

TOXIC COAL ASH IN PUERTO RICO

The Hazardous Legacy of the AES-PR Coal Plant

Applied Energy Services continues to contaminate the air, soil, and water in Puerto Rico with toxic coal ash.

Since it started burning coal in 2002, the Applied Energy Services - Puerto Rico (AES-PR) coal plant in Guayama, Puerto Rico has failed to contain its coal ash, contaminating the air, soil, and water. AES-PR stored coal ash – the hazardous substance left after burning coal for energy – in a mountainous pile. For years, AES-PR distributed coal ash as cheap fill material, and it was dumped at dozens of sites in southeastern Puerto Rico. The AES-PR coal plant continues to produce an average of 800 tons of coal ash per day.

Coal ash contains hazardous pollutants including arsenic, boron, cobalt, chromium, lead, lithium, mercury, molybdenum, radium, selenium, and other heavy metals, which have been linked to cancer, heart and thyroid disease, reproductive failure, and neurological damage. Industry’s own data indicate that across the country 91 percent of coal plants are currently polluting groundwater above federal health standards with multiple hazardous pollutants.¹

Coal ash remains one of our nation’s largest toxic industrial waste streams. U.S. coal plants continue to produce approximately 70 million tons every year.²

Despite EPA’s 2015 Coal Ash Rule, which created the first-ever safeguards for coal ash disposal, many coal ash dumps remained unregulated due to sweeping exemptions for legacy coal ash ponds, inactive landfills, and use of coal ash as a substitute for clean fill. The exempted coal ash dumps are sited disproportionately in low-income communities and communities of color. The EPA agreed to address

Coal ash is leaching unsafe levels of toxic pollutants into groundwater at 91% of coal plants.

some of these exemptions at power plants under revised rules to be enacted in 2024. But the revised rules will likely not address coal ash that was dumped off-site or used as fill, which occurred at dozens of locations in Puerto Rico.

Harm to Groundwater from the AES-PR Coal Plant

Puerto Rico’s one coal-burning power plant is located on the southeast coast of the archipelago. AES, a multinational corporation with assets exceeding \$33 billion, opened its Guayama plant in 2002. Since the plant’s opening, AES-PR has failed to protect Puerto Ricans from the plant’s toxic waste. AES-PR leaves its enormous coal ash pile uncovered, which has allowed the ash to blow into homes and nearby schools and leaves it vulnerable to hurricane-force winds and rain. The AES-PR coal ash pile is sited above the South Coast Aquifer that serves as the source of drinking water for tens of thousands of people in southern Puerto Rico. Groundwater monitoring data published by AES-PR reveals levels of boron, lithium, molybdenum, selenium, and sulfate above federal health standards.³

Toxic Fugitive Dust from the AES-PR Coal Plant

Fugitive dust emissions from the waste pile have caused harm to the health of nearby residents. For over a decade, the waste pile dwarfed all other structures at the plant and still stands with no cover, totally exposed to the persistent Caribbean winds and tropical rainstorms.

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Fugitive dust emissions can have grave consequences for the local community. In July 2016, the University of Puerto Rico, Graduate School of Public Health conducted an epidemiological study of communities downwind from the AES-PR plant. The study concluded that the Guayama community suffers higher incidence of respiratory disease, cardiovascular disease, asthma, hives, spontaneous abortions, bronchitis than a community whose air and environment are not impacted by the power plant.⁴

AES-PR Is Not Cleaning Up Contaminated Groundwater as Mandated by the Federal Coal Ash Rule

Despite the legal requirement to do so, AES-PR has failed to implement a corrective action remedy that would adequately clean up the groundwater contamination at the Guayama plant and prevent further contamination. AES-PR's plan consists of installing a synthetic liner under the waste pile in dangerous proximity to the water table and employing a "do nothing" approach known as Monitored Natural Attenuation (MNA) to watch rather than clean up the existing groundwater contamination. In January 2022, EPA issued a letter to AES-PR identifying deficiencies in the company's cleanup plan and reiterating the EPA's position that MNA is not an appropriate remedy.

In June 2022, EPA Region 2 issued a Notice of Potential Violations identifying several violations of the Coal Ash Rule's groundwater monitoring and reporting requirements. Specifically, AES-PR failed to provide groundwater data from certain samples taken over the past five years that are critical to determining the full nature and extent of contamination from the waste pile.

AES-PR's Violation of Clean Air Act Requirements

AES-PR repeatedly violated federal clean air standards. On July 25, 2022, EPA Region 2 issued a notice of violation under the Clean Air Act, finding

that the Guayama plant exceeded emission limits for pollutants such as nitrogen dioxide, carbon monoxide, sulfur dioxide, and mercury. According to the notice, AES-PR also violated the Puerto Rico Regulations for the Control of Atmospheric Pollution by exceeding the visible emissions and opacity limitations 86 times in 2021. The notice also identified several violations of the Clean Air Act's Mercury and Air Toxics Standards. AES-PR also violated the reporting provisions of the plant's Prevention of Significant Deterioration permit by failing to submit quarterly reports of all excess emissions to EPA for 2017 through 2021.

Coal Ash Contamination in Puerto Rico from "Fill" Projects

From approximately 2004 to 2012, AES-PR distributed more than 2 million tons of coal ash as cheap fill material to dozens of sites in Puerto Rico, including housing, commercial developments, and road projects.⁵ The coal ash, called "Agremax" by AES-PR, is comprised of fly ash and bottom ash mixed with water. In 2012, Vanderbilt University completed a study on the leaching potential of Agremax for EPA, Region 2 and concluded that Agremax leaches particularly high concentrations of arsenic, boron, chloride, chromium, fluoride, lithium, and molybdenum.⁶

AES-PR's coal ash was often used to grade sites in flood-prone areas. In some cases, ash was placed in excess quantities and in areas clearly not safe for coal ash disposal.⁷ The majority of sites are directly above the South Coast Aquifer and close to public supply water wells, wetlands, or the Jobos Bay National Estuarine Research Reserve. Puerto Rico's rainy, hurricane-prone climate is incompatible with the use of coal ash for structural fill. The archipelago's high population density and reliance on groundwater for drinking water increases the risk of human exposure to coal ash pollutants. At numerous sites, the toxic ash still lies unused and uncovered on the ground, and these piles pose dangers in residential areas, near parks, a school and even a hospital. At numerous sites, the coal ash was left uncovered or

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covered only with a thin layer of dirt, which quickly eroded. Fugitive dust from these uncovered piles and roads is common.

Environmental Justice and Coal Ash in Puerto Rico

The Guayama region, where many residents are Afro-Puerto Rican, has a high rate of poverty. According to the Toxic Release Inventory, this region suffers the greatest contamination of any region in Puerto Rico. The region also has among the highest unemployment and school dropout rates on the archipelago. The region experienced a sharp decrease in medical services with only one hospital currently in operation. AES-PR’s waste pile, offsite disposal of coal ash in the region, and continued reckless operation of the plant impose disproportionate public health risks to this environmental justice community.

Regulated and unregulated coal ash disposal sites in Puerto Rico

The AES-PR waste pile is the only coal ash disposal site in Puerto Rico that is regulated by the 2015 Coal Ash Rule. As shown in Table 1, the coal ash waste pile is contaminating groundwater at unsafe levels. In addition, there are approximately 30 unregulated coal ash fill sites, consisting of both covered and uncovered ash deposits, throughout southeastern Puerto Rico. Because AES-PR was not required to report the location of ash placement, the number of dumpsites that escape federal regulation remains unknown. While these unregulated sites are almost certainly contaminating water and threatening health and the environment, monitoring data are not available.

Action Needed

The magnitude of harm from recklessly dumped toxic coal ash requires decisive action from federal and local regulators. AES-PR must be required to comply with the law and immediately clean up its pollution.⁸ EPA and territorial authorities must make enforcement a priority and act quickly to ensure that AES-PR’s ash throughout Puerto Rico does not cause any more harm. **The longer enforcement is delayed, the more hazardous contaminants enter Puerto Rico’s air and water and the more difficult cleanup will be.** EPA must swiftly strengthen the Coal Ash Rule to prohibit the dangerous placement of unencapsulated toxic coal ash and protect all Puerto Rican communities from coal ash pollution.

Table 1: Regulated Coal Ash Disposal Site in Puerto Rico

Coal Plant	City	Owner	Coal Ash Dumps Dumps (total coal ash in short tons) ⁹	Groundwater Contamination from Coal Ash Magnitude of exceedance above federal health-based guidelines ¹⁰
AES-PR Guayama Plant (520 MW)	Guayama	AES-PR	Coal ash waste pile (121,213 tons in 2021)	Boron (x2), Lithium (x18), Molybdenum (x12), Selenium (x4), Sulfate (x7)

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Endnotes

¹ Earthjustice and Environmental Integrity Project, “Poisonous Coverup, The Widespread Failure of the Power Industry to Clean Up Coal Ash Dumps,” available at <https://earthjustice.org/document/poisonous-coverup>.

² American Coal Ash Association, 2020 CCP Production and Use Survey Report, <https://aca-usa.org/wp-content/uploads/2021/12/News-Release-Coal-Ash-Production-and-Use-2020.pdf>.

³ See AES-PR CCR Compliance and Data and Information, available at <https://www.aespuertorico.com/es/ccr>.

⁴ See University of Puerto Rico, Medical Sciences Campus, Graduate School of Public Health - Department of Biostatistics and Epidemiology, Epidemiological Study in the Communities of Puente de Jobos and Miramar in Guayama and Santa Isidra and Rafael Bermúdez in Fajardo. The study found: 1 of every 3 people in Guayama has been diagnosed with respiratory disease; 1 of every 4 people in Guayama has been diagnosed with cardiovascular disease; pediatric asthma is approximately 5 times greater in Guayama; Severe asthma in children is 6 times higher in Guayama; The prevalence of urticaria (hives) is 7 times higher in Guayama; The prevalence of spontaneous abortions is more than 6 times higher in Guayama; The probability of suffering from chronic bronchitis in the larger population of 45 years is 9 times higher in Guayama; The probability of suffering from pediatric asthma is approximately 6 times greater in Guayama. These results were confirmed in a subsequent study in 2018.

⁵ See 84 Fed. Reg. at 21,328.

⁶ See A.C. Garrabrants et al., Leaching Behavior of “AGREMAX” Collected from a Coal-Fired Power Plant in Puerto Rico, EPA-600/R-12/724, December 2012 (attached); see also, D.S. Kosson et al., *Characterization of Coal Combustion Residues from Electric Utilities - Leaching and Characterization Data*, at 18 (EPA-600/R-09/151) (Dec. 2009) (prepared for

EPA, Office of Research & Dev., Nat’l Risk Mgmt. & Research Lab.), available at <https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P1007JBD.TXT>.

⁷ See 80 Fed. Reg. at 21,329. EPA stated:

[T]he available facts illustrate several of the significant concerns associated with unencapsulated uses. Specifically, the AGREMAX was applied without appropriate engineering controls and in volumes that far exceeded the amounts necessary for the engineering use of the materials. Inspections of some of the sites where the material had been placed showed use in residential areas, and to environmentally vulnerable areas, including areas close to wetlands and surface waters and over shallow, sole-source drinking water aquifers. In addition, some sites appeared to have been abandoned.

Consistent with the proposed rule, EPA does not consider the practices described in this section to be beneficial use, but rather waste management that would be subject to the requirements of the final rule.

⁸ See endnote 1, *supra*, for more information re widespread utility non-compliance with the 2015 Coal Ash Rule.

⁹ https://www.aespuertorico.com/sites/default/files/2021-12/CCR%20Annual%20Inspection%20Report%202021_Final.pdf

¹⁰ All data derived from the utilities’ publicly accessible [CCR Compliance Data and Information websites](#), and exceedances were calculated by Environmental Integrity Project.

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