponds and Landfills

Below is a damning indictment of the entire nation’s state regulatory programs, revealing a widespread absence of basic safeguards across the U.S. Table 1 indicates how few states impose specific basic safety requirements that should be mandated in all states for all coal ash ponds and landfills.

Table 1. Failure of State Programs to Impose Basic Safeguards at Coal Ash Dumps

REGULATORY SAFEGUARD	STATES THAT FAIL TO REQUIRE SAFEGUARD AT ALL (NEW & EXISTING) PONDS	STATES THAT FAIL TO REQUIRE SAFEGUARD AT ALL (NEW & EXISTING) LANDFILLS	STATES THAT FAIL TO REQUIRE SAFEGUARD AT NEW PONDS	STATES THAT FAIL TO REQUIRE SAFEGUARD AT NEW LANDFILLS
Groundwater Monitoring during operation	35 of 37 states 86% total coal ash*	33 of 37 states 95% total coal ash	35 of 37 states 86% total coal ash	29 of 37 states 83% total coal ash
Composite Liner	<i>No states have retroactive liner requirements</i>	<i>No states have retroactive liner requirements</i>	34 of 37 states 80% total coal ash	32 of 37 states 90% total coal ash
Leachate Collection System	<i>No states have retroactive leachate requirements</i>	<i>No states have retroactive leachate requirements</i>	31 states of 37 76% total coal ash	25 of 37 states 67% total coal ash
Daily Cover	<i>Not applicable</i>	30 of 37 states 72% total coal ash	<i>Not applicable</i>	30 of 37 states 72% total coal ash
Dust Controls	36 of 37 states 87% total coal ash	24 of 37 states 59% total coal ash	36 of 37 states 87% total coal ash	24 of 37 states 59% total coal ash
Run-off Controls	34 of 37 states 84% total coal ash	20 of 37 states 55% total coal ash	34 of 37 states 84% total coal ash	20 of 37 states 55% total coal ash
Separation from Water Table	<i>No states have retroactive siting requirements</i>	<i>No states have retroactive siting requirements</i>	31 of 37 states 74% total coal ash	22 of 37 states 64% total coal ash
Financial Assurance	25 of 37 states 64% total coal ash	19 of 37 states 50% total coal ash	25 of 37 states 64% total coal ash	18 of 37 states 48% total coal ash
Groundwater Monitoring (30 years after closure)	36 of 37 states 97% total ash	32 of 37 states 73% total coal ash	36 of 37 states 97% total coal ash	31 of 37 states 71% total coal ash
Inspection of Pond by State Regulators	24 of 37 states 57% total coal ash	<i>Not applicable</i>	24 of 37 states 57% total coal ash	<i>Not applicable</i>
Regular Reporting by Pond Operators	28 of 37 states 61% total coal ash	<i>Not applicable</i>	24 of 37 states 55% total coal ash	<i>Not applicable</i>
Emergency Action Plan for Coal Ash Ponds	19 of 37 states 44% total coal ash	<i>Not applicable</i>	18 of 37 states 43% total coal ash	<i>Not applicable</i>

*Percentage of total coal ash generated in the U.S. in 2005. Percentage indicates the portion of total coal ash that is not covered by the specific safeguard.

How does your state stack up? Table 2, below, lists the 37 states (comprising 98 percent of the ash generated in the U.S.) and the safeguards required by each state. The requirements in this table address both coal ash landfills and ponds. Appendix 2 of this report provides citations to all state regulatory requirements.

Table 2. State-by-State Failure to Impose Basic Safeguards at Coal Ash Dumps¹⁴

State	Require groundwater monitoring at all new and existing ponds	Require groundwater monitoring at all new and existing landfills	Require composite liners for all new ponds	Require composite liners for all new landfills	Prohibit ash ponds from being constructed in the water table	Prohibit coal ash landfills from being constructed in the water table	Require financial assurance for coal ash ponds	Require financial assurance for coal ash landfills
Alabama	No	No	No	Yes	No	Yes	No	Yes
Alaska								
Arizona	No	No	No	No	No	No	No	No
Arkansas								
California								
Colorado	No	No	No	No	Yes	Yes	Yes	Yes
Connecticut								
Delaware								
Florida	No	No	No	No	No	No	No	No
Georgia	No	No	No	No	No	No	Yes	Yes
Hawaii								
Idaho								
Illinois	No	Yes	No	No	No	Yes	Yes	Yes
Indiana	No	No	No	No	No	No	No	Yes
Iowa	No	No	No	No	No	Yes	No	Yes
Kansas	No	No	No	No	No	No	No	No
Kentucky	No	No	No	No	No	No	No	No
Louisiana	Yes	No	Yes	Yes	No	No	Yes	Yes
Maine								
Maryland	No	No	No	No	No	Yes	No	No
Massachusetts								
Michigan	No	No	No	No	No	Yes	Yes	Yes
Minnesota	No	No	No	No	No	Yes	No	No
Mississippi	No	No	No	No	No	No	No	No
Missouri	No	No	No	No	No	No	Yes	Yes
Montana	No	No	No	No	No	No	No	No
Nebraska								
Nevada	No	Yes	No	Yes	No	Yes	No	Yes
New Hampshire	No	Yes	No	No	No	Yes	Yes	Yes
New Jersey	No	Yes	No	No	No	Yes	No	Yes
New Mexico	No	No	No	No	No	No	No	No
New York	No	No	No	No	No	No	No	No
North Carolina	No	No	No	Yes	Yes	Yes	No	Yes
North Dakota	No	No	No	No	No	No	No	No
Ohio	No	No	No	No	No	No	No	No
Oklahoma	No	No	No	No	Yes	Yes	Yes	Yes
Oregon								
Pennsylvania	Yes	No	Yes	No	Yes	Yes	Yes	Yes
Rhode Island								
South Carolina	No	No	No	No	No	No	No	Yes
South Dakota	No	No	No	No	No	No	No	No
Tennessee	No	No	No	No	No	No	No	No
Texas	No	No	No	No	No	No	No	No
Utah	No	No	No	No	No	No	No	No
Vermont								
Virginia	No	No	No	No	No	No	No	No
Washington	No	No	No	No	No	No	No	No
West Virginia	No	No	Yes	No	Yes	Yes	Yes	Yes
Wisconsin	No	No	No	Yes	Yes	Yes	Yes	Yes
Wyoming	No	No	No	No	No	No	Yes	Yes

Gray indicates data not available

States that exempt on-site storage or allow for variance of safeguards per regulator discretion are classified as lacking the requirement.

*With respect to dry landfills, Tennessee law provides for groundwater monitoring, financial assurances, landfill siting and composite liners merely as a default. Tenn. Comp. R & Regs. 1200-01-07-.01 et. seq. The same law also contains a very broad provision to allow the Commissioner of the Tennessee Department of Environment and Conservation to waive any of these provisions at his discretion. Tenn. Comp. R & Regs. 1200-01-07-.01(5).

Missing Coal Ash Pond Safeguards

Because disposal of coal ash in ponds presents the additional threat of catastrophic failure, which can be deadly to nearby communities and cause significant economic and environmental destruction, basic requirements related to structural stability are presented separately. Table 3, below, presents the components of an adequate pond and dam safety program and indicates how many states fall short. Appendix 3 of this report provides the corresponding state regulatory citations.

Table 3. Essential Coal Ash Pond Safeguards Missing in State Regulatory Programs¹⁵

State	Requires Dam Design/Supervision by an Engineer	Size Threshold for Regulation	Requires Frequent Visual Inspection By Operator	Geotechnical/Engineering Inspections by Operator	Requires Regular Reporting (*construction period only)	Requires Inspection by Regulators	Requires Emergency Action Plan	Requires Inundation Mapping	Requires Certification of Construction	Requires Meeting Design Standards and Specifications	Bond	No. of Dams	No. of Dams Rated Significant or High Hazard	No. of Dams over 25 ft or 500 acre-feet	Percentage of Dams with Hazard Ratings	Number of Dams rated "Poor"	Percentage of Dams Inspected by Regulators in Last 5 years
Alabama	No	None	No	None	No	None	No	No	No	No	No	15	5	13	47%	3	0%
Alaska																	
Arizona	Yes	Large	Yes	1-5 yrs	Frequent*	None	Yes	Yes	Inspection†	Yes	Yes	15	10	8	66%	0	66%
Arkansas																	
California																	
Colorado	Yes	Medium	Yes	Infrequent	Infrequent	None	Yes	Yes	Yes	Yes	Yes	40	0	1	15%	0	5%
Connecticut																	
Delaware																	
Florida	No	Large	No	None	None	None	No	No	No	No	No	9	0	1	89%	0	100%
Georgia	Yes	Very Large	Yes	For Permit	Only if Problem	None	No	No	No	Yes	No	29	9	19	34%	1	7%
Hawaii																	
Idaho																	
Illinois	Yes	Medium	Operation Plan*	For Permit	Frequent	None	Partial	No	Yes	Yes	Yes	38‡	2	16	24%	0	0%
Indiana	No	Very Large	No	None	None	1-5 yrs	No	No	No	Yes	No	71	4	26	6%	25	8%
Iowa	Yes	Medium	Annual	As Follow Up	Frequent	1-5 yrs	No	No	Inspection	Yes	Yes	43	0	3	0%	0	0%
Kansas	Yes	Large	No	3-5 yrs	Frequent*	None	Yes	Yes	Yes	Yes	No	13	1	5	8%	0	15%
Kentucky	Yes	Large	No	None	Infrequent	1-5 yrs	No	No	Yes	Yes	No	43	12	21	54%	0	28%
Louisiana	Yes	Large	Operation Plan	None	Only if Problem	None	Yes	Yes	No	Yes	No	11	0	8	0%	3	0%
Maine																	
Maryland	Yes	Small	No	None	Failure Only	None	Partial	No	Yes	Yes	No	0	0	0	100%	0	N/A
Massachusetts																	
Michigan	Yes	Small	No	3-5 yrs	Infrequent	None	Yes	Yes	Inspection	Yes	Yes	10	0	6	10%	0	90%
Minnesota	Yes	Large	Operation Plan	None	Infrequent	1-8 yrs	Partial	No	Yes	No	No	21	3	10	19%	2	19%
Mississippi	Yes	Medium	Yes	For Permit	Frequent	None	Yes	No	Yes	Yes	No	1	0	1	0%	0	100%
Missouri	No, if Permit	Very Large	Operation Plan	For Permit	Infrequent	None	Yes	No	Yes	Yes	No	32	0	15	0%	0	0%
Montana	Yes	Large	Operation Plan	5 yrs	Infrequent	None	Partial	Yes	Yes	Yes	Yes	9	3	2	100%	0	0%
Nebraska																	
Nevada	No	Medium	No	None	None	None	No	No	No	No	No	8	8	0	100%	0	0%
New Hampshire	Yes	Small	Operation Plan	None	Infrequent	1-5 yrs	Yes	Yes	Yes	Yes	No	0	0	0	100%	0	N/A
New Jersey	Yes	Small	No	1-10 yrs	Frequent*	None	Yes	Yes	Yes	Yes	No	0	0	0	100%	0	N/A
New Mexico	Yes	Large	Operation Plan	5 yrs	Infrequent	None	Yes	Yes	Yes	Yes	No	8	3	2	50%	0	0%
New York	No	None	No	None	No	None	No	No	No	No	No	6	0	0	0%	0	100%
North Carolina	Yes	Medium	Operation Plan	None	Infrequent	1-5 yrs	No	No	Yes	Yes	No	26	18	26	100%	6	19%
North Dakota	Most	Large	Operation Plan	None	Frequent	None	No	No	Yes	No	Yes	16	0	4	31%	0	6%
Ohio	Yes	Medium	Operation Plan	5 yrs	Frequent	5 yrs, at least	Yes	Yes	Yes	Yes	Yes	29	17	22	72%	10	66%
Oklahoma	Yes	Large	No	1-5 yrs	Infrequent	1-5 yrs	Yes	Yes	Yes	Yes	No	5	0	3	0%	0	100%
Oregon																	
Pennsylvania	Yes	Large	Yes	Annual	Frequent	None	Yes	No	Yes	No	Yes	31	5	7	39%	1	61%
Rhode Island																	
South Carolina	Yes	Large	Operation Plan	None	Frequent*	None	Yes	Yes	Yes	Yes	No	22	0	13	4%	0	0%
South Dakota	Yes	Large	No	None	None	1-5 yrs	Partial	No	Yes	No	No	0	0	0	100%	0	N/A
Tennessee	No	None	No	None	No	No	No	No	No	No	No	18	14	16	83%	8	0%
Texas	Yes	Large	Operation Plan	Annual	Frequent	5 yrs for some	Yes	No	Yes	Yes	No	31	0	6	0%	3	26%
Utah	Yes	Medium	Operation Plan	None	Frequent	5 yrs for some	Yes	Yes	Inspection	Yes	No	6	0	4	83%	0	0%
Vermont																	
Virginia	Yes	Large	Operation Plan	Annual	Infrequent	None	Yes	Yes	Yes	Yes	No	11	2	9	73%	1	36%
Washington	Yes	Medium	Operation Plan	Annual	Frequent	1-5 yrs	Yes	Yes	Yes	Yes	No	0	0	0	100%	0	N/A
West Virginia	Yes	Large	Yes	1-7 yrs	Infrequent	None	Yes	Yes	Yes	Yes	No	12	10	9	83%	0	83%
Wisconsin	No	None	No	None	No	None	No	No	No	No	No	18	0	0	0%	0	6%
Wyoming	Yes	Small	No	None	Infrequent	Every 5+ yrs	No	No	No	No	No	17	3	9	41%	0	18%

† Requires approved operation and monitoring plan but regs do not specify a schedule

‡ Requires a post-construction inspection

‡ 38 dams reflects US EPA survey; according to Illinois EPA, there are 83 coal ash ponds in Illinois

Colors	Good	Needs Improvement	Poor	Bad or Absent	Data Unavailable
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Inconsistency Breeds Endangerment

State regulations governing coal ash are often wildly inconsistent with each other as well as internally inconsistent. These inconsistencies lead to the unequal protection of American communities from toxic waste. Fairness requires that federal waste regulations establish a floor of mandatory safeguards to ensure that all citizens, no matter where they live, are protected from coal ash.

Inconsistent state regulations lead to **cross-border dumping**. For example, lack of regulations in Alabama has made that state a coal-ash dumping ground. In fact, the Arrowhead landfill in Perry County, Alabama, which has received about 5 million tons of coal ash from Tennessee since 2009, is licensed to receive ash from no less than 33 states.¹⁶ Inconsistent state regulations also result in **environmental injustice**-- the states with the most lax coal ash regulations are the states where coal ash dumps are most likely to disproportionately impact low-income communities and communities of color.

Internally, states also leave their citizens unprotected. For example, Wisconsin's regulation of wet ash disposal lacks many of the protections afforded to dry disposal in the state. Despite the existence of 18 coal-ash impoundments in Wisconsin, these dams are not included within the scope of the state's dam safety program.¹⁷ This means that there are no structural safety or dam integrity regulations applying to coal-ash dams in the state. Likewise state regulators do not monitor the construction or operation of Wisconsin coal-ash dams. As a result, state regulators have inspected only one of the state's 18 dams within the last five years.

In the case of Florida, your protection from dangerous coal ash ponds depends on where you live within the state. Florida is a complex patchwork of local rules promulgated by five individual water management districts.¹⁸ While three of these districts require a professional engineer to design or certify plans for a new dam, two have no such requirement.¹⁹ Only one district requires regular inspections by regulators, and none of the districts require emergency action plans to protect human life during a disaster.²⁰ While the state of Florida does require permits for dams constructed within the state, the terms of those permits are left up to the individual water management districts.²¹ The result of all of this—you should feel much safer living next to a dam in Florida Northwest than along the Suwanee River.

The only way to cure these inconsistencies is for EPA to establish mandatory federal regulations under RCRA that apply equally in all states. This is a national problem that demands a national solution.

PART III.

The 12 Most Dangerous States

The 12 states described below make up about 50 percent of the yearly generation of coal ash—in total, 70.6 million tons of coal ash each year are generated in these states.²² Together the 12 states host at least 217 coal-fired power plants.²³ All of these states dispose of a substantial amount of their waste in over 350 coal ash ponds, the most dangerous type of coal ash disposal.²⁴ **In general, the weakest state programs are found in the states that produce the largest quantities of toxic waste and employ wet disposal, the most dangerous method of disposal.**

Below are brief descriptions of the 12 most dangerous states.²⁵ Unless otherwise noted, the source for information for the number, age and size of coal ash ponds is EPA's Database of Survey Responses from the Agency's 2009–2011 "Information Request Responses from Electric Utilities."²⁶ The source for information for the condition of coal ash dams and ponds is EPA's "Coal Combustion Residuals Impoundment Assessment Reports," including the contractor reports assessing the structural integrity of numerous coal ash impoundments.²⁷

NATIONAL INVENTORY OF DAMS CRITERIA: "HIGH," "SIGNIFICANT," AND "LOW"¹

The hazard potential ratings refer to the potential for loss of life or damage if there is a dam failure.

- **High Hazard Potential:** Dams assigned the high hazard potential classification are those where failure or mis-operation will probably cause loss of human life.
- **Significant Hazard Potential:** Dams assigned the significant hazard potential classification are those dams where failure or mis-operation results in no probable loss of human life, but can cause economic loss, environment damage, disruption of lifeline facilities, or impact other concerns.
- **Low Hazard Potential:** Dams assigned the low hazard potential classification are those where failure or mis-operation results in no probable loss of human life and low economic and/or environmental losses.

1. Alabama

Coal ash Generation: 3,210,337 tons annually²⁸

Rank for Coal Ash Generation in US: 14th

Number of Ash Ponds: 15

Number of Documented Sites Contaminated by Coal Ash: 2

Alabama represents the worst of the worst when it comes to coal-ash disposal. First, Alabama has **no** laws or regulations on the books to specifically ensure the safety of the state's coal ash dams. It is the only state in the country without such laws. Because there are no federal laws to ensure dam safety, this essentially means that Alabama dams are **completely unregulated**. Until 2011, Alabama also completely exempted coal ash disposal in landfills. Consequently, coal ash from its ten coal-fired plants has been dumped mostly in unlined, unregulated, and unmonitored ponds and landfills. Given the historical absence of controls on coal ash disposal, it is outrageous that more than 5 million tons of ash from the Kingston TVA spill was shipped to Alabama for disposal.²⁹

State oversight of Alabama's dangerous dams is also totally missing. None of the state's 15 coal ash dams have been subject to state regulatory inspections in the past five years. After inspections by the EPA and TVA contractors in 2009–2010, five of the dams were given poor ratings and two had to make immediate repairs to improve stability. Alabama dams are, on average, the tallest and largest coal ash dams in the 12 most dangerous states. The average height is nearly 7 stories tall (over 66 feet), and the average surface area is greater than 192 acres (about 151 football fields)—more than twice the average of coal ash ponds in the other nine states. These large ponds pose high threats—two of Alabama's dams are high hazard, and 11 are significant hazard dams. Lastly, these ponds are **old**—the average age of an Alabama coal ash pond is 40 years. According to the EPA, that's the estimated lifespan, but Alabama utilities have announced no retirement plans.³⁰

Alabama's coal ash ponds disproportionately impact low-income communities and communities of color. The EPA statistics show that more than 40 percent of the citizens living near coal ash ponds in Alabama are non-white. Also, about 25 percent of nearby residents are below the poverty line, which is more than twice the national average poverty rate of 11.9 percent.

2. Georgia

Coal ash Generation: 6,077,700 tons annually

Rank for Coal Ash Generation in US: 8th

Number of Ash Ponds: 29

Number of Documented Sites Contaminated by Coal Ash: 1

Georgia is the eighth largest coal ash-producing state, and, in gross disregard to the safety of its citizens, it has a hands-off approach to coal ash at its 29 coal ash ponds. Georgia's role in ensuring the safety of coal ash impoundments basically stops at dam construction. There is

nothing in Georgia law to specify how often inspections must occur, and in practice, regulatory inspections of Georgia’s numerous aging ponds are exceedingly rare—only 7 percent of Georgia’s dams have been inspected by the state in the past five years, yet 13 of the state’s 29 ponds are at least 40 years old. Georgia requires no emergency action plans, no inundation maps to determine what areas would be impacted in the event of a breach, and no bonds to cover closure or cleanup.

The threat from coal ash in Georgia is substantial. The state ranks second among the 12 most dangerous states in total surface area covered by impoundments (2,218 acres—almost three times the size of Central Park). Yet the state does not require liners or monitoring wells at coal ash ponds—despite the fact that many of the ponds are built on unstable, karst terrain.³¹ The state does not even prohibit the siting of landfills and ponds directly in the water table. Of Georgia’s 29 coal ash ponds, two are rated high hazard and 11 are rated significant hazard. So far, Georgia has one dam rated poor by EPA inspectors—the 25-year-old, 54-acre ash pond at Georgia Pacific’s Plant Hammond in Coosa, GA, where the percent of citizens living below the poverty line exceeds the county average.

3. Illinois

Coal ash Generation: 3,856,748 tons annually

Rank for Coal Ash Generation in US: 11th

Number of Ash Ponds: 83

Number of Documented Sites Contaminated by Coal Ash: 12

State regulatory control of Illinois’ many large coal ash ponds is sorely missing, and the threat to Illinois citizens is substantial. The state has 68 operating coal ash dams and 15 ponds that no longer accept waste, but which still pose a danger to adjacent communities.³² In fact, counting these retired ponds, Illinois ranks first in the nation in the number of coal ash ponds with 83. Even without including the 15 retired ponds, Illinois ranks second among the 12 most dangerous states in total surface area for its coal ash impoundments (over 3.3 square miles of ponded ash, which is more than 86 times the size of Chicago’s famed Millennium Park). A recent inventory by the Illinois Environmental Protection Agency (IEPA) revealed that only about a third of Illinois ponds are lined or monitored.³³ This is no surprise because Illinois regulations do not require composite liners or groundwater monitoring at every coal ash pond and landfill. According to a 2010 assessment by the IEPA, 10 Illinois power plants with active ponds were characterized as having “high” to “very high” potential to contaminate a drinking water source. According to the U.S. EPA³⁴ and the IEPA,³⁵ coal ash has already contaminated water at 15 power plant sites in the state.

Disturbingly, the structural integrity of Illinois coal ash ponds remains unknown. Because there is no regular inspection requirement of ponds by state regulators, few of the state’s 68 operating dams have been inspected by the state in the past five years. The EPA has inspected only four of the state’s dams. In addition, only 10 of Illinois’ ponds have been assigned hazard ratings, yet at least seven of the unrated ponds are taller than 25 feet.³⁶ Compounding Illinois’

problem is the lack of a requirement for area inundation maps—a key component of proper emergency planning because an inundation map indicates the area of probable flooding in the event of a dam failure. This is an environmental justice issue in Illinois, where approximately one-fifth of residents living near coal ash ponds are below the poverty line.

4. Indiana

Coal ash Generation: 8,798,844 tons annually

Rank for Coal Ash Generation in US: 6th

Number of Ash Ponds: 71

Number of Documented Sites Contaminated by Coal Ash: 9

Indiana citizens have good reason to worry about coal ash. Indiana is sixth in the nation in coal ash generation, and it has more operating coal ash ponds (71) than any other state in the U.S.³⁷ The state also has an alarmingly poor record of dam safety and water contamination and exceedingly lax regulations, even when compared to the other eleven most dangerous states. For example, in Indiana:

- A staggering 25 of the 41 coal ash dams inspected by the EPA to date were given a “poor” rating for structural integrity;
- There have already been two major 30 million gallon spills from coal ash ponds at the Eagle Valley Generating Station in Indianapolis and two spills at the R.M. Shafer Power Station;
- Contaminated groundwater has been documented at eight sites, including in the Town of Pines, which has been designated a Superfund site;³⁸
- Only 11 percent of the state’s ponds have had state regulatory inspections in the past five years; and
- Less than half of the state’s coal ash dams have hazard ratings.

State regulations could hardly be worse. First, there are shockingly few requirements for ensuring dam safety in Indiana, including no requirement that the dam be designed by a professional engineer, no requirement to inspect dams, no reporting requirements, no inundation mapping, no emergency plans required, and no bond requirements.

Similarly, state law fails to protect drinking water and surface water from the leaching of toxic chemicals from ash. Indiana regulations do not require groundwater monitoring or composite liners at all ponds and landfills, nor do the regulations prohibit dumping directly into the water table. In fact, state regulators are clear in their opposition to such common-sense protections. In 2010, the Commissioner of the Indiana Department of Environmental Management denied that coal ash shares the “harmful characteristics” of other types of hazardous waste, and he urged EPA to weaken its proposed subtitle D standards to allow coal ash to be placed below the water table.³⁹ The eight contaminated sites in Indiana, including the poisoning of an entire town’s drinking water aquifer, the large ash pond spills, and the 25 ponds with “poor” ratings are the direct result of the state’s lax oversight.

5. Kentucky

Coal ash Generation: 9,197,567 tons annually

Rank for Coal Ash Generation in US: 5th

Number of Ash Ponds: 43

Number of Documented Sites Contaminated by Coal Ash: 4

Kentucky is on the most dangerous list because the threat from coal ash is enormous in this leading coal-burning state; yet state regulations require exceedingly little from owners and operators of coal ash ponds and landfills. Kentucky is fifth in the nation in coal ash generation, and it has 43 operating coal ash ponds—21 of which exceed a height of 25 feet or impound more than 500 acre-feet of ash. In fact, Kentucky has the third largest coal ash storage capacity (more than 64,000 acre-feet) in the nation. This is equivalent to covering the Churchill Downs Racetrack, home to the Kentucky Derby, is held each year, under 800 feet of toxic sludge. Kentucky ties Ohio for the most high hazard dams (eight). It should concern Kentucky residents that professional engineers did not design 20 of the state's 43 dams nor did they construct 27 of them. Only 15 of Kentucky's dams have been inspected by the EPA to date, and, by admission of the power plant owners, engineers do not presently monitor 30 of the 43 dams.

State oversight of the coal ash dams is also minimal. There are no regular reporting requirements after construction, except for certificate renewal every five years. Operators are not given an inspection frequency and are not required to post a bond to ensure safe operation and maintenance or even completion of dam construction. Finally, Kentucky does not require emergency action planning or inundation mapping, which is astounding given the presence of eight high hazard dams that are likely to take human lives if they break and six significant hazard dams that would cause substantial economic and/or environmental damage in the event of failure.

Groundwater contamination from coal ash dumping has been documented at four sites in Kentucky. Many more sites are likely contaminated but not detected, because the state does not require composite liners at all ponds and landfills nor does the state prohibit dumping directly into the water table. Yet because Kentucky regulations do not require groundwater monitoring at all coal ash dump sites, the extent of the contamination is largely unknown. We do know, however, that by the EPA's calculation, **100 percent** of the toxic chemical releases to land of arsenic, chromium and mercury in Kentucky come from disposal of coal ash in landfills and ponds.⁴⁰

6. Missouri

Coal ash Generation: 2,679,742 tons annually

Rank for Coal Ash Generation in US: 16th

Number of Ash Ponds: 32

Number of Documented Sites Contaminated by Coal Ash: 4

In Missouri, only the largest, most dangerous of the state's 32 coal ash ponds are regulated for dam safety. Amazingly, Missouri allows ponds impounding more than 170 million gallons of coal ash to escape safety regulations. This amount is roughly equivalent to 35,000 bathtubs full of coal ash or an area the size of Washington's National Mall covered in sludge about two feet deep. Furthermore, Missouri has not assigned a hazard rating to a single coal ash impoundment in the state. The EPA has inspected only two of Missouri's 32 dams and rated those dams as high hazard and significant hazard. Undoubtedly, many of Missouri's other ponds are also potentially dangerous because 14 ponds are over 25 feet high or impound more than 500 acre-feet. Yet state regulators have inspected only one dam in the past five years, despite the fact that about half the dams were not constructed by professional engineers and fewer than half are currently monitored by one.

Other key safety regulations to protect the public are also missing in Missouri. State regulations do not require regular inspections by dam safety officials. Missouri regulations also do not require groundwater monitoring or composite liners at all ponds and landfills, nor do the regulations prohibit dumping directly into the water table or require bonds to ensure cleanup at coal ash landfills.

These deficiencies are threatening Missouri's environment. The Missouri Department of Natural Resources (DNR) has known since 1992 that a 154-acre, unlined ash pond at Ameren's Labadie plant – the largest coal plant in the state and the 14th largest coal plant in the nation – has been leaking some 50,000 gallons per day. DNR has not required groundwater monitoring or cleanup, despite the threat to the local population that relies on groundwater for drinking water and agricultural use. DNR has also allowed the plant to continue operating under a 1994 NPDES permit, which technically expired in 1999, without issuing an updated renewal permit to require groundwater monitoring and cleanup. Missouri citizens deserve better.

7. North Carolina

Coal ash Generation: 5,504,531 tons annually

Rank for Coal Ash Generation in US: 9th

Number of Ash Ponds: 26

Number of Documented Sites Contaminated by Coal Ash: 10

Every single one of the North Carolina's 26 coal ash dams is enormous. The average dam height in North Carolina is more than six stories tall (62 feet), and the total storage capacity is nearly 65,000 acre-feet—enough toxic waste to flood an area nine times the size of Central Park one foot deep. This means that it is essential that North Carolina have strict regulations for dam safety. Unfortunately, the state does not require operators to submit regular reports to regulators, have emergency action plans, generate inundation maps, or post bonds in the case of dam failure.

Only 19 percent of North Carolina's ponds have been inspected by a state regulator in the past five years. Over the last two years, however, the EPA inspected 22 of North Carolina's dams and

gave six of the ponds a poor rating. One of these high hazard poor-rated dams, at Progress Energy's Asheville Electric Plant, is located in a densely populated area with nearly 1,800 residents within a one-mile radius. The population near the plant also exceeds state averages for low income and minority residents.

North Carolina also does not require groundwater monitoring nor composite liners at all its ash ponds. North Carolina's lax regulation of coal ash ponds and landfills has resulted in 10 dump sites where local communities are threatened because groundwater or surface water has been contaminated with toxic pollutants such as arsenic, selenium and boron.⁴¹

8. Ohio

Coal ash Generation: 10,429,446 tons annually

Rank for Coal Ash Generation in US: 3rd

Number of Ash Ponds: 29

Number of Documented Sites Contaminated by Coal Ash: 7

Despite the fact that Ohio is the third largest producer of coal ash in the U.S., Ohio has one of the most lax regulatory programs in the nation. Ohio excludes all coal ash from regulation by classifying it as "nontoxic."⁴² Due to lax state regulations, which fail to require composite liners at all coal ash ponds and landfills, water contamination has occurred at seven coal ash dump sites across the state. Many other sites in Ohio may also be poisoned but remain undetected, because the state does not require groundwater monitoring at all sites.

We do know, however, that something has gone terribly wrong at Ohio's huge coal ash ponds. The EPA gave a poor rating to 10 Ohio dams, greater than a third of Ohio's 29 coal ash dams. Three poorly-rated dams at Dayton Power and Light's J.M. Stuart Station in Aberdeen are located in the most densely populated area of any of the 55 dams in the U.S. found by the EPA to be in poor condition. The J. M. Stuart dams have 2,265 residents within a 1-mile radius. The population near the Stuart Station also exceeds state averages for low income and minority populations.

Ohio citizens have great reason to be concerned. The average dam height in Ohio is more than five stories tall (52.6 feet), and the total storage capacity is the third largest of the 12 worst states (over 73,000 acre-feet)—enough to flood 114 square miles in sludge a foot deep. Sixteen (over half) of Ohio's ponds have dams that are rated either high or significant hazard. Ohio likely has more high and significant hazard dams, since five not-yet-rated dams are over 25-feet high (with four over 40-feet high). Nine of Ohio's 29 dams were not designed by a professional engineer, and 10 of the state's dams were not constructed by one. The state also has some of the oldest dams of the 12 states. The average age of Ohio coal ash dams is 39 years.

9. South Carolina

Coal ash Generation: 2, 178, 359 tons annually

Rank for Coal Ash Generation in US: 21st

Number of Ash Ponds: 22

Number of Documented Sites Contaminated by Coal Ash: 4

A striking proportion of the 22 ash dams in South Carolina – over 50% -- are large capacity impoundments or have dam heights above 25 feet. Despite the fact that the breach of any of these dams would undoubtedly inundate a large area, the state does not require hazard ratings. Recent inspections by EPA contractors discovered that six of the state’s unrated dams are “significant hazard.”⁴³ Compounding this problem, the state does not require **any** state regulatory inspections and **none** of the dams in South Carolina have been subject to a state regulatory inspection within the past five years. While South Carolina has a fair set of regulations for the design and construction of new dams, its laws are deficient when it comes to inspection and oversight of existing dams. Annual geotechnical inspections should be required of the operators, and experienced regulators need to take a more active oversight role. With so many large dams in the state, it is imperative that regulators beef up both the contents and application of dam safety regulations – it is the only way to minimize the threat to the environment and people of South Carolina.

To date, there is evidence that at least five coal ash dump sites in South Carolina have contaminated groundwater or surface water with arsenic and other dangerous chemicals. In fact, one of the polluted and most thoroughly studied cases of coal ash contamination is in the Savannah River in South Carolina. A power plant discharged coal ash into ponds that overflowed into the Savannah River floodplain for more than a decade. Scientists found severe ecological damage, especially to amphibians, which have experienced mutations and die-offs.⁴⁴ Concentrations of arsenic, selenium, and strontium in some amphibians were as much as 11-35 times higher than in the same species collected from unpolluted wetlands. Arsenic was also found leaking from ponds at the SCE & C Wateree Station, SCE&G Urquhart Station and the SC Public Service Authority’s Grainger Station.⁴⁵ At the Grainger Station, arsenic was found up to 91 times the drinking water standard in groundwater near the Waccamaw River. These releases are not surprising since South Carolina regulations do not require composite liners for their ponds and landfills.

10. Tennessee

Coal ash Generation: 3,240,120 tons annually

Rank for Coal Ash Generation in US: 13th

Number of Ash Ponds: 18

Number of Documented Sites Contaminated by Coal Ash: 7

In 2008, the cataclysmic TVA disaster graphically demonstrated just how dangerous it is to live next to a coal ash pond. The collapse of a dam at TVA’s Kingston Fossil Plant destroyed a riverside community, and the decade-long cleanup is estimated to cost more than \$1 billion.

The disaster in Harriman, Tennessee spurred TVA to evaluate its other large coal ash dams (24 in total) in TVA's three-state region. At TVA's seven Tennessee plants, inspectors found that half the ponds (eight) failed to meet federal stability standards established by the U.S. Army Corps of Engineers.⁴⁶ Remedial action was required at all eight dams to increase stability.

The collapse of the Kingston dam was a direct result of the absence of state oversight and maintenance at Tennessee's coal ash dams. There is **no set of rules that apply to the structural stability and safety of Tennessee's coal ash dams**. While the state does have a comprehensive set of dam safety laws and regulations, **it specifically exempts coal-ash dams from its scope**. While this would be shocking in any state, it is abhorrent in Tennessee, which suffered the worst coal-ash disaster, and arguably one of the worst environmental disasters in history. Given the absence of state regulations, it is not surprising that prior to the dam failure, none of the dams in Tennessee had been subject to an official regulatory inspection within the previous five years.

Similarly, Tennessee regulations fail to prevent contamination of water via the slow escape of chemicals from landfills and impoundments. With respect to dry landfills, Tennessee law provides for groundwater monitoring, financial assurances, landfill siting and composite liners merely as a default.⁴⁷ The same law also contains a very broad provision to allow the Commissioner of the Tennessee Department of Environment and Conservation to waive any of these provisions at his discretion.⁴⁸ Eight sites in the state have been documented with contamination of surface and/or groundwater from coal ash. One of the most polluted is the Superfund site at the Oak Ridge Y-12 Plant where arsenic and selenium releases led to fish deformities and a widespread extirpation of aquatic life.⁴⁹

11. Texas

Coal ash Generation: 13,165,728 tons annually

Rank for Coal Ash Generation in US: 2nd

Number of Ash Ponds: 31

Number of Documented Sites Contaminated by Coal Ash: 5

Texas is the second largest generator of coal ash in the U.S., but the laws in Texas governing the disposal of ash are among the worst. Texas excludes from regulation all coal ash that is disposed of "on-site," which is defined in Texas as anywhere within 50 miles of the power plant!⁵⁰ Texas also excludes from regulation all coal ash that is destined for "beneficial" reuse.⁵¹ This is a big problem because in Texas "beneficial" reuse includes minefilling—the dumping of industrial waste in active and abandoned coal mines. This type of dumping often occurs directly into aquifers and has resulted in significant contamination in several states.⁵²

The harmful release of pollutants to water and air from landfills is highly likely, because at least seven Texas coal plants employ *no* liners or dust controls at their landfills.⁵³ In fact, dangerous contamination of drinking water is occurring at the Lower Colorado River Authority, Fayette Power Project in La Grange, where coal ash is polluting groundwater with arsenic, molybdenum

and selenium exceeding state standards-- which has required the Texas Commission on Environmental Quality to warn neighboring landowners.⁵⁴

There is also abundant evidence of dangerous chemical releases from coal ash ponds in Texas. Texas coal ash ponds are not especially large or high, but they are numerous (31). Discharges from coal ash ponds caused the contamination of at least three reservoirs with selenium- the Brandy Branch Reservoir in northeastern Texas along the Louisiana border, the Welsh Reservoir northeast of Dallas, and the Martin Lake Reservoir southeast of Dallas. Coal ash discharges poisoned the water, caused major fish kills, and contaminated fish with high levels of selenium that lasted for over a decade. And the harm was not limited to fish. The contaminated fish threatened the health of those who fished and consumed them. In response, the Texas Department of Health issued fish consumption advisories, in one case warning people to eat no more than eight ounces of fish from the reservoir per week. Another advisory urged children under six and women who were pregnant or might become pregnant not to consume any fish from the reservoir whatsoever. That advisory remained in effect for 12 years.⁵⁵ In addition, there is evidence that the toxin entered the food chain resulting in elevated selenium concentrations in birds nesting near the lakes. Even now, decades after the releases occurred, selenium concentrations in fish remain as high as 1.8 to 27 times the national average in two of the three reservoirs, according to 2009 Health Consultation by the Agency for Toxic Substances and Disease Registry.⁵⁶

Lastly, the legacy of poor regulatory authority in Texas was evident in the determination in March 2011 by U.S. EPA that three coal ash ponds were in “poor” condition.⁵⁷ Among the problems observed were erosion, seeps and the absence of engineering studies that indicate the structural stability of the ponds. EPA also noted that the absence of documented inspections and emergency action plans.

12. Virginia

Coal ash Generation: 2,388, 527 tons annually

Rank for Coal Ash Generation in US: 18th

Number of Ash Ponds: 11

Number of Documented Sites Contaminated by Coal Ash: 4

Coal ash from Virginia’s 16 coal-fired power plants has created a substantial toxic legacy in the Commonwealth. Coal ash contamination has generated at least two federal Superfund sites in Virginia,⁵⁸ including one on the National Priority List of the nation’s most contaminated Superfund sites,⁵⁹ as well as two other sites where coal ash contaminated groundwater⁶⁰ or caused extensive ecological damage.⁶¹ Despite the history of coal ash contamination, Virginia regulations do not require composite liners, groundwater monitoring and daily cover at every coal ash pond and landfill.

The legacy of mismanagement extends to oversight of the structural integrity of Virginia’s large coal ash ponds, as well. Virginia’s coal ash dams are some of the oldest, having an average age

of 40 years. Virginia has 11 ash ponds, including five significant hazard coal ash dams, with an average height of more than five stories. The EPA gave one of Virginia’s significant hazard dams a poor rating and asked the owner, Dominion Virginia Power, to take immediate remedial action at the Chesapeake Energy Center to address the “urgent action items” that “require immediate attention to ensure the structural integrity of the impoundment in the near term.”⁶² Serious problems like these may well escape detection in Virginia because the Commonwealth does not require inspection of dams by state regulators and requires only infrequent reporting by owners. Virginia also does not require a bond to ensure safe operation and maintenance or even completion of dam construction.

But Virginia’s lack of regulatory control over coal ash is playing with fire. One hundred percent of the releases to land of arsenic, chromium and selenium, and over 92 percent of the releases to land of mercury, come from coal ash alone.⁶³

[DIS]HONORABLE MENTION

The Wild West: Arizona, Montana, New Mexico, And Utah

Not only is the situation dismal in the 12 worst states, but some of the largest coal ash-generating states in the country have no or nearly no coal ash regulatory programs—and many are found in the arid west, where water is scarce. Two states—New Mexico and Utah¹—exempt coal ash completely from regulation as a solid waste, leaving the disposal of coal ash virtually unregulated. Montana and Arizona are not much better. In these four arid states, with scarce and valuable underground sources of drinking water, very few safeguards are required.

CONCLUSION

The Myth is Busted

States Are Not Doing A “Good Job”

Clearly, federal coal ash regulations are needed to protect communities from leaking and unstable landfills and ponds. The states have had decades to get this right—but most states still have huge and dangerous gaps in their programs. The 37 state programs we examined, which cover 98 percent of all ash generated in the nation, largely fail to protect their citizens’ drinking water, air and environment from some of the most toxic chemicals known to man. The lack of adequate state regulatory programs is a major rationale for a strong federal rule under subtitle C. Not only would a subtitle C rule set mandatory minimum national standards for all states to enforce, it would also provide the EPA with authority to enforce such regulations if states are

unable or unwilling to do so. Poisoned water, foul air and falling dams are not the inevitable consequences of coal ash disposal. These are threats that can and must be minimized by regulatory standards that require reasonable safeguards be followed. The states have failed miserably at this straightforward task and have placed the nation's most vulnerable communities at great risk. There is a solution, and the EPA proposed it over a year ago—regulation of coal ash as a hazardous waste under subtitle C of RCRA.

¹ 75 Fed. Reg. 35,128, 35,157 (June 21,2010).

² U.S. Environmental Protection Agency, Regulatory Impact Analysis For EPA's Proposed RCRA Regulation of Coal Combustion Residues (CCR) Generated by the Electric Utility Industry, April 30, 2010 at page 124.

³ 75 Fed. Reg. at 35,237.

⁴ 75 Fed. Reg. at 35,238.

⁵ IPL, Response to US EPA 104(e) Information Request to Indianapolis Power and Light Company- Eagle Valley Generating Station (May 13, 2009), available at <http://www.epa.gov/osw/nonhaz/industrial/special/fossil/surveys/index.htm>.

⁶ *Id.*

⁷ <http://www.timesfreepress.com/news/2009/jan/13/tennessee-widows-creek-ash-may-be-more-toxic-kings/>.

⁸ <http://www.starnewsonline.com/article/20100928/ARTICLES/100929663/1177?Title=Deluge-takes-toll-on-roads-ash-pond-sewers>.

⁹ US EPA, Human and Ecological Risk Assessment of Coal Combustion Wastes (April 2010) (draft).

¹⁰ *Id.*

¹¹ Physicians for Social Responsibility, Coal Ash the Toxic Threat to Our Health and Environment (August 2010), <http://www.psr.org/resources/coal-ash-the-toxic-threat-to-our-health-and-environment.html>.

¹² *Id.*

¹³ *Supra* at note iii. Date for cigarettes comes from Center for Disease Control, Cigarette Smoking-Attributable Morbidity-U.S. 2000, MMWR Weekly, September 5, 2003 / 52(35); 842-44.

¹⁴ An appendix to Table 2 can be found at <http://earthjustice.org/documents/report/pdf/state-groundwater-monitoring-requirements-coal-combustion-waste-landfills>.

¹⁵ The source for information in Table 3 concerning the number, size, hazard ranking, and inspection frequency of dams is EPA's May 2011 coal ash impoundment survey, available at <http://www.epa.gov/osw/nonhaz/industrial/special/fossil/surveys/index.htm>. EPA is in the process of inspecting dams, and new information, including newly-assigned hazard rankings, is posted by EPA at <http://www.epa.gov/osw/nonhaz/industrial/special/fossil/surveys2/index.htm>. The information in Table 3 reflects the data submitted to EPA by the dam owner/operators. It does not reflect the findings of EPA's inspections, which may both differ from and augment the industry-supplied information.

¹⁶ <http://adem.alabama.gov/newsEvents/notices/jun11/6perry.htm>. The Arrowhead landfills is permitted to accept waste from Alabama, Arkansas, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Vermont, Virginia, West Virginia, and Wisconsin. See also, <http://perryherald.blogspot.com/2009/06/three-million-tons-of-coal-ash-headed.html>.

¹⁷ See Wisconsin Admin. Code NR § 333.03. This regulation defines a "dam" as "any artificial barrier in or across a water-course which has the primary purpose of impounding or diverting water." Because coal-ash impoundments do not fit within this regulatory definition of a "dam" they are not regulated by the Wisconsin dam safety program.

¹⁸ <http://www.dep.state.fl.us/water/mines/damsafe.htm>. The Florida Dam Safety Program homepage describes the relationship between the Florida Department of Environmental Protection, the five regional water management districts and the U.S. Army Corps of Engineers.

¹⁹ The districts of Northwest Florida, Florida Southwest, and South Florida all have such a design requirement. See Fla. Admin. Code §§ 40A-4.101 (Northwest Florida), 40D-4.381(m) (Florida Southwest); see also Rules of the South

Florida Water Management District Appx. 6 Rule 1.3 *available at* http://www.dep.state.fl.us/water/mines/docs/BOR_08_00.pdf. The St. John's River and Suwanee River districts do not.

²⁰ The Northwest Florida Water Management district has an annual inspection requirement. See Fla. Admin Code § 40A-4.461. The state code contains only a vague "periodic inspection" requirement, which is not elaborated upon in any other district. Fla. Stat. § 373.423.

²¹ A copy of each district's regulations are available at: <http://www.dep.state.fl.us/water/mines/damsafe.htm>.

²² Based on 2005 coal ash generation volumes. See U.S. Environmental Protection Agency, Regulatory Impact Analysis For EPA's Proposed RCRA Regulation of Coal Combustion Residues (CCR) Generated by the Electric Utility Industry, 32 (April 30, 2010).

²³ *Id.*

²⁴ *Id.*

²⁵ Fact sheets on all listed states can be found at <http://earthjustice.org/features/campaigns/state-fact-sheets-on-coal-ash>.

²⁶ <http://www.epa.gov/osw/nonhaz/industrial/special/fossil/surveys/index.htm>.

²⁷ See <http://www.epa.gov/osw/nonhaz/industrial/special/fossil/surveys2/index.htm>.

²⁸ Information regarding amount of coal ash generated is EPA's Regulatory Impact Analysis for EPA's Proposed RCRA Regulation of Coal Combustion Residues (CCR) Generated by the Electric Utility Industry, specifically the 2007 US Department of Energy, Energy Information Agency (EIA) database for electricity power plants from the Form EIA-860 "Annual Electric Generator Report."

²⁹ US EPA, Database of Survey Responses, Information Requests from Electric Utilities, <http://www.epa.gov/osw/nonhaz/industrial/special/fossil/surveys/survey5-16-11.pdf>.

³⁰ 75 Fed. Reg. 35,153. EPA stated in the preamble to its proposed coal ash rule, "Surface impoundments are generally designed to last the typical operating life of coal-fired boilers, on the order of 40 years. However, many impoundments are aging: 56 units are older than 50 years, 96 are older than 40 years, and 340 are between 26 and 40 years old. In recent years, problems have continued to arise from these units, which appear to be related to the aging infrastructure, and the fact that many units may be nearing the end of their useful lives."

³¹ According to EPA, Karst terraces are areas that are underlain by soluble bedrock, generally limestone or dolomite, and may contain extensive subterranean drainage systems and relatively large subsurface voids whose presence can lead to the rapid development of sinkholes. The Agency recognizes that rapid sinkhole formation that occurs in some karst terraces can pose a serious threat to human health and the environment by damaging the structural integrity of dams, liners, caps, run-on/run-off control systems, and other engineered structures. 75 Fed. Reg. 35,201.

³² Illinois Environmental Protection Agency, Illinois EPA's Ash Impoundment Strategy Progress Report (October 2010), available at <http://www.epa.state.il.us/water/ash-impoundment/documents/ash-impoundment-progress-102010.pdf>.

³³ *Id.*

³⁴ US EPA, Coal Combustion Waste Damage Case Assessments (July 2007).

³⁵ *Supra* at note xxvi.

³⁶ US EPA, Database of Survey Responses, Information Requests from Electric Utilities, <http://www.epa.gov/osw/nonhaz/industrial/special/fossil/surveys/survey5-16-11.pdf>.

³⁷ *Id.*

³⁸ See Pines Ground Water Plume Site at <http://www.epa.gov/region05/cleanup/pines/>.

³⁹ See Thomas W. Easterly, Commissioner IDEM, State of Indiana Comments on Hazardous Waste Management System (Oct. 22, 2010), available at <http://www.uswag.org/pdf/2010/CCR%20Comments/IDEM10222010.pdf>.

⁴⁰ See US EPA, Toxic Release Industry dataset update for 2009 released in February 2010, available at <http://www.epa.gov/triexplorer/>.

⁴¹ See Environmental Integrity Project and Earthjustice, *Out of Control: Mounting Damages from Coal Ash Waste Sites*, February 2010, available at <http://earthjustice.org/sites/default/files/library/reports/ej-eipreportout-of-control-final.pdf> and Environmental Integrity Project, Earthjustice and Sierra Club, *In Harm's Way: Lack of Federal*

Coal Ash Regulations Endangers Americans and Their Environment, August 2010, available at <http://earthjustice.org/sites/default/files/files/report-in-harms-way.pdf>.

⁴² Ohio Admin. Code 3745:27-01(S)(23) (2010).

⁴³ See <http://www.epa.gov/osw/nonhaz/industrial/special/fossil/surveys2/index.htm>.

⁴⁴ National Academy of Sciences, National Research Council. Managing Coal Combustion Residuals in Mines, March 2006 at 78. Available at www.nap.edu.

⁴⁵ Environmental Integrity Project, Earthjustice and Sierra Club, In Harm's Way: Lack of Federal Coal Ash Regulations Endangers Americans and Their Environment, August 2010,, available at <http://earthjustice.org/sites/default/files/files/report-in-harms-way.pdf>.

⁴⁶ Stantec, Coal Combustion Facility Assessment Report (October 20, 2010), available at <http://www.tva.gov/power/stantec2/Oct%202010%20presentation.pdf>.

⁴⁷ Tenn. Comp. R & Regs. 1200-01-07-.01 et. seq.

⁴⁸ Tenn. Comp. R & Regs. 1200-01-07-.01(5). For further information see Southern Alliance for Clean Energy, "The State of Coal Ash Regulation In Tennessee", October 2010, available at http://www.cleanenergy.org/images/files/TN_Regulatory_and_Damage_Report1.pdf.

⁴⁹ US EPA, Coal Combustion Waste Damage Case Assessments, 20 (July 2007).

⁵⁰ 30 Tex. Admin. Code §§ 335.2(d): 335.1(138)(H)(2010).

⁵¹ *Id.*

⁵² See Clean Air Task Force, *Impacts on Water Quality from Placement of Coal Combustion Waste in Pennsylvania Coal Mines* (July 2006), available at www.catf.us.

⁵³ *Id.*

⁵⁴ Environmental Integrity Project, Earthjustice and Sierra Club, In Harm's Way: Lack of Federal Coal Ash Regulations Endangers Americans and Their Environment, August 2010, at pp. 243-247, available at <http://earthjustice.org/sites/default/files/files/report-in-harms-way.pdf>.

⁵⁵ U.S. Environmental Protection Agency, Office of Solid Waste. Coal Combustion Waste Damage Case Assessments. July 9, 2007. Downloaded from <http://www.publicintegrity.org/assets/pdf/CoalAsh-Doc1.pdf>.

⁵⁶ See Agency for Toxic Substances and Disease Registry, Health Consultation, Welsh Reservoir, Mount Pleasant, Titus County, TX, October 2009, available at <http://www.atsdr.cdc.gov/hac/pha/pha.asp?docid=145&pg=1>, and Health Consultation, Martin Creek Lake, Henderson, Rusk and Panola Counties, Texas, October 2009, available at <http://www.atsdr.cdc.gov/HAC/pha/pha.asp?docid=117&pg=1>.

⁵⁷ The three poor-rated impoundments are located at the Coletto Creek Power Station in Fannin, TX (two ponds) and the Lower Colorado River Authority in La Grange, TX (one pond). See U.S. Environmental Protection Agency, Coal Combustion Residuals Impoundment Assessment Reports available at <http://www.epa.gov/osw/nonhaz/industrial/special/fossil/surveys2/index.htm#F>.

⁵⁸ Battlefield Golf Club Site, Chesapeake, VA, http://www.epa.gov/reg3hwmd/CurrentIssues/final-battlefield_golf_club_site/index.html.

⁵⁹ The Chisman Creek Superfund Site contaminated residential wells with vanadium and selenium from coal ash generated by the Yorktown Power Station. See <http://www.epa.gov/reg3hwmd/super/sites/VAD980712913/index.htm>.

⁶⁰ Possum Point Power Station is listed as a "proven damage case" in EPA's 2007 *Coal Combustion Waste Damage Case Assessments* due to cadmium and nickel contamination of groundwater.

⁶¹ Coal ash from the Clinch River Plant caused ecological damage to fish, snails, mussels, and aquatic macroinvertebrates in the Clinch River. In 1967 a dike from a coal ash pond at Clinch River Plant collapsed releasing a caustic ash slurry into the Clinch River. Some 217,000 fish were killed for up to 90 miles downriver and benthic macroinvertebrates, snails and mussels were also wiped out or very negatively affected. Forty years after the spill, aquatic ecosystems downstream remain degraded. High concentrations of copper and aluminum from power plant effluent also contribute to biotic impairment.

⁶² <http://www.epa.gov/osw/nonhaz/industrial/special/fossil/surveys2/dom-chesa-power-request.pdf>.

⁶³ See US EPA, Toxic Release Industry dataset update for 2009 released in February 2010, available at <http://www.epa.gov/triexplorer/>.