

Unearthing Australia's toxic coal ash legacy

Coal-fired power has long been associated with air pollution and climate change. But coal-fired power stations produce another insidious waste problem, hidden in plain sight.

When coal is burnt to make electricity, it produces tens of thousands of tonnes of toxic ash waste. At most coal-fired power stations in Australia, coal ash is mixed with saline wastewater and pumped into enormous dumps creating a lethal cocktail of toxic sludge including heavy metals and dangerous pollutants like mercury, lead, arsenic, selenium and chromium.

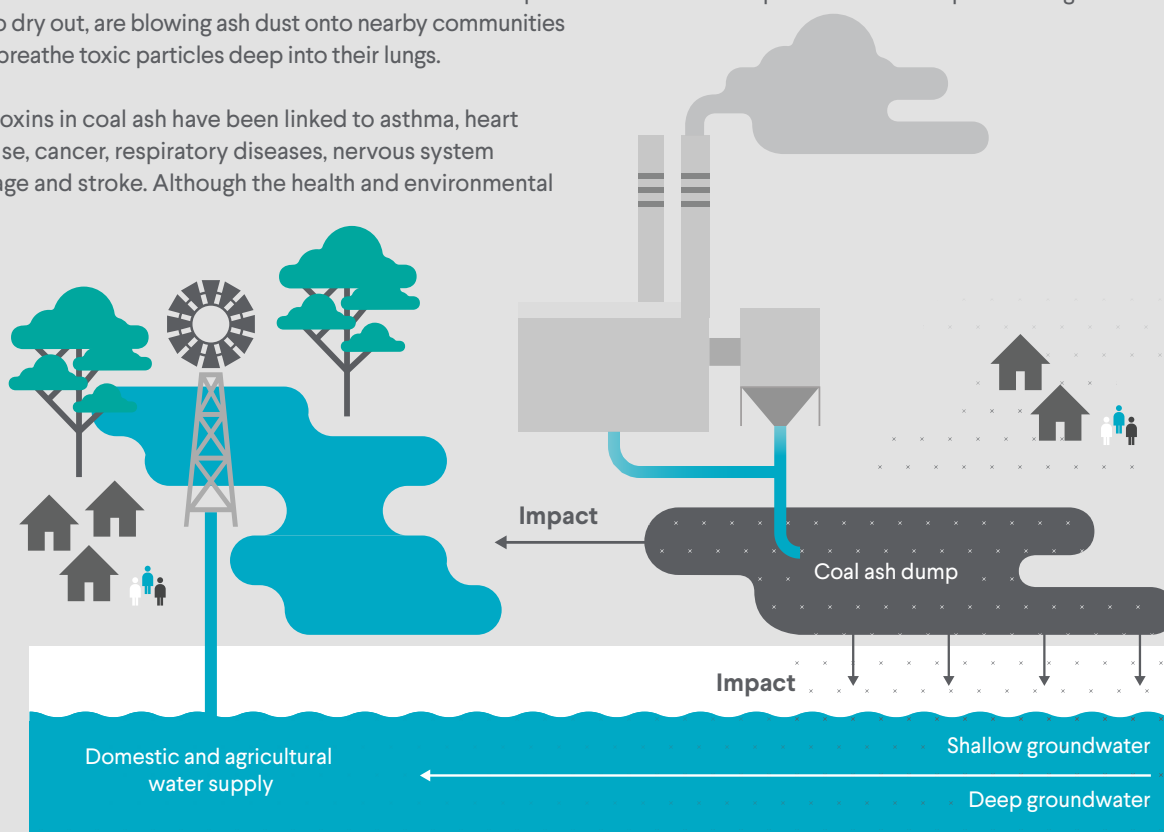
Coal ash is one of Australia's biggest waste problems and accounts for nearly one-fifth of the entire nation's waste stream. Toxic slurry from poorly managed ash dumps across the country is contaminating water and soil needed by farmers and ecosystems, and leaching into rivers and lakes where our families fish and our children swim. Those dumps left to dry out, are blowing ash dust onto nearby communities who breathe toxic particles deep into their lungs.

The toxins in coal ash have been linked to asthma, heart disease, cancer, respiratory diseases, nervous system damage and stroke. Although the health and environmental

impacts of air pollution are becoming more well known, very little research has been done in Australia on the health and environmental impacts from water and soil contaminated by coal ash.

Lax government regulation is putting communities that live near coal-fired power stations at serious risk. Coal ash cannot be disposed of safely. Even with best practice methods, there remains a significant contamination risk to the environment and communities. Coal ash dumps must be carefully and strictly managed and rehabilitated to minimise the risk this toxic substance poses to human and environmental health.

Australian governments must make these coal-fired power stations thoroughly clean up their act. Poorly constructed ash dumps in Australia, including Eraring, Vales Point, and Loy Yang, should be re-sited, re-constructed and managed to allow for a comprehensive clean up of existing contamination.



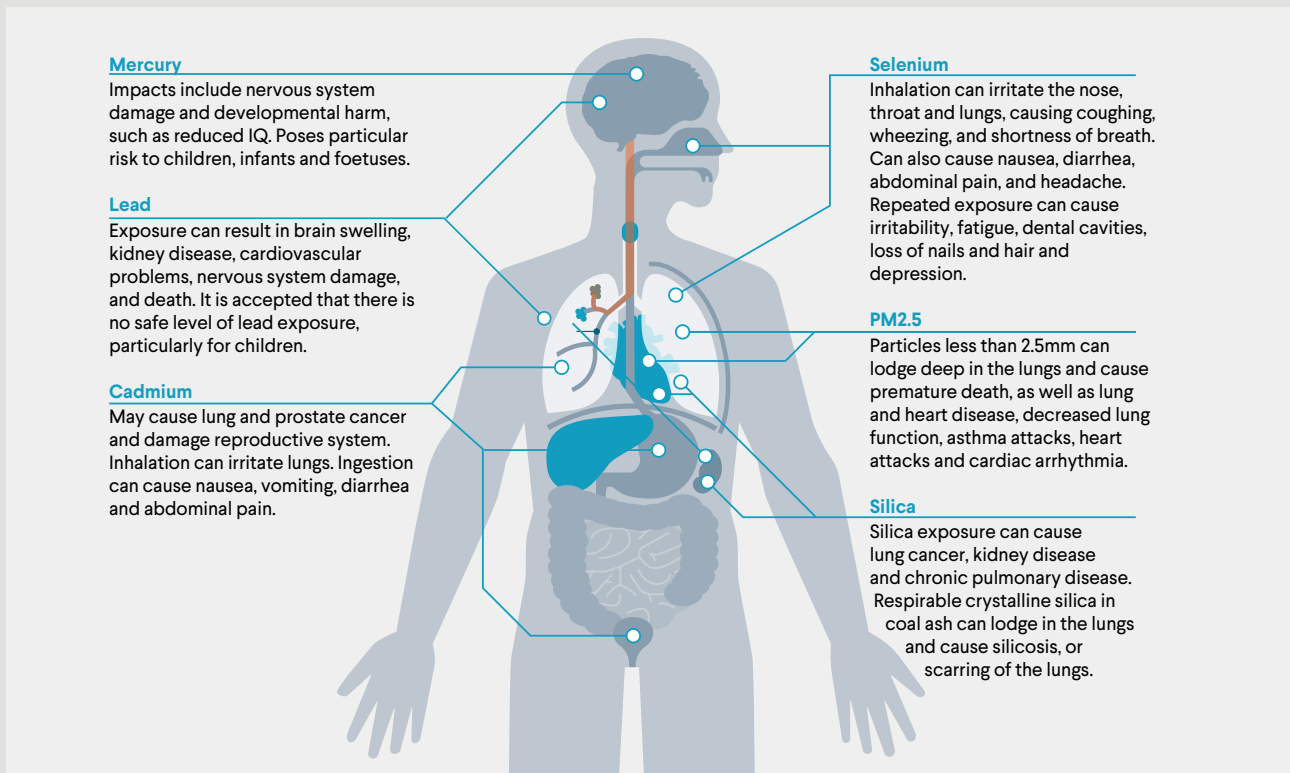
LEACHING FROM COAL ASH DUMP

Coal ash is a serious threat to health

Burning coal concentrates toxins such as heavy metals naturally found in coal. This means that coal ash contains a much higher concentration of toxic pollutants and metals on a per volume basis compared to its raw form.

Toxic elements in coal ash include arsenic, lead, cadmium, mercury, selenium, silica and other dangerous chemicals. These toxins cause a range of health impacts in every major organ of the human body (see image below) including cancer, kidney disease, reproductive harm, and damage to the nervous system, especially in children.

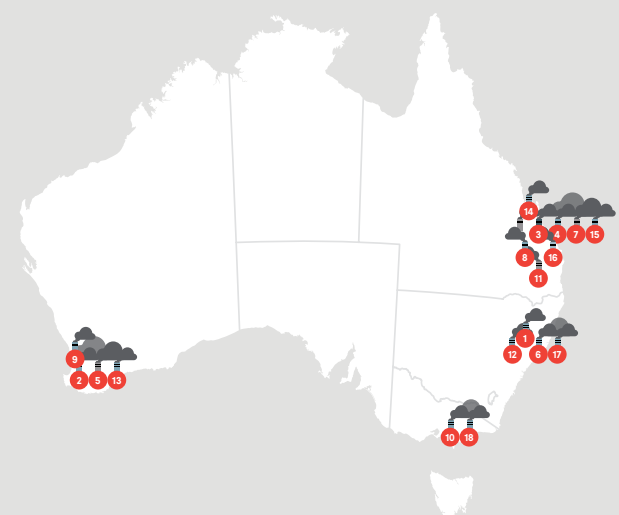
A United States Environmental Protection Agency (US EPA) risk assessment found that living near unlined ash dumps increases the risk of damage to the liver, kidney, lungs and other organs as a result of being exposed to toxins at concentrations far above safe levels. Another recent United States study found the prevalence of health and sleep problems were significantly greater in children living near coal ash dumps.



Who is at risk?

Communities who live closest to power stations bear the greatest environmental burden of this toxic mess. Some of the ash dumps in Australia are very close to residential areas, schools and recreation centres. Most are extremely close to waterways.

- In Victoria, there are two operational coal ash dumps – at the Yallourn and Loy Yang power stations.
- There are five operational coal ash dumps in New South Wales for the Eraring, Mount Piper, Vales Point, Liddell and Bayswater power stations.
- Queensland has several operational ash dumps, at Stanwell, Gladstone, Callide, Tarong, Tarong North, Millmerran and Kogan Creek power stations.
- Western Australia has several operational ash dumps for the Collie, Muja and Bluewaters coal-fired power stations.





Coal ash dump collapse, Tennessee, US, 2018.
Source: Dot Griffith photography

A ticking time bomb

KINGSTON, TENNESSEE, USA

In 2008, 4.9 million tonnes of coal ash sludge flooded an area of 300 acres when a dike suddenly collapsed at the Tennessee Valley Authority Power Station in Harriman, Tennessee. The toxic sludge swept away multiple houses, filled two rivers, and destroyed a residential community. Clean-up of the coal ash took years and cost over US\$1 billion. More than 30 clean-up workers died of illnesses allegedly caused by exposure to the toxic ash during the clean-up, and more than 200 remain ill, ten years after the disaster. In 2018, sick workers and families of the deceased workers won a lawsuit for liability against the clean-up contractor who refused to allow the workers to wear protective respirators.

Coal ash is already causing environmental harm in Australia. We've had coal ash pipes spill thousands of litres of toxic slurry into rivers, coal ash blow over and choke communities, groundwater contamination, and toxins from coal ash dumps poison nearby aquatic ecosystems.

In May 2019, the much-loved community sports and recreation centre at Myuna Bay on the NSW Central Coast was shut down over structural fears that the Eraring ash dump would collapse in the event of an earthquake.

LAX GOVERNMENT REGULATION IS PUTTING COMMUNITIES AT RISK

The regulation of coal ash dumps throughout Australia differs from state to state, is inconsistent between dump sites, and does not adhere to best practice construction, management or rehabilitation standards as practised in other parts of the world.

SUMMARY OF THE PROBLEMS AT AUSTRALIA'S 16 ACTIVE COAL ASH DUMPS

	Adequately lined?	Groundwater contaminated?	Financial bond?	Ash management plan?	Rehabilitation/closure plan prepared?
Yallourn (Vic)	✗	✓	✓	✗	✗
Loy Yang (VIC)	✗	✓	✓	✗	✗
Vales Point (NSW)	✗	✓	✗	✗	✗
Eraring (NSW)	✗	✓	✗	✗	✗
Mount Piper (NSW)	✗	✓	✗	✗	✗
Bayswater (NSW)	✗	No information	✗	✗	✗
Liddell (NSW)	✗	No information	✗	✗	✗
Gladstone (QLD)	✗	No information	✗	✓	✗
Stanwell (QLD)	✗	No information	✗	✓	✓
Tarong (QLD)	✗	No information	✗	✓	✗
Tarong Nth (QLD)	✗	No information	✗	✓	✗
Callide (QLD)	Unknown	No information	✗	Unknown	Unknown
Kogan Creek (QLD)	✗	No information	✗	Unknown	✗
Millmerran (QLD)	Unknown	No information	✗	Unknown	Unknown
Collie (WA)	✗	No information	✗	✓	✗
Bluewaters (WA)	✗	No information	✗	✗	✗
[Ewington mine]	✗	No information	✗	✗	✗
Muja (WA)	✗ Supernatant dam ok, otherwise	✓	✗	Unknown - managed under Contaminated Sites Act 2003	✗
Kwinana (WA)	✗	✓	✗	Unknown - managed under Contaminated Sites Act 2003	✗
[Perron Quarry]	✗	✓	✗	Unknown - managed under Contaminated Sites Act 2003	✗

NB: The NSW EPA conducted an audit on the ash dumps for the operational power stations but did not audit groundwater seepage because it was 'outside of the scope of the audit'. See: <https://www.epa.nsw.gov.au/-/media/F296D19215D348A8BC16DEB4D2021A52.ashx>

How can we fix this mess?

Because of its toxicity, coal ash cannot be disposed of safely and poses a significant contamination risk to the environment and communities. The best way to prevent this risk is to stop producing coal ash.

In the meantime, coal ash dumps must be carefully and strictly managed, rehabilitated and monitored to minimise the harm these toxic sites pose to human and environmental health both now and well after closure.

Recommendations

- 1. Australian governments initiate inquiries into coal ash dumps:** Australian Parliaments need to initiate inquiries into coal ash dumps to understand the full extent of the toxic threat and make strong recommendations to protect human and environmental health.
- 2. Rehabilitation plans:** Australian governments should impose an immediate obligation on ash dump owners and operators to prepare best practice rehabilitation, closure plans and post-closure plans in consultation with the communities who live near these toxic sites.
- 3. Tougher groundwater regulation:** Australian regulators who oversee ash dumps should immediately develop and implement actions to clean up and manage ash dumps causing groundwater contamination, including re-siting operational ash dumps to thoroughly rehabilitate existing sources of contamination to best practice standards.
- 4. Safe containment of existing ash dumps:** Australian governments should impose immediate obligations on ash dump owners and operators to convert wet dumps to dry ash emplacements.
- 5. Bond payments to protect communities:** Australian governments should immediately impose a bond or financial assurance on ash dumps to protect Australian communities from bearing the cost burden of poorly managed or poorly rehabilitated ash dumps.
- 6. National guidelines:** Australian governments should develop and ensure the implementation of enforceable national best practice guidelines for ash dump management, rehabilitation, and closure and post-closure management to mitigate as far as practicable the future threat of contamination of land, groundwater, and surface water and prevent harm to human health.
- 7. Transparency and availability of information:** Australian governments should make access to information about ash dumps transparent and available to the Australian community, including all existing management plans, details of financial assurance, rehabilitation plans, pollution incidents, fines and other enforcement actions taken by regulators, monitoring data, hydrogeological assessment, predictions for future contamination, and predictions for future land-use planning.

ABOUT ENVIRONMENTAL JUSTICE AUSTRALIA

Environmental Justice Australia is a not-for-profit public interest legal practice. Funded by donations and independent of government and corporate funding, our legal team combines a passion for justice with campaigning to protect our environment.

This document is part of a larger report, *Unearthing Australia's toxic coal ash legacy*. You can download the full report and get involved here www.envirojustice.org.au/coal-ash

For further information on this report please contact: Bronya Lipski, Lawyer, Environmental Justice Australia, admin@envirojustice.org.au

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Source for all facts and figures can be found in the full report, EJA: *Unearthing Australia's toxic coal ash legacy*.

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