

What is Coal Ash?

Coal ash, or coal combustion residuals (CCR) are one of the largest forms of industrial waste in the United States and are created whenever coal is burned at coal-fired power plants.

There are different types of coal ash such as bottom ash formed in the bottom of a coal furnace and boiler slag that's molten and turns into pellets with a smooth glass appearance when it's cooled with water. Fly ash is a fine powdery material that's very common, and presents a danger when it's airborne, often when ash is loaded, unloaded or transported. These windblown particulates are often called "fugitive dust."



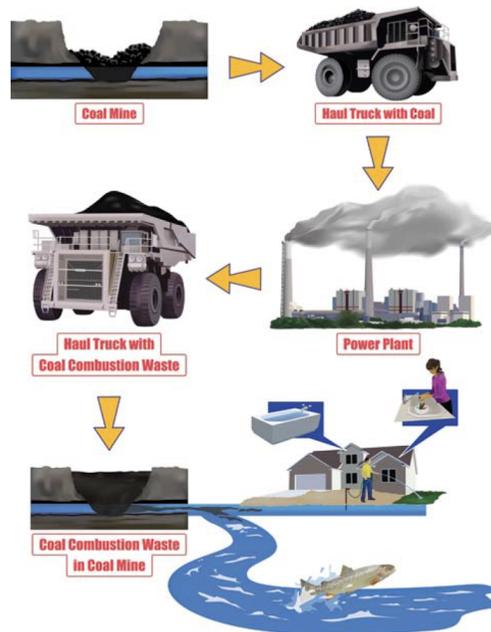
Aerial view of coal ash landfill at Navajo Generating Station.
Source: Google maps December 2020

Coal ash can be stored in wet surface impoundments or "dry" landfills, although even "dry" impoundments can become wet with snowmelt and rain.

How does Contamination Work?

Coal ash has different pathways to contamination in large part based on whether it is stored in wet surface impoundments or "dry" landfills; lined or unlined. Contamination in wet surface impoundments normally happens through leaching into groundwater, or runoff into surface water.

On Navajo Nation, this can include seasonal washes and arroyos that lead to larger bodies of water, such as the San Juan River. In addition to snow and rain making "dry" landfills wet, wind can blow coal ash from "dry" landfills into neighboring fields and communities where humans and animals can inhale particulates from the air. The dangers of this are heightened when landfills are not covered daily or capped.



Source: Earthjustice Waste Deep Report

Health Effects of Coal Ash

CCRs can be inhaled directly through fugitive dust, ingested through contaminated surface or groundwater, or eaten through contaminated crops or fish nearby.

Human Health Effects of CCR pollutants

Aluminum	Lung disease, developmental problems
Arsenic	Multiple types of cancer, darkening of skin, hand warts
Beryllium	Lung cancer, pneumonia, respiratory problems
Boron	Reproductive problems, gastrointestinal illness
Cadmium	Lung disease, kidney disease, cancer
Chromium	Cancer, ulcers and other stomach problems
Cobalt	Lung/heart/liver/kidney problems, dermatitis
Lead	Decreases in IQ, nervous system, developmental and behavioral problems
Mercury	Cognitive deficits, developmental delays, behavioral problems
Molybdenum	Mineral imbalance, anemia, developmental problems
Nickel	Cancer, lung problems, allergic reactions
Selenium	Birth defects, impaired bone growth in children
Vanadium	Birth defects, lung/throat/eye problems
Zinc	Gastrointestinal effects, reproductive problems

Source: www.atsdr.cdc.gov/toxfaq.html

Coal Ash on Navajo Nation

Below are highlights of known contamination on coal plants on Navajo Nation.

Four Corners Power Plant (FCPP):

- About 84 million tons of CCR total have been generated at FCPP.
- In all four CCR units, arsenic was found above EPA drinking water standards.
- Boron was found 42x above EPA drinking standards; Lead 2x.

San Juan Generating Station (SJGS):

- Levels of arsenic, boron, lead, sulfates and selenium are above drinking water standards in the shallow gravel aquifer underneath the Shumway Arroyo.
- Sulfates in the aquifer have reached 55,000 mg/L at the boundary of the mine- 220x the secondary drinking water standard.
- 40 million tons of CCR have been dumped in the San Juan mine since the late 1980's.

Navajo Generating Station (NGS):

- NGS landfill contains about 20 million tons of coal ash and was closed in place.
- There is mounting concern of the "new" aquifer from unintentional leakage, potentially contaminating the Navajo aquifer, a regional source of drinking water.

Cholla Power Plant:

- Cholla's CCR units cover 577 acres in total.

- Arsenic is 3x above EPA drinking standards in all three CCR units; Boron levels 12x; Molybdenum x9.

Escalante Generating Station:

- The one landfill contains about 800,000 tons of coal ash.
- Arsenic has been found 2x above EPA drinking standards in its one landfill; lithium 15x.

For more full information by unit, visit:

<https://earthjustice.org/features/map-coal-ash-contaminated-sites>

What Can I Do?

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To find out about opportunities for public involvement.

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Stay tuned for public meeting on Four Corners Power Plant and Cholla power plant

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