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The newsletter of The LEAD (Lead Education and Abatement Design) Group Inc.
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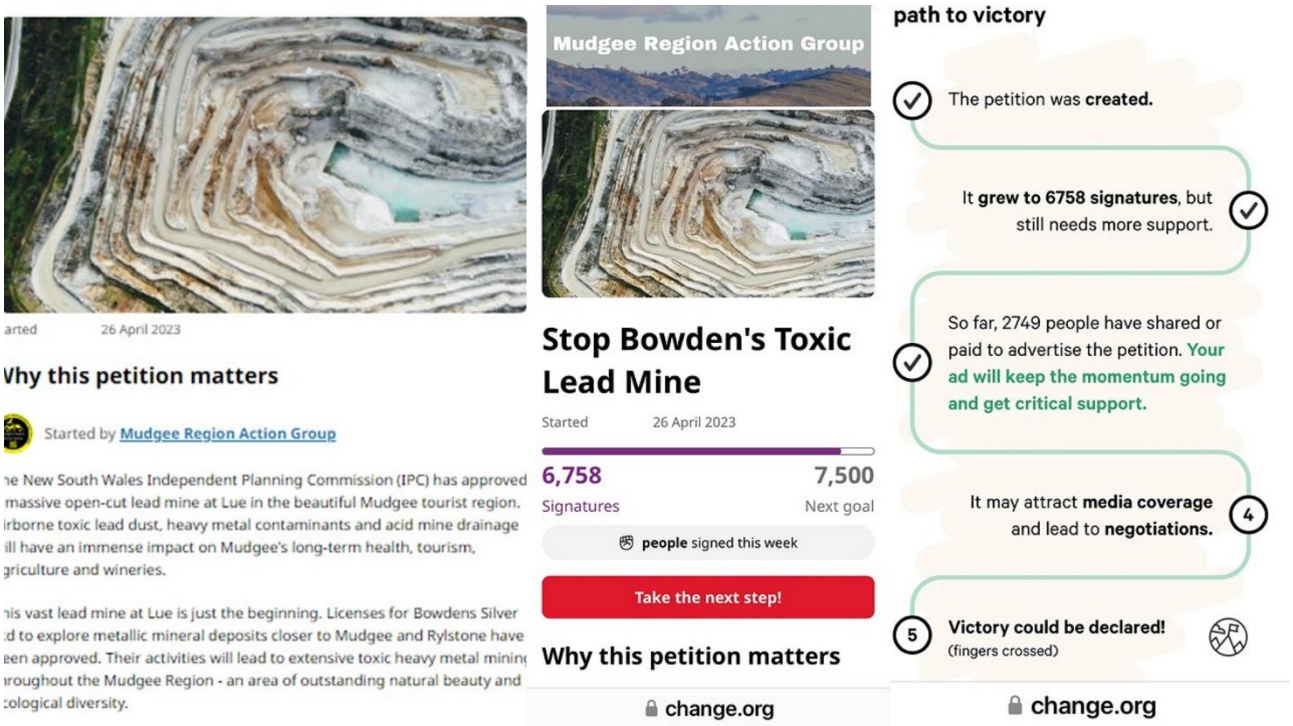
World's First Circular Economy for Lead

Where will the world's first circular economy for lead develop? If Australia could ban new lead mine approvals, it could be in Australia – the world's largest lead exporting country!

Please sign and ask your networks to sign petitions like the one below and enter Enter Volcano Art Prize 2025 by 28th July 2025 and win your entry on a PictureProducts mug!

This issue of *LEAD Action News* is dedicated to ending new lead mining, banning all leaded paint and fuel (including AvGas), along with fossil fuel extraction in the world so we have a smarter population which has a chance of creating a global circular economy for everything and averting climate crisis.



Volcano Art Prize 2023 Entry by Mudgee Region Action Group. Title: **Stop Bowdens Toxic Lead Mine. Lead-Safety Message: It's time for you dear readers to take action and sign the petition at https://www.change.org/p/help-stop-bowden-s-toxic-lead-mine!** URL: https://volcanoartprize.com/portfolio-item/stop-bowdens-toxic-lead-mine/

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Enter Volcano Art Prize 2025 by 28th July 2025!

To be in the running for this **annual lead-awareness-raising global art/photo/film competition open to all ages**, just go through your smart phone photos/videos and pick a landscape-orientation one, create a short Title and Lead-Safety Message and enter as many times as you like, at https://volcanoartprize.com/submitentry/ by midnight at the end of the day, your timezone, on Monday 28th July 2025.

Once the entry deadline has passed, the Volcano Art Prize (VAP) 2025 Judge will choose the First Prize winner of $400 and 30 prize winners of a mug from Pictureproducts and you can help pick the 2025 People's Choice prizewinner. Just go to https://volcanoartprize.com/peoples-choice/ and following pages, to vote (by giving a ThumbsUp) for all the VAP 2025 entries you like, so that The LEAD Group can count up the Likes to see who wins the People's Choice Cash Prize of $200.

Volcano Art Prize

Proudly sponsored by: Pictureproducts Since 1977

It's easy to create a VAP entry!!

See Join us on our Global Lead Awareness - a reel about how easy it is to make a Volcano Art Prize entry!

Be part of a global lead-awareness raising community of photographers, artists and caring individuals!

Enter artworks, photos and short videos in Volcano Art Prize (VAP). This annual art competition has both cash/sponsors' prizes and certificates for children and encourages everyone to increase their lead knowledge by creating their Lead-Safety Message.

Images of people, old paint, pets, backyard chickens/vegetables, lead products/mining/smelting/recycling, solutions - lead-detox foods/activities/supplements, lead testing kits, etc and fun or serious videos all help The LEAD Group charity to spread the word about lead-safety around the world via social media, www.lead.org.au and www.leadsafeworld.com

Each entrant can enter multiple times.

Just go thru the camera roll on your phone or look around for inspiration and submit your own and your children's entries at www.volcanoartprize.com/submitentry by the 4th Monday in July each year. That means Monday 28th July 2025 – so you have one month left to enter!!

Only adults in OECD countries pay the AU$10 entry fee. All kids and everyone else enter for free!

Petition to Stop a New Lead Mine Opening in NSW

Mudgee Region Action Group, Wednesday, 30 April 2025 Email
Bowdens Mine is back - help us hit 10,000 signatures before it's too late. [*Editor's Note*: as at June 29, 2025 this petition at https://www.change.org/p/help-stop-bowden-s-toxic-lead-mine has 10,142 signatures but more is always better!]

🚨 Bowdens Mine Pushes Ahead! Let's Reach 10,000 Signatures!

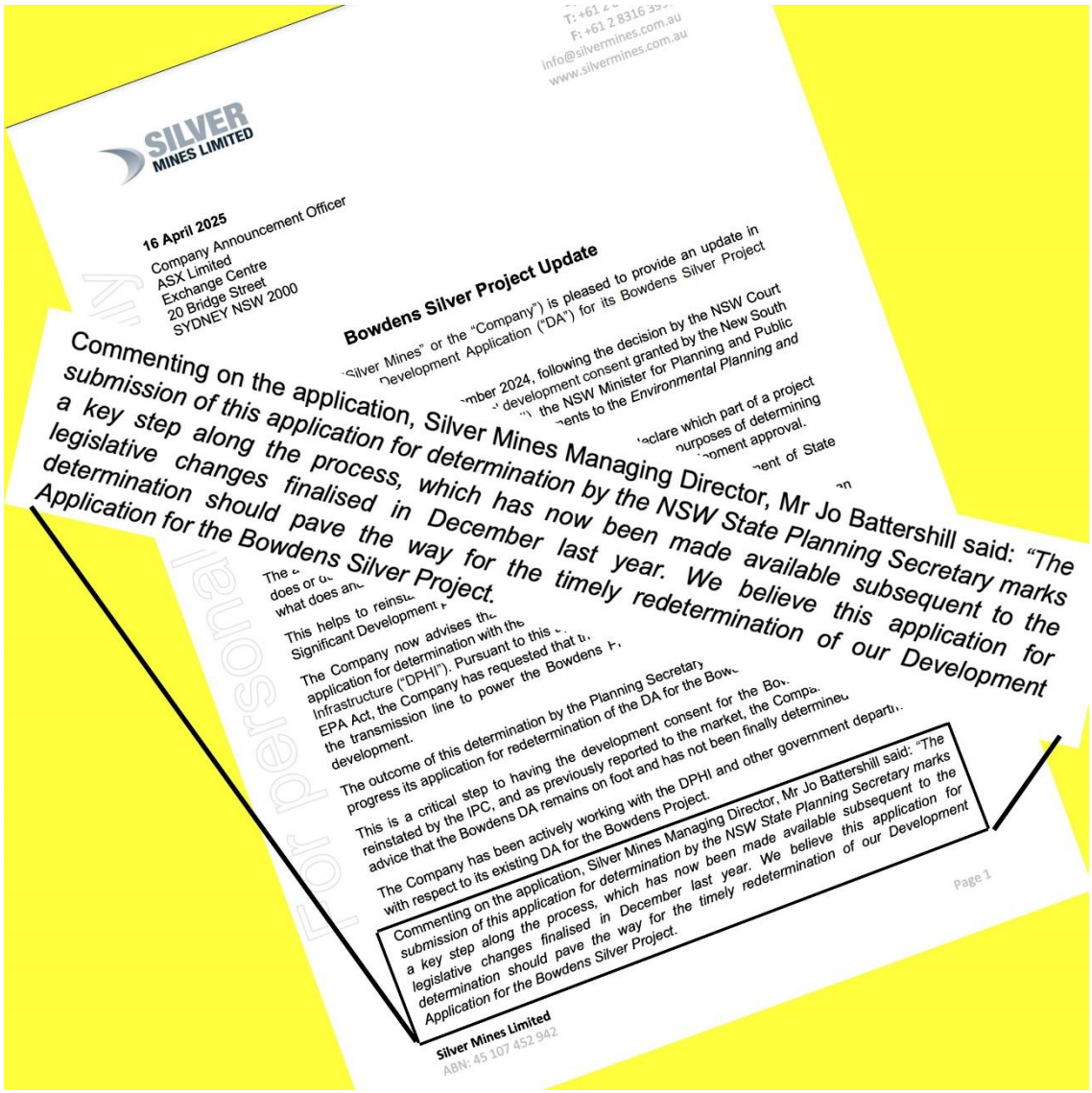
Bowdens Silver has re-launched its plans for a toxic lead, silver, and zinc mine - and they expect approval shortly.
This is a critical moment for our region and our waterways. Right now, we are just 500 signatures away from reaching 10,000 signatures on the petition - the point where politicians take notice.

We urgently need your help:

- ✔ Sign the petition if you haven't already
- ✔ Ask 10 friends, family members or neighbours to sign too

Sign the Petition

If just 50 people ask 10 others, we'll reach the goal and make sure Bowdens destructive plans are met with strong community opposition.



Bowdens Silver Mine plans to capture and use unlicensed contaminated water - risking the flow of Lawsons Creek, threatening downstream communities, and undermining the Murray-Darling Basin.

Sign the Petition

Together, we can close the loopholes that put our precious water and land at risk. **Every signature counts!**

You can share this email with friends by clicking on the buttons below:

Share Share Forward

Breaking! ABC Central West Local News

The ABC covers the fresh development application by Bowdens to restart the project. Listen here to their coverage.

Thank you for standing with us. Together, we can make a difference.
Mudgee Region Action Group

HOW YOU CAN GET EVEN MORE INVOLVED

Donate here

Sign the petition here

Sign up for our email list or to volunteer and get involved here

Stop Bowden's Toxic Lead Mine (Petition)

[Please go to https://www.change.org/p/help-stop-bowden-s-toxic-lead-mine to sign this petition]

Recent signers:

Lucy Barglik•4 days ago
Sharmin Leigh Helven•4 days ago
Ellen Roditis•5 days ago
Mel Kaz•7 days ago
André DESTROISMAISONS•7 days ago
Chris•7 days ago
Raegon Gallant•1 week ago
David Folland•1 week ago
Sally Hobbs•1 week ago
Janis Conley•2 weeks ago
christine young•2 weeks ago
Suzanne Taylor•3 weeks ago
Cheryl Cuthbertson•3 weeks ago
Caroline Mills•3 weeks ago
Susan HILL•3 weeks ago
jamie crowe•3 weeks ago
Sebastian Menendez•3 weeks ago
Tegan Van Rijn•3 weeks ago
Rebecca Carroll•3 weeks ago

Karen Ferrier•3 weeks ago

Lucy Barglik and 19 others have signed recently.

4 supporter voices

11 updates

The issue

The New South Wales Independent Planning Commission (IPC) has approved a massive open-cut lead mine at Lue in the beautiful Mudgee tourist region. Airborne toxic lead dust, heavy metal contaminants and acid mine drainage will have an immense impact on Mudgee's long-term health, tourism, agriculture and wineries.

This vast lead mine at Lue is just the beginning. Licenses for Bowdens Silver Ltd to explore metallic mineral deposits closer to Mudgee and Rylstone have been approved. Their activities will lead to extensive toxic heavy metal mining throughout the Mudgee Region - an area of outstanding natural beauty and ecological diversity.

Under current planning laws, an appeal can only be made if it can proved that the IPC didn't follow process, NOT the overwhelming evidence that show the unmanageable impacts of the mine.

Our community wants to appeal the decision so we can protect our region. To do that, we have to get the planning laws changed. We need supporters and a strong ***VOICE*** from people like you. Sign this petition for your family, your community and your region.

Please help us save the Mudgee Region and sign our petition!

Find out more about the mine **here**

Mudgee Region Action Group

Petition starter

Media enquiries

Landline - Bega's bid to become a circular economy to reduce waste

[URL: First broadcast on Sunday 28 July 2024 on Landline on ABC (Australian Broadcasting Commission) TV and later viewable (as part of the whole 57 minute episode) on ABC iView (via a free account) at https://iview.abc.net.au/show/landline/series/2024 ; https://iview.abc.net.au/video/RF2314Q024S00; later the 24 minute story was published on the Landline YouTube channel at **https://www.youtube.com/watch?v=9MbjjIuy1wQ**]

Transcript with screenshots

Pip Courtney, Landline main presenter: Joscelin and Tom McMillan farm in the Bega Valley. But they run their pasture raised egg operation on other people's land. The business model was forced on them when they started out young and keen, but cash and land poor.

Joscelin McMillan: We didn't have a farm to go to, you know, we didn't have family land that we could have used. It was the only way we could have got into it. And here we are, four and a half years later. We're doing pretty good now. Yeah.

Pip Courtney: The couple move their mobile chicken coops wherever the land owner wants, providing free fertiliser with zero carbon footprint.

Tom McMillan: He's very happy. He's very happy. Yeah. It just becomes more productive at the end of the day. It's just so you can grow more grass, just to put it really, really simply.

Joscelin McMillan: we were the last one into drought and the first one out of drought too. So as soon as we got rain, it was green here. Whereas, you know, other farms around the valley, it takes a little bit longer.

Pip Courtney: Their 5,000 hens turn off 3,500 eggs a day. And for two years they haven't been able to meet demand. When they wanted to expand, their neighbour, Barry Irvin, Bega Group's executive chairman, found his problem - an embarrassingly weedy, unproductive

grazing paddock, was the McMillan's free solution.

Barry Irvin, Bega Group: All right. Cool. They've expanded their business. We've got a more, healthy soil, more vigorously growing plants. We haven't had to use chemicals to knock out the invasive weeds. And we haven't had to use artificial fertiliser to get the soil where we wanted it to go, so that, in that case, that is a virtuous circle.

Pip Courtney: Barry predicts he'll soon be competing with other dairy farmers who'll be prepared to pay the McMillans to park their weed-eating soil-renovating chickens on their land.

Barry Ivrin: That will encourage more, more enterprise here. It'll be another reason to establish itself here.

Pip Courtney: When farmland serves multiple uses for multiple users, it's called enterprise stacking. To Barry, it's a small but perfect example of circularity.

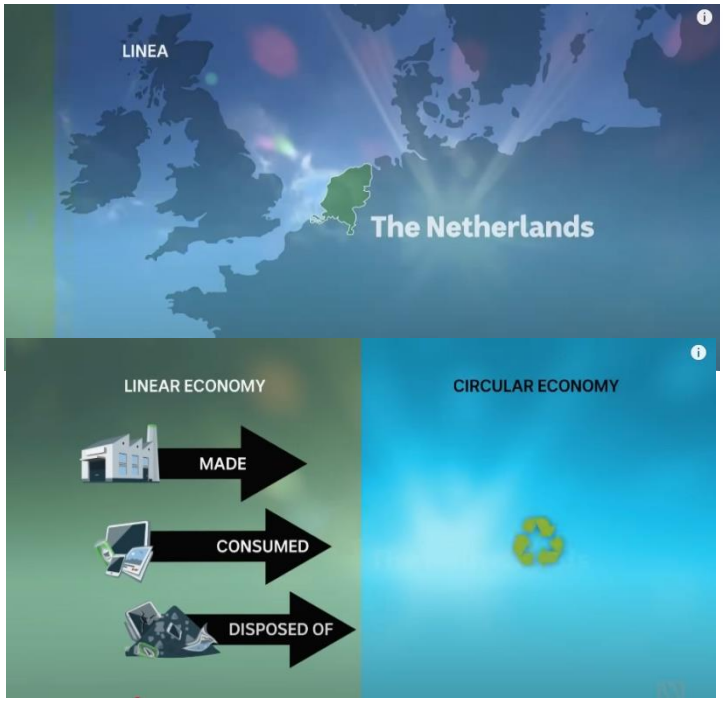
Barry Irvin: It's circularity but it's a virtuous circle where everybody wins. And that is from an economic point of view, from an output point of view and from an environmental point of view. The mountain ranges themselves….

Pip Courtney: Barry's been on a quest for circularity for several years. It was the view from his veranda that convinced him the ideal place to trial circular economy principles was in the Bega Valley. Bordered on three sides by mountains and one side by 220km of ocean, the natural boundaries contain a single council, airport and port,

and there are just two roads in and out.

Barry Irvin: We can measure everything in this valley. What we should be doing if we were really having a go, is convert this valley to be entirely circular. We could use this for proof of concept. We could actually prove things up really quickly. We could also prove that things failed and didn't work really quickly. And then we could share that knowledge because we've got to solve it.,, across the state, across the country and indeed across the world.

Pip Courtney: Circularity appeared on Barry's radar when a Dutch banker warned him the language around sustainability was old, and if Australia didn't adopt the practices of a circular economy, it would fail to reach net zero goals.



Barry Irvin: In the Netherlands, the target isn't net zero by 2050. It's to be a fully circular economy by 2050. I'm curious, so I said, I didn't actually know what that meant, so I just said, tell me more. It was probably a light bulb moment for me.

Pip Courtney: The Netherlands is one of the leading countries in the world to begin moving from a linear economy where goods are made, consumed and disposed of into a circular one where finite resources are recovered, recycled and reused.

Lisa McLean: It's about keeping materials in the economy for as long as possible at their highest value. Designing out waste and pollution and then regenerating natural systems.

Pip Courtney: Supply chains traditionally go one way and end in landfill. Circularity reverses supply chains to recover materials for reuse.

Lisa McLean is the CEO of Circularity Australia.

Lisa McLean: If there's more gold and silver in a tonne of iPhones than a tonne of, ore from a gold or silver mine, you can still be a miner, but you'll be mining it out of iPhones instead.

Governments around the world are moving towards a circular economy. The World Economic Forum has embraced the World Circular Economy Forum. It's the only economic framework we have to grow our economies in a resource and carbon constrained future. So it's actually all we've got, we better make the most of it.

Pip Courtney: Lisa McClean says Australia won't reach net zero without going circular.

Lisa McLean: We are focusing a lot, which we need to on cutting carbon and that renewable energy transition. And that's great. That's going to manage about 45%, 55% of the emissions we need to cut. But the remaining 45% is what circular economy is needed for, because that's the embedded carbon. That's the carbon that is embodied in materials.

Pip Courtney: Circularity converts have a saying, that once you see it, you can't unsee it. As it makes so much sense. Once Barry saw it, he was on board. But not just for his company, Bega Group.

Barry Irvin: Changing Bega Cheese will be nice, but it won't shift the dial. Changing the Bega Valley will begin to shift the dial. Sharing what we learn here with everyone else and saying here it is, it's

yours. Please use it as you wish. That will start to shift the dial.

Pip Courtney: Barry set up the Bega Circular Valley Project with the goal of making the shire Australia's leading circular economy by

2030.

He's confident residents will see economic, environmental and social transformation.

Barry Irvin: Ten years - I would be going 30 to 50% is where we should be looking. Need to be catching up to the types of targets that the Europeans have.

Kristy McBain, Bega's former Mayor: And great initiatives are backed with action.

Pip Courtney: Bega's former mayor says if anyone can make it work, it's Barry who's known for his drive, influence and connections.

Kristy McBain, Federal Minister for Regional Development, Local Government and Territories, ALP Member for Eden-Monaro: They've got Rabobank on board, KPMG, Deloittes, Charles Sturt University, University of Wollongong, the local council, the

state government, the federal government. They've brought all of these players to the table because we know that change happens in regional communities and we don't want to let it happen to us. We want to be at the forefront of it.

Barry Irvin: If you think about the natural advantages this valley has, we shouldn't be looking to be average. We should be looking to be better.

Pip Courtney: Barry's not known for being average. When the former banker and fifth generation dairy farmer joined Bega Cheese in 1991, it was a small dairy co-op. Now it's a listed company turning over more than $3 billion a year. Barry wants Bega Group to be Australia's best corporate example of circularity.

Manjit Randhawa, Bega Group Environmental Manager: As we were extracting the milk materials in the past they were going down the drain.

Pip Courtney: He's given environmental manager Manjit Randhawa a big job: reduce emissions, water and power consumption and find valuable uses for waste.

Manjit Randhawa: But future projects, we are looking at all our organics turning into biogas and on that growing some seaweed. And all these projects are alive projects due to circularity.

Pip Courtney: His latest success is this evaporator, which removes minerals from liquid whey waste.

Manjit Randhawa: This brings around $3000 to $5000 tonne to site. it's a it's a good, good project to do and to pay for them within, within a year or so pay for itself.

Pip Courtney: The Bega Group's been circular without realising it for some time. This

cheese plant's boiler runs on wood waste. It keeps power bills down and solved a sawmill's disposal problem. What's left is fly ash.

Interviewer: So that's all that's left after burning? At what temperature?

Manjit Randhawa: This will be burning at 750 degrees in our furnace, in our burner, creating steam for site.

Pip Courtney: Sending two tonnes a day to landfill costs the company $200,000 a year. Now it's delivered free to dairy farmers as a lime replacement. And Wollongong University is investigating if fly ash can cut CO_2 emissions in cement production.

Barry Irvin: So, you've got everything from mild cheese to tasty to strong and bitey...

Pip Courtney: The easy projects are done. Most plastic and cardboard packaging is recycled and factory waste water is diverted to pasture next door.

Manjit Randhawa So they liberate around 1.2 million litres of wastewater. And that wastewater is at this stage is beneficially reused to grow grass.

Pip Courtney: But as opportunities in the blue carbon world emerge, it's expected wastewater will go to higher value uses like onshore seaweed farms.

Dr Pia Winberg says these farms producing ingredients for human and animal consumption could use it all.

Dr Pia Winberg, Seaweed Scientist: We've already ironed out the whole process of growing a unique Australian green seaweed. We've done all the food safety work, we've even done clinical studies. We know how to dry it, we know how to put it into foods. And yes, we've actually achieved our first export this week. So we have the system and now we just need to make it bigger for Australia. It should be at least as big as 10% of the wheat industry. It's got huge potential. seaweed is a massive crop in Asia and we are girt by sea in Australia and really haven't scratched the surface of this opportunity.

It does create a new crop with so many more benefits and bringing nutrition from the sea into the food chain. Things like omega three, iodine and that sort of thing that's missing. So yes, it should be a part of our land to sea cycle of food.

Pip Courtney: The launch of Bega's Circularity Project has marine scientists buzzing. The increased collaboration and funding will stimulate innovation.

Dr Pia Winberg: It's really exciting when you can actually herd the cats and start to communicate across silos of both industry, academia, government and collectively say, let's make this happen.

Prof Tim McCarthy: Our blue carbon researchers are absolutely ecstatic to get people understanding what's happening under the water, and how that is actually fundamental to saving our planet. That's going to be a huge benefit, both for our researchers to tell their stories, and for the public to actually understand what's worth investing in.

Pip Courtney: The goal is for a coastline dotted with new seaweed and kelp rearing, growing and processing operations on and off shore, and while increasing local wealth by creating jobs in new industries is a key goal of circularity. So too is habitat repair.

Prof Tim McCarthy: The regeneration of kelp is essential for creating habitat for marine life. It also creates nutrients in the water that, make the ocean healthier. And we can actually harvest quite a lot of that kelp to make useful products that make us healthier and make our land healthier as well.

Pip Courtney: South Coast Sea Urchins is a textbook example of circularity.

William Brunker, Processing Manager, South Coast Sea Urchins: So they can chomp straight through the stems of these massive kelp plants.

Pip Courtney: The roe of the invasive long spined sea urchin is a delicacy, so it's worth paying divers to bring the environmental vandals in for processing. We can't overfish them. In fact, we specifically target them because they are a pest. So, they're an endemic species, but they're massively overpopulated, which means that they're killing all of the kelp and the

seagrasses, which abalone and the rock lobsters need to grow in.

Pip Courtney: More than 90% of the pest is waste. Once, the only disposal option was landfill, which cost thousands in fees. Someone saw some value there though, and now remove it for free.

Interviewer: Will you be able to expand the business and get more of these spiky things out of the ocean?

William Brunker: Yes, yes, the answer is yes, yes and yes, a massively scalable business. We've got divers ready to go. We are setting up more and more infrastructure to enable us to keep growing the business and the businesses which take our waste. They need more and more by the day.

Pip Courtney: It's going into compost. Brothers Tim and Kyren Crane started their fish and timber compost venture five years ago. The first company licensed by the New South Wales EPA to use putrescent or rotting seafood.

Bega Valley Shire Council staff officer: I can see in this pile abalone, mussels, oysters... scallops, sea urchins and some fish.

Tim Crane, Compost Producer: Yeah. We've got abalone, mussels...

Pip Courtney: while small, last year the business saved 500 tonnes of marine waste from landfill. The leftover shells are being crushed and trialed as a lime substitute for pasture.

Kyren Crane, Compost Producer: Yeah, it's got a little bit more to mature yet, but, yeah, it's getting pretty close.

Tim Crane: I'd say it might take us 5 or 6 weeks to do our pasteurisations, and then it'll be ready to go to the next stage.

Pip Courtney: How many pasteurisations does it need?

Tim Crane: It needs five pasteurisations. It needs to be over 55 degrees for three days, five times, pretty much.

Pip Courtney: The startup caught the eye of Pentarch Forestry. As well as supplying wood waste. It's invested to help the business expand.

Stephen Dadd, Executive Director, Pentarch Forestry: Pip, we're thrilled to be part of what the boys have done here. they've been working on this for years, and it's an absolute showpiece for the circular economy here in the Bega Valley. This could be a mainstream, large, scale business. And that's why we're investing in the business in our facility in Eden. We will build a big shed, a larger composting area and, packing line and also into bulk delivery so we can supply local and remote agricultural businesses as well.

This is being tested now. So that's right to go.

Pip Courtney: Tim can't believe the pointless and costly fate of such a potent fertiliser.

Tim Crane: We import a lot of stuff from overseas for our farms. Yet the best stuff we're putting in the landfills. It's ridiculous. It's, you know, something's got to change. It's got to change now. And we've had a really big bite of it and we've seen the potential of it.

Pip Courtney: The product is for home gardeners. But the Cranes are developing a dry version that can be rehydrated for agriculture. Dairy farmer Toad Heffernan volunteered a test paddock. He added water sprayed the fish tea and then watched his cows.

Toad Heffernan, Bega Valley dairy farmer: So obviously [cow moos] pardon me. So obviously, the cows know exactly what they're eating. They know what they want better than we do. and they actually moved across back on to where the fish tea was on the heavy dose.

Pip Courtney: He was surprised when sugar levels in his grass were higher hours after spraying, and when a frost hit, the whole farm, he was astonished.

Toad Heffernan: The fish paddock that we'd done the trial on wasn't actually frozen, and I was blown away. Maybe, you know, we can grow our kikuya or maybe 3 or 4 weeks longer into winter and then maybe start it growing a bit earlier coming out of winter.

Pip Courtney: Toad's plan is to stop using artificial imported fertilisers and go local.

Toad Heffernan: And I think if we could literally stop all the cartage coming in here with the trucks and everything, with the carbon footprint, and get our fertiliser from the coast, I mean, minutes away, you know, that. That, to me, is golden. I think Barry's a very smart man, and I think he's jumping on this, the circular economy thing, at the right time.

Pip Courtney: For Barry Irvin's plan to work across the Shire, he needed the biggest dealer in waste, Council, as an ally. Running landfill is expensive, so council didn't need much convincing. While 48% of the region's waste was recycled or turned into compost, 19,000 tonnes was dumped here last year.

Tim Cook, Waste Strategy Coordinator, Bega Valley Shire Council: and unfortunately, that number is increasing every year and it's increasing larger than our population growth. and so what that tells us is that our residents, our population here is per

person becoming more wasteful. It cost us $307 currently per tonne to landfill. And that economic value is not productive. It doesn't lead to anything else. So it's, it's a pretty awful outcome that there are things that have value that are going in there that people think of as waste, rather than thinking of them as a resource that can have a life, through some kind of circular or reuse system.

Pip Courtney: Tim believes if residents and businesses are enthusiastic about circularity, the percentage of waste to landfill can be cut from 52% to single digits. Council's wide awake to the treasure in its trash.

Tim Cook: This is full of, rare and precious metals. So there'll be gold in this. There'll be silver. You can see pretty obviously a lot of copper wiring around it. And then there'll be some rare earths in here as well, and no doubt some cobalt.

Pip Courtney: Tim Cook says e-waste in particular, highlights how much throwaway culture needs to change.

Tim Cook: Even for high value electronic items, we buy it, we use it for a period of time, even if it's still serviceable, if it's considered to be obsolete or obsolescent, people want to get rid of it and get the newer, bigger, higher fidelity, and it's a real shame because this is where it comes in. And it comes at a real cost to the community, to the consumer as well, but something they seem for now to be happy with.

Pip Courtney: Council was an early adopter of the weekly Fogo Food and Organics

collection service. It saved 10,000 tonnes of methane-producing food scraps and garden waste from landfill last year. Council compost the Fogo, locals get half, and the rest goes to

Municipal gardens. Show me what people put in your Fogo bins. The system has just one flaw. Some residents are rubbish at sorting rubbish. Is it frustrating?

Tim Cook: Yeah. Yeah, it's incredibly frustrating.

Pip Courtney: Barry's dream is a carbon trading scheme rewarding emissions reduction and nature conservation. And Council is leading the way. From three of its capped landfills, methane is captured and burned off as CO2.

Tim Cook: Carbon dioxide is still a greenhouse gas, but methane is 28 times more potent, 28 times worse for the environment. And so we partner with a company that, has basically installed that infrastructure, the carbon credit trading that they do, pays for that itself.

Pip Courtney: Bega's already home to a council and a range of businesses following some circularity principles. It's a good place to start at the region's bold, Barry-driven experiment. He thinks he's lit a fire that can't be put out. And the transformation coming the valley's way will be noticed on the world stage.

Barry Irvin, Bega Group: I kind of want to make people jealous. I want I want to make people come to the Bega Valley and go: “We should be like that. We should be doing that.”

Kristy McBain, Federal Member for Eden-Monaro: But here in Bega, we will be world leaders.

Pip Courtney: Late last year, the regional circularity co-operative was launched and a model of the National Centre for Circularity to be built in Bega was unveiled.

Promotional video voiceover: This is Australia's national center for circular discovery.

Pip Courtney: Bega Group kicked in $5million. The New South Wales government, $14million.

Promotional video voiceover: Because now circularity has a home.

Pip Courtney: 40% of Australians have heard about circularity or circular economies, but only 24% know what it actually means. The National Circularity Centre, to be built in front of this beautiful lagoon, will be able to host schoolchildren, academics and staff from private and government organisations. The goal is to spark ideas, encourage collaboration and increase literacy about circularity.

Philip Cox, architect: Talking about circularity and circular philosophy and how to make this into a building, was very, very difficult.

Pip Courtney: Celebrated architect Phillip Cox built in an end-of-life plan. So, one day, all the buildings components will be recycled.

Philip Cox: It's a very exciting space to be in.

Pip Courtney: Set to open in two years, Barry wants it to capture the imagination of not just Bega, but people from all over the globe.

Barry Irvin: This sort of running joke now, the project a few years old, is a little like Hotel California, the fact that you can check out, you can change roles, you can move to another country but you can't leave this project.

Bega Valley Lead Safe Circular Economy Proposal

Email from Elizabeth O'Brien, The LEAD Group Inc, to the man featured in ***Landline - Bega's bid to become a circular economy to reduce waste***, broadcast on Landline on 29 July 2024, ABC TV Australia, viewable on ABC iView online if you subscribe, or at https://www.youtube.com/watch?v=9MbjjIuy1wQ – or read the transcript and screenshots above.

To: Barry Irvin, Executive Chairman, Bega Group; Chairman of Bega Cheese Limited since 2000; and Chairman of Giant Steps, an organisation providing services to children and young adults with autism since 2002

Sent: Tuesday, 17 September 2024

Subject: Attn Barry Irvin - can we please collaborate on a Bega Valley lead safe circular economy?

Dear Barry,

I was blown-away impressed with you when I saw the Landline episode in July 2024 but having also found out from the Bega Group website today that the Peanut Company of Australia in my hometown of Kingaroy is part of the Bega Group, and that you've been the Chairman of Giant Steps helping children and young adults with autism (a condition that can be caused by lead poisoning and can also cause, thru pica, lead exposure) since 2002, has cemented my belief that we were meant to work together to achieve a lead-safe circular economy in the Bega Valley.

2023 Volcano Art Prize (VAP) Entry. Photographer: Claire Leight. Photo description: Elizabeth O'Brien AKA Grandma Lead, in front of the peanut silos in Kingaroy, wearing her "Just a Kid from Kingaroy t-shirt. Lead-Safety Message: **Not Just a Kid from Kingaroy - A Force to be Reckoned With.** URL: https://volcanoartprize.com/portfolio-item/not-just-a-kid-from-kingaroy/

Half my life - the past 34 years - has revolved around lead poisoning and lead contamination prevention and management following the discovery that my three sons were lead poisoned just by living in an old house in inner western Sydney, so I joined with other parents to set up The Lead Education and Abatement Design (LEAD) Group Inc charity. The LEAD Group Inc

has helped tens of thousands of parents (including hundreds of parents of children and young adults with both autism and lead poisoning), renovators, the aging population, organisations, governments and the World Health Organisation (WHO) and United Nations (UN) with the knowledge they needed to take action towards lead-safety. I have for instance, advised Giant Steps staff on which vacuum cleaner to buy for Giant Steps and how to use a LEAD Group Kit to test the school soil for lead at a National Association of Testing Authorities (NATA)-accredited lab.

When I watched you on Landline, I immediately thought that your Bega Valley Circular Economy will only truly be a circular economy if lead is part of the circularity and of how my vision would fit so perfectly into that. I expressed my vision for a circular economy for lead in The LEAD Group's October 2023 submission to the NSW Parliamentary Inquiry into Gold, Silver, Lead and Zinc Mining – see https://www.parliament.nsw.gov.au/lcdocs/submissions/82416/0184%20Lead%20Education%20and%20Abatement%20Design%20(LEAD)%20Group%20Incorporated.pdf. The submission envisions that instead of destroying agricultural areas and Aboriginal sites and requiring too much water and fossil fuels by opening new lead mines, the NSW government should incentivise the replacement of all toxic lead products with non-toxic alternatives, and the collection and recycling of all leaded wastes and toxic lead products, followed by the manufacture of 100% recyclable lead acid batteries made from the 100% recycled lead.

Wouldn't it be wonderful if the Bega Valley could be the first region in the world to firstly do a lead audit… find out how many:

- people are drinking too much lead from new brass taps or from lead flashing on roofs used for rainwater collection,

2021 Volcano Art Prize (VAP) Entry. Photographer: Jason Fargie. Title: Beware Lead Flashing on Your Roof Lead-Safety Message: **Replace lead flashing with non-lead flashing like Wakaflex, in order to reduce lead in rainwater and stormwater.** URL: https://volcanoartprize.com/portfolio-item/beware-lead-flashing-on-your-roof/

- shooters are lead poisoned from lead styphnate primer and leaded ammunition,
- children and renovators are being lead poisoned by exposure to leaded dust, soil and

sediment contaminated due to degradation or mismanagement of pre-1997 paint, the dust from leadlighting and from building cavities (released gradually into the living space or suddenly during ceiling-damaging storms or demolition), or from bushfires and floods

- older people have elevated blood lead levels today from their earlier-in-life lead exposure thus putting them at risk of early death from heart attack, stroke, osteoporosis, dementia and other causes

- cows are lead poisoned due to their inclination to lick and eat lead painted items and discarded lead acid batteries

- backyard eggs have too much lead in them due to leaded soil, water (from tank or tap or PVC hose or galvanised water bowl lead) and/or commercial chicken feed

2024 Volcano Art Prize (VAP) Entry. Title: Chicken Feed Lead Lead-Safety Message: Tell the humans there is lead in some commercial chicken feed that can get in to our eggs along with the soil lead from our backyard chicken run!

- waste streams contain excess lead which could negatively impact the re-use of wastes such as seashells

- re-use materials such as painted wood or bricks in the marketplace are lead painted

Then to use the results of the audit to create a Bega Valley Lead Safe Circularity Plan

including:

to replace:

- leaded taps with stainless steel taps
- lead flashing with non-toxic non-lead flashing
- lead ammunition/primers with non-lead ammunition
- lead roofing with non-lead roofing
- leaded paint in priority child-risk settings with non-leaded paint

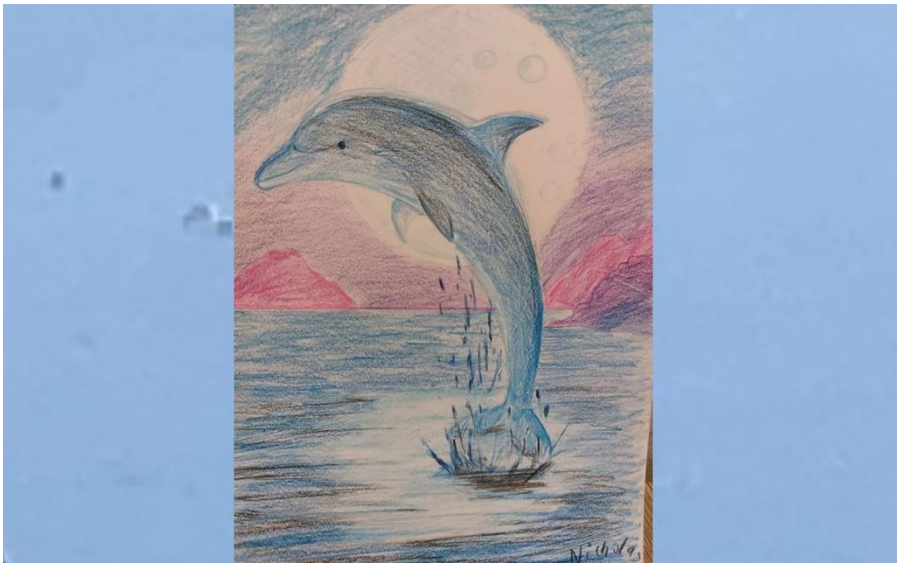
to cover over or make inaccessible to children any existing leadlighting that is desired to be kept but to require that the lead cames are child-inaccessible in new leadlighting or require non-leaded coloured glass art such as DesignLam - non-lead / lead-replacement stained glass, in new projects

to remediate:

- re-use painted wood or bricks by lead-safely stripping the lead paint
- lead contaminated soil in children's play areas and chicken runs
- leaded building cavity dust by having a member of the Australian Dust Removalists Association (ADRA) vacuum it especially prior to the installation of insulation or prior to demolition
- degraded lead paint in childcare facilities and schools

to collect and recycle, in the most water- and fuel-efficient way:

- the leaded products above
- all leaded wastes including sediments
- used lead acid batteries
- lead x-ray vests and x-ray room shielding

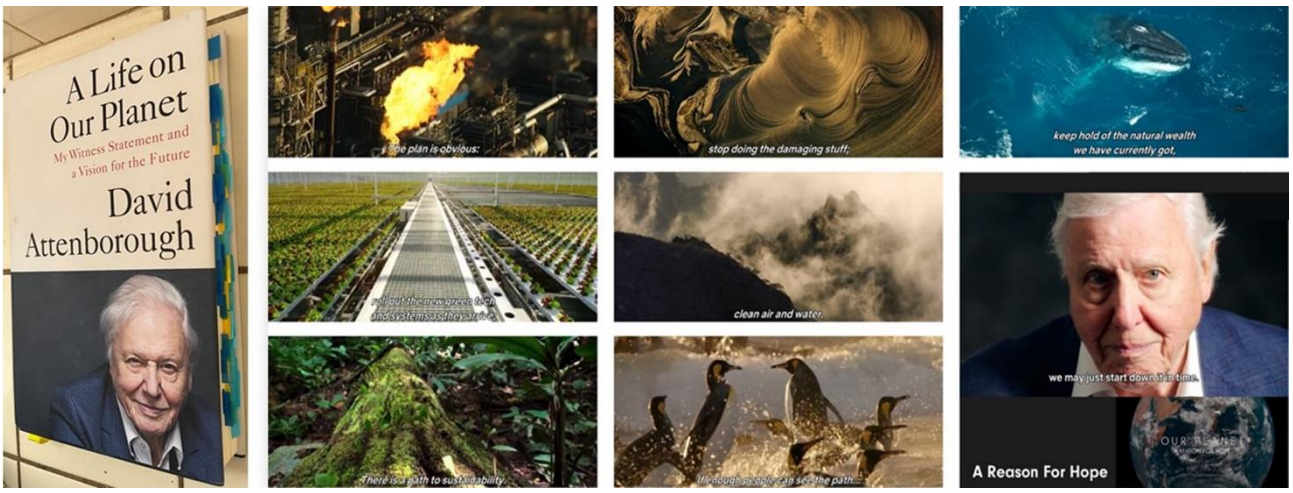


2024 Volcano Art Prize (VAP) Entry. Artist: Nicholas Jeffrey, Age: 11, School Name: Creative Einstein. Title: Moon dolphin porpoising Lead Safety Message: **Don't let spilled lead pellets from a dive weight belt or lead sinkers weigh down our dolphins. Use only stainless steel diving weights and non-lead fishing sinkers.** URL: https://volcanoartprize.com/portfolio-item/moon-dolphin-porpoising/

and finally, to create new 100% recyclable lead acid batteries from 100% recycled lead.

I hope that you can see the potential for your vision to incorporate my vision to protect everyone and the environment from lead, the most common industrial contaminant, and thus to create a smarter longer-lived population that has a chance of averting climate crisis.

You are also invited to read my detailed Model National Lead Safety Policy illustrated by 2023 Volcano Art Prize Entries, in *LEAD Action News* vol 21 no 4 (LANv21n4) - Model National Lead Safety Policy and 2023 Volcano Art Prize - pp3-88/articles 2-11, at https://leadsafeworld.com/wp-content/uploads/2023/12/LANv21n4_Model_National_Lead_Safety_Policy_and_2023_VAP.pdf.



2024 Volcano Art Prize (VAP) Entry. Title: Stop Doing the Damaging Stuff. Lead-safety Message: As I wrote in our Model National Lead Safety Policy (2023): David Attenborough says, "The plan is obvious: stop doing the damaging stuff". So let's stop burning fossil fuels, especially leaded fuels like AvGas, and stop lead poisoning our kids because we need smarter, wiser minds to avert a climate crisis. Description of Work: iPhone 13 photo of A Life on Our Planet marked up where lead-safety and climate-safety interact, and collaged with screenshots collaged by Lucinda Curran and Elizabeth O'Brien from video A Reason for Hope Attenborough 2019. URL: https://volcanoartprize.com/portfolio-item/stop-doing-the-damaging-stuff/

I look forward to receiving your response.

Kind regards

Elizabeth O'Brien, Lead Scientist and Lead Advisor, The LEAD Group Inc. charity

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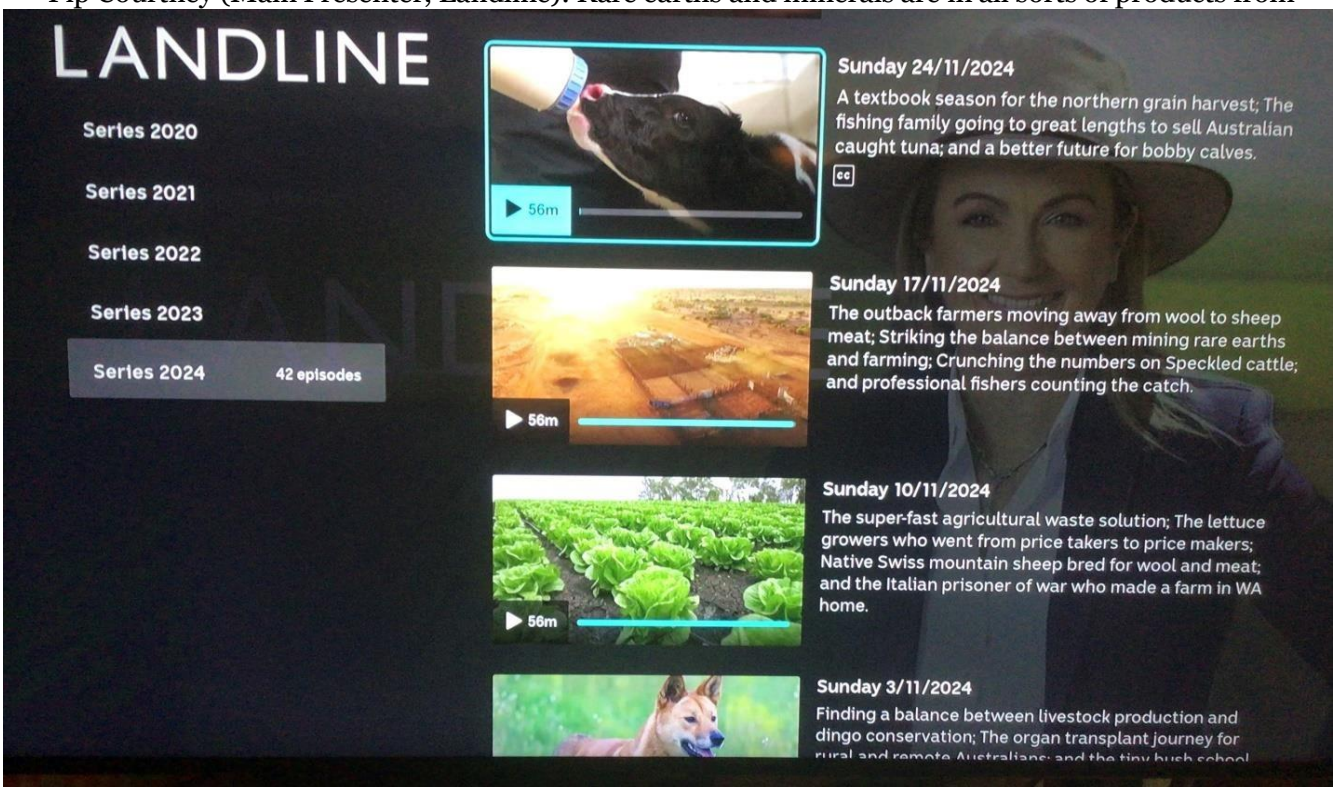
Landline - Mineral Sands by Gillian Aeria 17 Nov 2024

This final segment "Mineral Sands: Striking the balance between mining rare earths and farming" of the 17 Nov 2024 episode of Landline on ABC TV was transcribed by Elizabeth O'Brien of The LEAD Group Inc, and illustrated by screenshots from the show. The full episode can be viewed for the next three years if you have an iView account, at https://iview.abc.net.au/video/RF2314Q040S00

Pip Courtney (Main Presenter, Landline): Rare earths and minerals are in all sorts of products from



mobile phones to electric cars, even ceramic bathtubs. Some of Australia's vast deposits of these valuable global commodities are under prime cropping land in Western Victoria, just one of 12 proposed mines cover 3,500 hectares and could impact on those cropping operations for decades. Farmers told Horsham reporter Gillian Aeria they feel powerless to protect their land from big mining.

Screenshot: Map showing Dooen in Wotjobaluk Country, Victoria, Australia.

Gillian Aeria, Reporter, ABC, Horsham: The Wimmera Plains in Western Victoria grows pulses, canola and wheat bound for markets in China, India and Vietnam, fetching a premium price.

Harvest is time to celebrate.

Lachie Johns: "This is like the grand final. Yeah, it's like your payday. It's that time where you get to reap the rewards of your hard work from the year. You just love it. You can't get into it early enough. and, you know, it's always a slog. It's a busy time of year but that's just part of it and... Yeah just living the dream."

Gillian Aeria: The Johns family farm at Dooen, near Horsham in Victoria's west.

Chris Johns is the fifth generation, and farming has always been his destiny.....

Now their world is being turned upside down....

Chris Johns: it's about half of Victoria [that has] exploration licenses or retention licenses over it.

Donna Johns: roughly 361,000 acres in the Wimmera Mallee.

Gillian Aeria: their farm and house are in the middle of a proposed mineral sands mine known as Avonbank. The company behind the mining bid is WIM Resource which is majority Chinese owned.

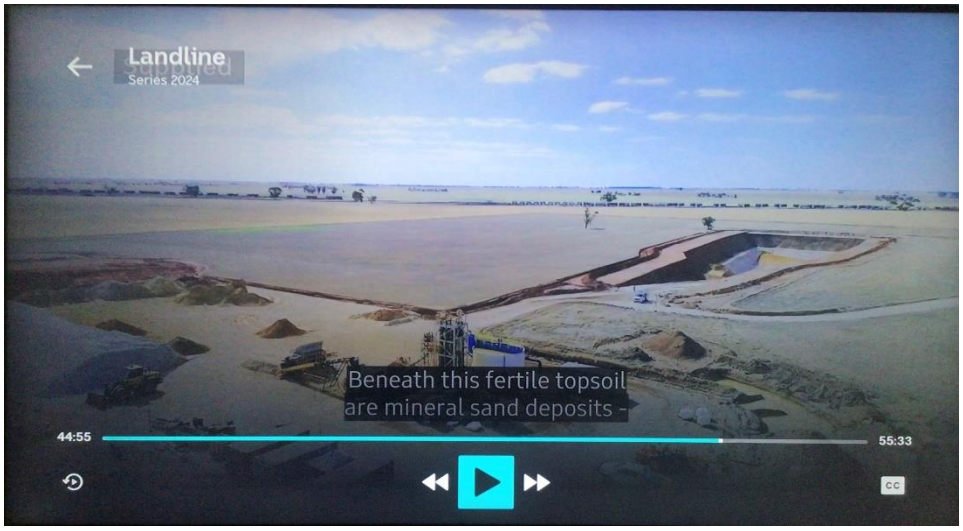
Chris Johns: This house is over 100 years old, built in 1920. Mum always had a beautiful Garden here. They've told us we can't use the house for 36 years - reason being the dust, the noise, the vibration, the lights and they told us that we can't live here because of the toxic dust.

Gillian Aeria: for the Johns, it's heartbreaking. Their family has farmed here since the 1880s. They've planted 30 trees here to commemorate both world wars. Although it will all go.

Chris Johns: there's not too many memorials you'd see get pulled out. we've worked our guts out to have what's here and to have a foreign owned mining company come in and do what they're doing to us.

I just can't understand and it's not just me. This is all my neighbors my community.

Donna Johns: our future is on hold, especially our son, Lachie. He lives here on this property. At this stage, he won't be able to live in the house for 36 years so it's concerning not knowing what his future is or where he's going to be able to live. It's not easy to watch the stress that it's causing to my husband and my son and then, you know, what it does even to my father-in-law, Max.



Gillian Aeria: beneath this topsoil are mineral sand deposits – A lucrative global commodity.

James Sorahan [Minerals Council of Australia (MCA), Victoria]: rare earth minerals in particular these days are used in electric vehicle batteries, in green energy, wind turbine magnets, so we know demand for these is growing. Zircon is in ceramics and also ilmenite and rutile in titanium.

Gillian Aeria: more than 3500 ha of cropping land across 25 rural properties falls into the footprint of WIM Resource's proposed Avonbank mine.

Andrew Weidermann, Grain Producers Australia: in terms of proximity, you couldn't have picked a worse spot even if you tried.

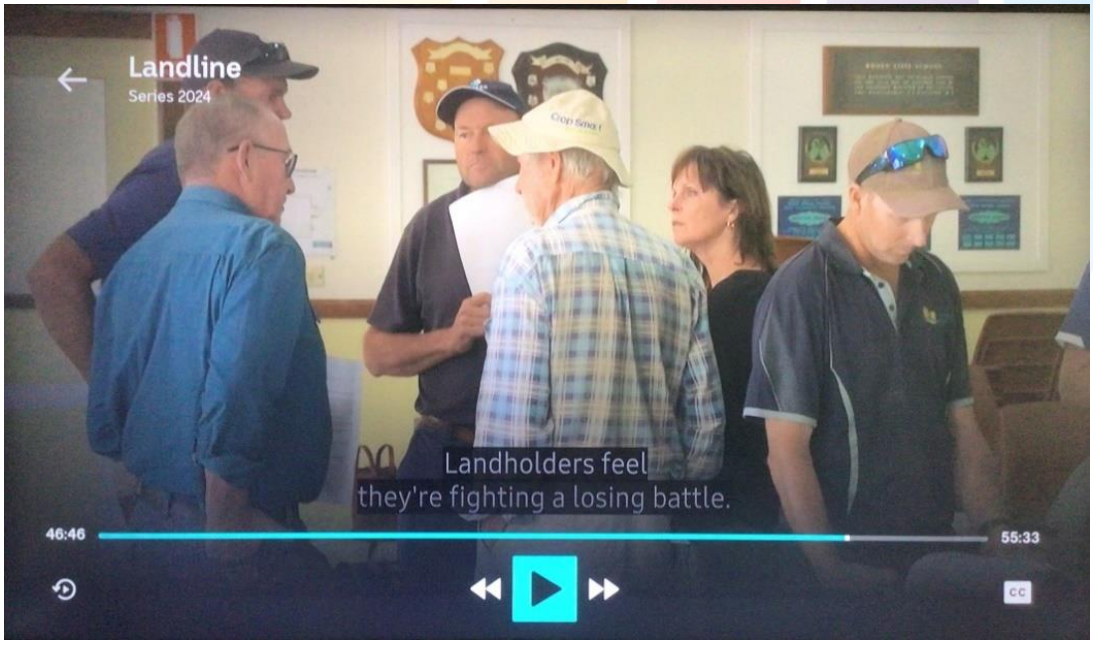
Gillian Aeria: Andrew Weidermann is on the proposed Mines Advisory Board.

Green growers are worried nearby crops and grain handling and export facilities could be contaminated.

Andrew Weidermann: we've asked questions about radioactivity. You know, clearly, once you start to get into the mesonet [middle?] soil profiles and down lower, you're looking at potential radiation issues.

Gillian Aeria: WIM Resource declined an interview with the ABC. But James Sorahan from Victoria's Minerals Council is adamant there's little risk because of strict government regulations.

James Sorahan: all aspects of the environment, soil, water is all looked at very closely, all involved in mine planning, rehab rehabilitation and all of these environmental and safety measures are fully integrated into a mine plan before the mine is approved.



Gillian Aeria: it's estimated the Avon bank deposit contains nearly 500,000,000 tons of ore from which 13 million tons of heavy mineral concentrate will be extracted and shipped to China for further refinement.

It'll end up in smartphones and electric vehicles. The potential returns are immense. landholders feel they're fighting a losing battle.

The Environmental Effects Statement for the Avonbank project, released for public scrutiny last year, to 6000 pages of technical information. The farmer say they were at a loss to present their case at the state government planning inquiry into the proposal.

Gavin Puls, Farmer: We don't feel equipped at all. It's well beyond us. We just like putting plants in the ground to watch them grow.

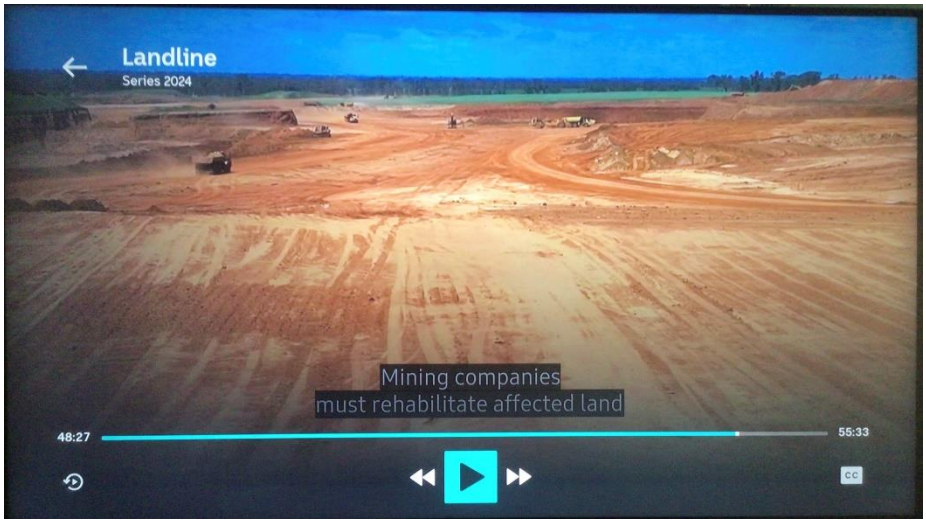
Dean Johns, Landholder: The biggest problem was, you know, we sort out legal advice and after about three weeks after the first communication They told us that there was a conflict of interest, so it didn't give us a lot of time to get through to the EES and I decided to represent myself.

Gillian Aeria: Those who could afford legal advice joint forces to share the cost.

Christopher Johns, Farmer: That was over $80,000 and at this stage we're well over $100,000 we've spent on Solicitors.

Donna Johns: I think for the farmers, the land owners don't really have a lot of say in this and there needs to be a body for people on the land that they can go to to get the information they need to deal with these situations because we're not lawyers and we don't know all the steps in the process.

Gillian Aeria [pictured at left]: these are just some of the thousands of pages that were under public review. It's what the government uses to assess whether a mine should go ahead. And now landholders here in Dooen are now awaiting the government's decision as to whether a mining license should be granted and if it is, these farming families will need to decide whether to sell up or negotiate compensation and lease their land.

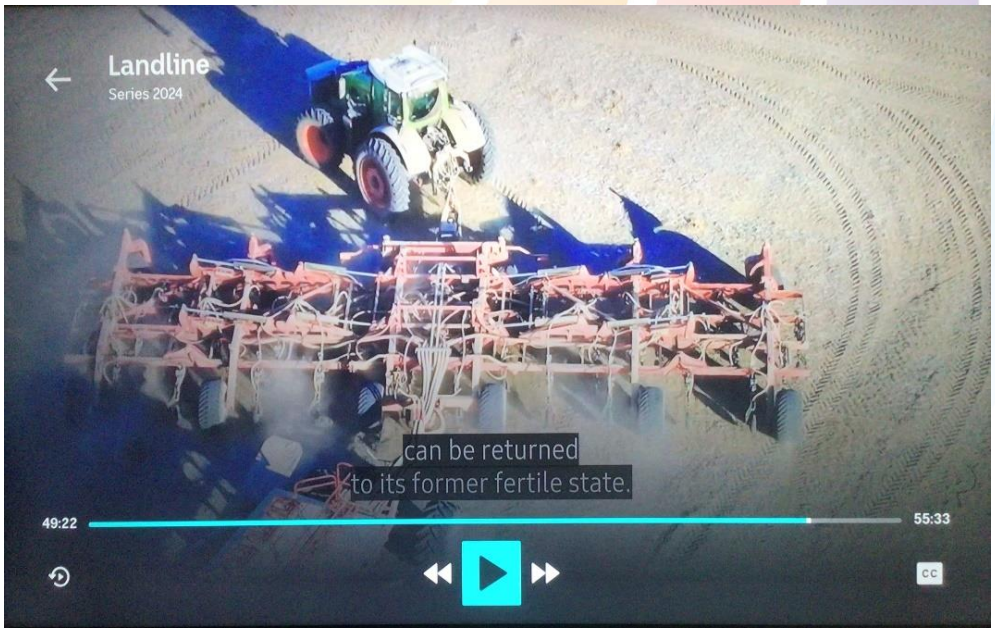


Gillian Aeria: mining companies must rehabilitate affected land At the end of mine's life. WIM Resource has built a test pit to demonstrate that crops can be grown on land Post mining. The results showed successful barley and lentil crops in 2021 and 2022 but the local farmers remain sceptical. Gavin Puls' cropped a paddock alongside the test pit.

Gavin Puls: They've overestimated their yields. We know what the crop looked like when they harvested it and ours was going next door and theirs was nowhere nearby.

Gillian Aeria: so you're not convinced?

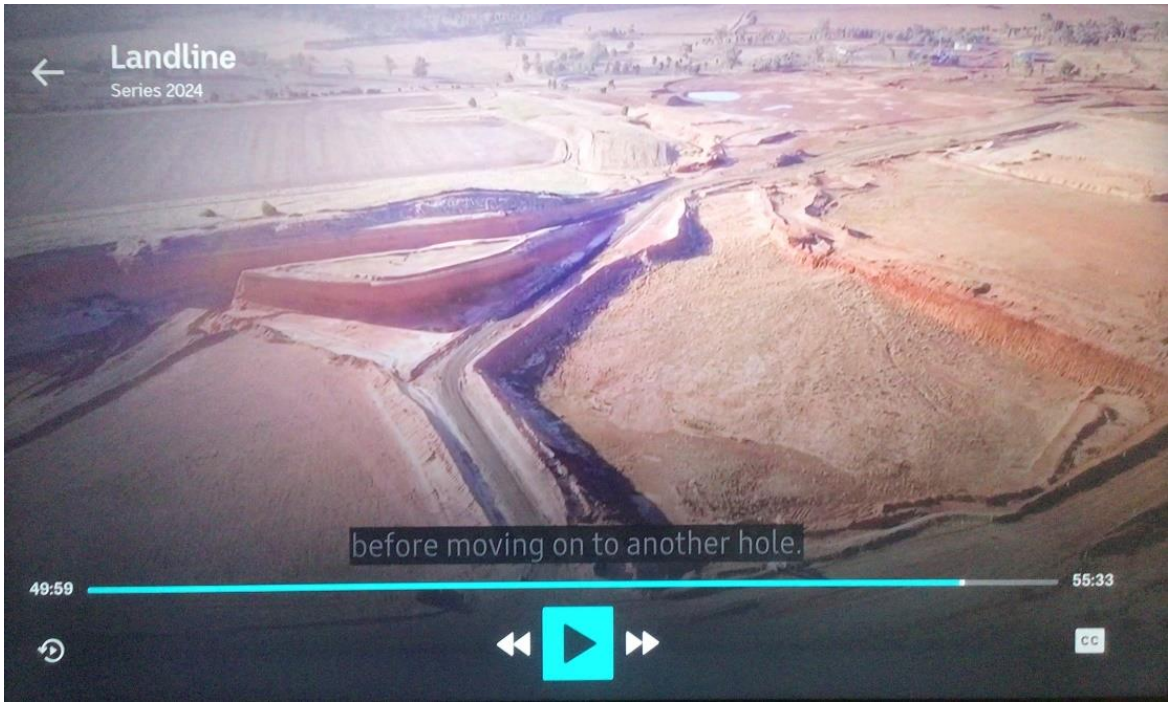
Gavin Puls: no, not convinced at all.



Gillian Aeria: local claim to get those results, WIM Resource would have had to use at least 15 times the amount of gypsum farmers normally would.

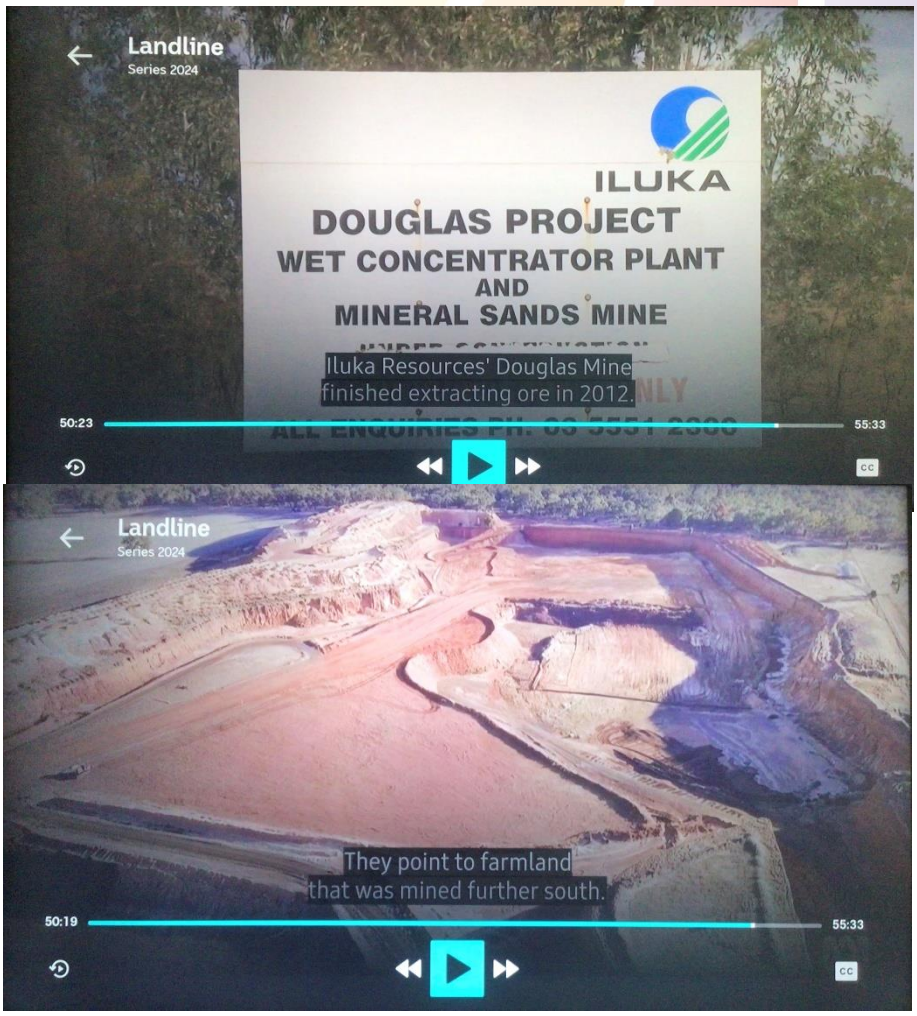
WIM Resource doesn't deny using extra gypsum farmers simply don't believe the soil, once mind can be returned to its former fertile state.

Andrew Weidermann, Grain Producers Australia: I don't know that there's been realistically, where there's an open cut mine that it's been successfully rehabilitated back to the state that it was before it was actually mined. And we're talking about mining an area, basically that is set aside for food production and turning it into a mine. I think there's got to be other areas in Australia where they should be looking at first, rather than trying to tear down, you know, 150 years of agriculture.



Gillian Aeria: WIM Resource Plans to mine no more than 400 ha at one time before moving on to another hole.

James Sorahan, MCA (Vic): Mineral sands mining is particularly small footprint. It's backfilled. It's progressively rehabilitated which means it's continually rehabilitated. It's sort of around four years to 5 years that the land is returned back to farmland.



Gillian Aeria: But farmers don't believe that can happen. They point to farmland that was mined further south. Iluka Resources Douglas Mine finished extracting ore in 2012.

Its main pit is still being backfilled after burying leftover soil and waste byproducts, Including radioactive material, f rom interstate mines. The local council refused a permit for that waste, which Iluka contested and won in the Victorian Civil and Administrative Tribunal.

Ian Ross, Wool Producer: it was supposed to be a moving footprint, but that never happened. The whole mine was mined and 14 k's of pit was still open and today in 2024 it's still not fully closed up. So, the moving footprint was a myth and we were misled as a community by the government, and the regulators let us down.

Gillian Aeria: Wool producer Ian Ross, sat on the Douglas Mine's Environmental Review Committee. He says, large stock piles of soil were left nearby on private farmland, compacting the ground beneath it.

Ian Ross: The compaction there and the loss of soil life because it was too piled for a dozen years, 15 years instead of three years, which means the organic matter, all the microbes in the soil - the compaction of the soil - they tried to deep rip - but the soils would stay damaged.

You can still see in the crops where the pits were and were the stock piles were.

Gillian Aeria: Iluka Resources showed the ABC a pit at the Douglass mine that they say has been rehabilitated and returned to the land holder. The companies head of rare earths, Daniel McGrath, says that land can be cropped.

Daniel McGrath, Iluka Resources [pictured at left]: I'm very confident that the land we've handed back is the equivalent to, if not better than it was when we took it over. A lot of the land here prior to us being here was not suitable for agricultural uses.

Gillian Aeria: And is the landholder happy with the state that it's been returned to?

Daniel McGrath: ah... we've handed a closure and completion notice back to this landowner earlier this year.

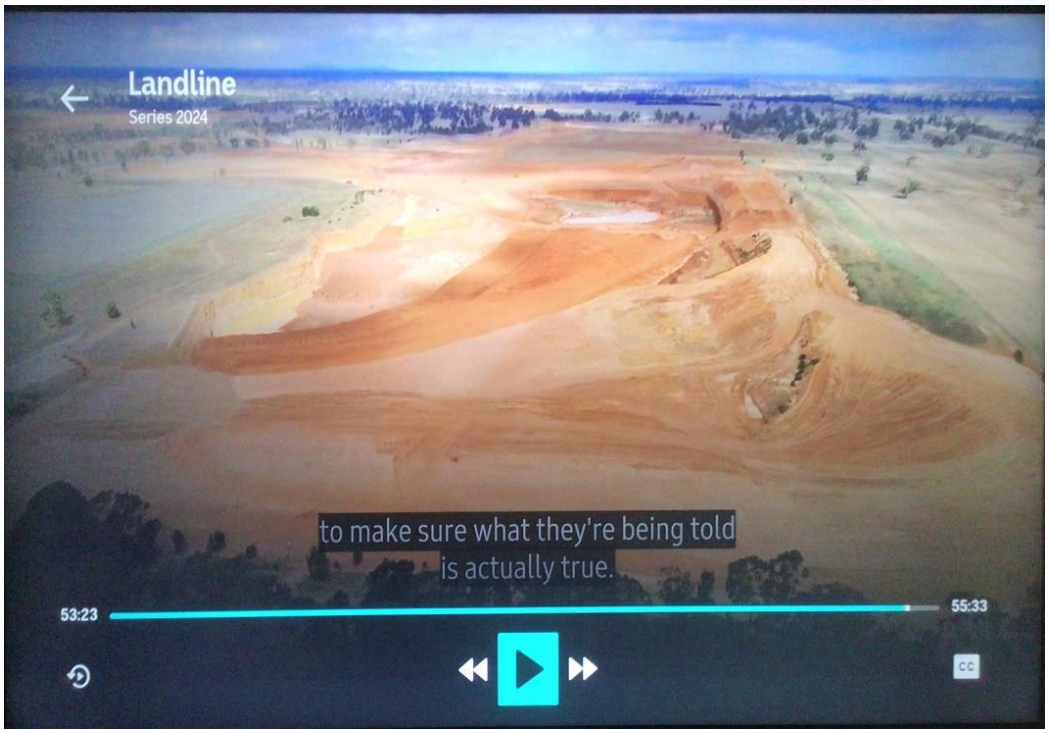
Gillian Aeria: OK. Are they happy with the results?

Daniel McGrath: We've handed the completion notice to the land owner so I'm comfortable that they are very happy with the results.

Gillian Aeria: The land holder told the ABC there's still more work to be done, but declined to comment further because they're bound by a confidentiality agreement.

Ian Ross: What was said in the environmental effects statement and what we signed off on as a community and the government signed off on never happened because the regulators didn't regulate. So, there's a lot of protection for mining and the farming community is not protected.

Gillian Aeria: Ian Ross is also a counselor at Horsham Rural City Council, the local government area where the Avonbank project is being proposed. After the experience of the Douglass mine, he doesn't have faith in the government regulator.



Ian Ross: for there to be an equitable balance, the farmers need to be far more empowered than we are. You have billion-dollar corporations coming onto farmers small operations and they're not expert at managing PR [public relations] or working with mines yet they've got a well-oiled machine coming into a community with great resources and then [for] each individual farm environmental affect statement [farmers need to] look at the science to make sure what they're being told is actually true.

Gillian Aeria: The Victorian minerals council says modern mining methods mean less environmental impact than in the past, and landholders have stronger laws to protect them.

James S..., MCA. (Vic): We don't want mining and farming to be pitted against each other. There's no need for it. Mining can bring good jobs, give reasons for young people to stay in a local area, and grow towns in northern western Victoria that needs more industry. We need more economic diversification.

Gillian Aeria: at Dooen near Horsham, the Johns family and others here would welcome that, but only if it doesn't ruin their lives and livelihoods. They're waiting to hear if a mining license over their farm will be granted to WIM Resource.

Donna Johns: Watching your loved ones suffer and ... you know, just not knowing what they can do - the stress that it's caused has been fairly immense. The not knowing, and the lack of information too, has been a bit hard on us. Probably more is the sleepless nights and, yeah, just dealing with the whole process. It would be devastating if we have to, you know, leave this land.

Pip Courtney: Landline learned late last week that WIM Resource had contacted landholders around Dooen, saying the project is going ahead.

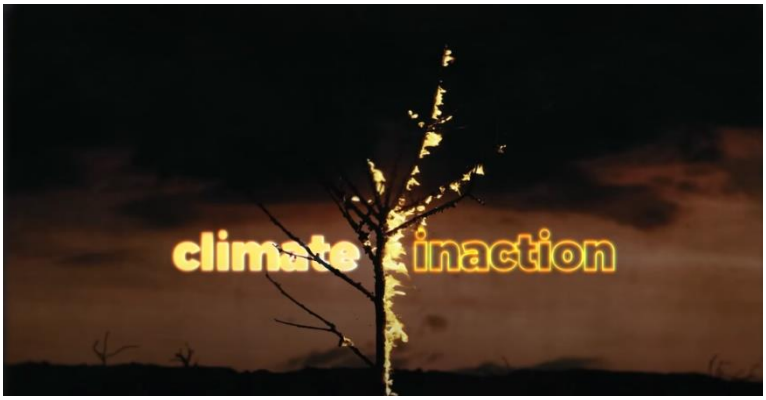
At the time of our recording, the government had not publicly commented.

Have We Surrendered To Collapse?

[TRANSCRIPT and Screenshots from URL: https://www.youtube.com/watch?v=G96PUbxxR2w By: Our Changing Planet]

The world is descending deeper and deeper into climate chaos. As fires rage and storms churn,

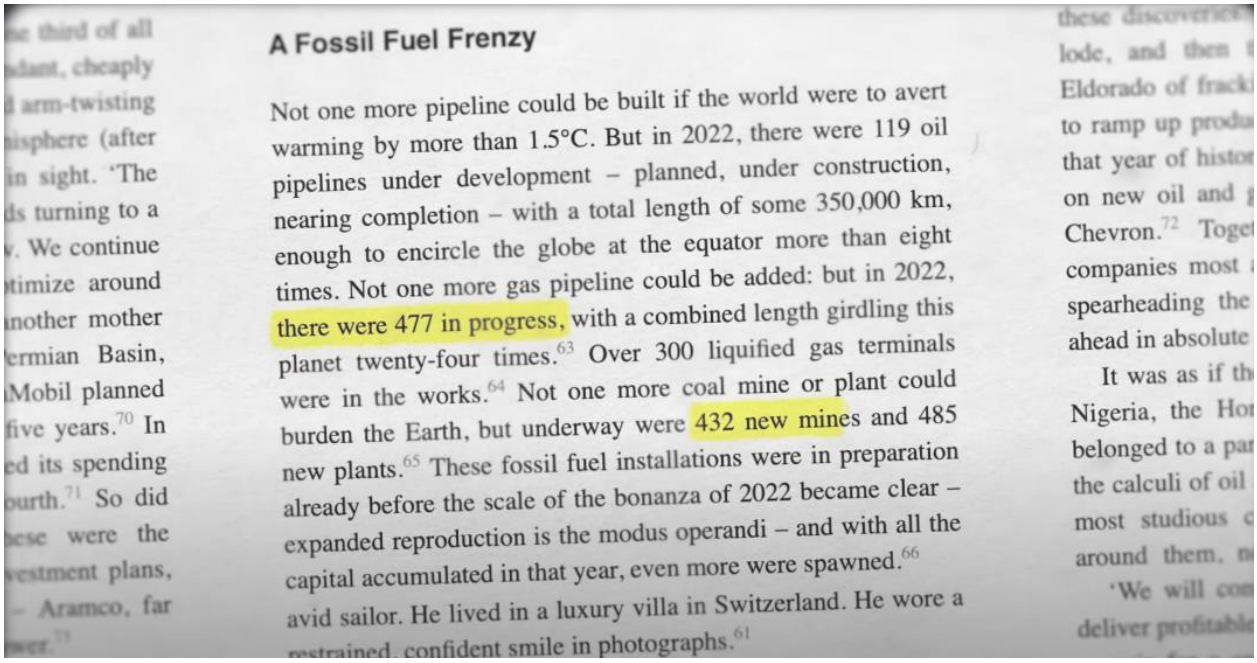
we're about to blow past 1.5°C of warming, which scientists and global leaders cite as the first point of no return for the planet. Past that mark irreparable catastrophes might ignite like a row of dominoes. And it seems as if we are spinning our wheels on climate action. It's not just 1.5°C, under current climate policy the world is on track to blow past 2°C, 2.5°C, and potentially even 3°C. Meanwhile, climate deniers seize power across the world and global climate negotiations fail to produce any sort of meaningful emissions cuts. How did we come to this? How have we continually bowed to the reign of fossil-fueled business-as-usual, despite mounting climate catastrophes? To unravel this question, we'll journey through the treacherous landscape of climate inaction. We'll examine the violent return of



fossil fascists like Trump, the illusory fictions of carbon capture, all the way to the pernicious ideology of overshoot. Today, we examine how the world surrendered to climate collapse.

Towards Collapse and the Rise of Fossil Fascism The damage of our current 1.3°C of global warming

Collapse and the Rise of Fascism has already been catastrophic. Wildfires raged through Los Angeles in early 2025 killing 29 and forcing over 200,000 people from their homes. Tropical cyclone Daniel decimated Libya in 2023 killing almost 6,000 and with over 8,000 missing. Generational floods in Pakistan, Spain, and the US have decimated towns and livelihoods, while drought in Somalia, Kenya, and Ethiopia forces millions on the move. And as we burn more and more fossil fuels, these catastrophes will only become more numerous and devastating. This makes the task ahead of us clear. To avoid even more death and planetary destruction we need to cut emissions to zero, which ultimately means confronting and dismantling fossil fuel production. In other words, any true climate action must ban fossil fuel exploration, extraction, and production. One study found that to stay below 1.5C of warming, 89% of coal, 58% of oil, and 56% of gas reserves must be left in the ground by 2050. Ending fossil fuel production is not a radical agenda. Instead, it's one based on life, especially considering that 1 in 5 deaths are caused by just air pollution from burning fossil fuels. Yet, despite the death toll and immense body of climate science detailing the need to rapidly eliminate emissions, the dismantling of the fossil fuel industry is nowhere in sight. Indeed, the world, especially the imperial core, seems to be doing the exact opposite. Fossil fuel companies are locking in infrastructure that won't be exhausted until as late as 2090. In 2022 alone, 477 gas pipelines, 432 new coal mines, and 485 new



A Fossil Fuel Frenzy

Not one more pipeline could be built if the world were to avert warming by more than 1.5°C. But in 2022, there were 119 oil pipelines under development – planned, under construction, nearing completion – with a total length of some 350,000 km, enough to encircle the globe at the equator more than eight times. Not one more gas pipeline could be added: but in 2022, there were 477 in progress, with a combined length girdling this planet twenty-four times.[63] Over 300 liquified gas terminals were in the works.[64] Not one more coal mine or plant could burden the Earth, but underway were 432 new mines and 485 new plants.[65] These fossil fuel installations were in preparation already before the scale of the bonanza of 2022 became clear – expanded reproduction is the modus operandi – and with all the capital accumulated in that year, even more were spawned.[66]

avid sailor. He lived in a luxury villa in Switzerland. He wore a restrained, confident smile in photographs.[61]

coal plants were slated for or under construction. These assets, this fixed capital, mean potentially trillions of dollars in profit for fossil capitalists or, if climate action is taken seriously, trillions in losses. As this review of carbon lock-in explains, the fixed capital of the fossil fuel empire represents "the largest network of infrastructure ever built, reflecting tens of trillions of dollars of assets and two centuries of technological evolution." But, to reap maximum profits from this massive network of infrastructure, fossil capital must ensure its continued survival. They must relentlessly guard and prolong the life span of their assets.

Enter Trump and the fossil fascist far-right. As I explained in this video, fossil capital has long

protected itself by throwing its power and cash flows behind fascist figureheads eager to ensure business-as-usual. This is exactly what happened with Trump's return to power. Fossil capitalists poured money into his campaign, and in exchange, Trump has already cut down barriers to the and bolstered the flow of oil and gas [play clip]. During his first few months in the White House, Trump placed oil executives and climate deniers to head the Department of the Interior and Energy. Cut down regulations for fossil fuels, and has hacked at renewable and electrification subsidies. Essentially, while he scapegoats immigrants and people of color for America's problems, he's letting fossil capital set fire to the planet. And we're seeing this outside the US with the rise of Germany's far-right party AFD and Sweden's far-right party.

Trump and his fossil fascist counterparts across the globe mark a new low in the descent into climate chaos and the consolidation of power in the hands of fossil capitalists. But the problem is that the current capitalist alternative to fossil fascism has also worked hand in hand to facilitate business as usual. Perhaps in a far less obvious way, liberal capitalist figureheads like Biden or Macron have spearheaded a response to global warming that has meant decades of inaction and the continued accumulation of power and profits in the hands of fossil capitalists. And key to the false action of these liberal leaders is the idea of climate overshoot.

The Liberal Response: Overshoot

The Liberal Response: Overshoot While Trump hands the reigns of power to fossil capital, the other option capitalism presents us with, exemplified in Biden or even the Green Party in Germany, seems to be doing the necessary climate work. They're hosting climate summits and making net zero pledges. But as we will soon see, they are just paying lip service to action while acquiescing to business as usual– to the relentless drive of fossil capitalism. The Biden administration, for example, oversaw a massive expansion of oil drilling on public lands– a fossil fuel build-out that outpaced even Trump's first presidential term. During his presidency, Biden expedited pipeline construction and facilitated record US oil production, and as a result under his administration, the US retook its place as the global leading exporter of liquified natural gas. In short, Biden, while championing his administration's environmental purity, was avoiding confronting and indeed aiding fossil capitalists. We even saw this in Germany as its Green Party approved the destruction of the hamlet of Luzerath to expand a lignite coal mine, and in 2022, the Green Party's economy minister was elated after securing a 15-year liquid natural gas deal with Qatar, explaining "Fifteen years is great… I wouldn't have anything against 20-year or even longer contracts." In short, liberal capitalist governments, while establishing some renewable and clean energy initiatives, are, in reality, overseeing the continued expansion of fossil fuel infrastructure and locking in decades more emissions. Liberal governments are avoiding the one solution that will actually lessen the blow of climate chaos: directly confronting and dismantling fossil fuel production.

But how could this be? These capitalist liberals are supposed to be climate warriors right? Aren't they supposed to be overseeing the renewable energy transition they've claimed so many times is on the horizon? The key piece to this contradiction, this doublethink, this failure of the Paris Agreement, the failure to contain global heating to 1.5°C, is the mythical

promise of overshoot. An insidious tool of capitalist climate governments that allows world leaders to set goals and claim climate action, while actually acquiessing to business-as-usual. But what is overshoot? The co-author of the book Overshoot, Andreas Malm, explains in an interview with the BreakDown, ["the idea of overshoot is basically that you can set a limit to global warming and uh you can respect that limit by exceeding it and then returning to it"]. Essentially overshoot claims that the world can hurtle past 1.5°C of warming, hit some determined peak of warming, and then in the future, when technologies are more developed and cheaper, use carbon capture to drawdown emissions from the atmosphere bringing global temperatures back below 1.5°C. Reading between the lines, this allows global leaders to do nothing right now. It allows them to claim that they are working to address climate change without having to directly confront fossil capital and destroy the immense profits borne out of fossil fuel production.

Unfortunately, overshoot has become institutionalized as the path forward. Most climate models and climate pledges are steeped in this overshoot ideology. According to Andreas Malm and Wim Carton in Overshoot, out of the 578 scenarios included in the Intergovernmental Panel on Climate Change's special report on 1.5°C of warming, 568 included some amount of overshoot. So, just 10 scenarios did not rely on some future scaling up of carbon removal to save us from disaster.

The epicenter of this destructive overshoot ideology has been the annual conference of parties, more commonly known as COP. A yearly climate summit where fossil fuel barons can claim that 1.5C is still the goal while they lock in more and more oil and gas infrastructure [play clip]. These conferences have come to reveal the pageantry that is liberal capitalist climate action. Lacking any sort of binding legislation or contracts, the yearly COPs have become theater for world leaders to claim that they are "doing the work." As Malm and Carton argue, "The annual summits became occasions for the incantation of optimism about a win-win low-carbon transition already underway…what mattered is not what anyone did, but what these leaders appeared to be doing, as seen from the audience floor." Overshoot has become an insidiously magical and effective tool for the capitalist elite. It allows for the contradiction of claiming 1.5C is the goal while doing the opposite– leaving climate action for future generations and allowing for the continued scaling up of fossil fuel infrastructure. But why exactly is overshoot bad? If we can capture carbon from the atmosphere in the future, why should we be worried right now?

Overshoot is a Scam

Overshoot is scam: The concept of overshooting our climate targets and then attempting to reverse the damage that that transgression has caused is a dangerous gamble. Because, the consequences of exceeding 1.5°C, 2°C, or even 2.5°C of warming will be irreversible and catastrophic. Under those temperatures, our landscapes will be transformed, extreme weather events will become more frequent and intense, and ecosystems will collapse. Not to mention, sea levels will rise, displacing millions.

The core of the overshoot ideology is decidedly rotten. Because faith in the success of overshoot means a belief in the power of carbon capture. Whether through bioenergy carbon capture and storage or through direct air capture, the champions of overshoot and indeed the majority of climate action pathways claim that we need a mass scale-up of carbon removal technologies. The problem is that these technologies are untested and unproven at a mass scale. Bioenergy carbon capture and storage, for example, would require land 1 to 2 times the size of India, as it relies on growing carbon-removing crops to burn and use for fuel, and as of 2023, there are only 6 plants in operation. Meanwhile, directly capturing carbon out of the air is essentially a pipedream. While there are a few operational plants, they are just that, few. The current, very optimistic rollout of direct carbon capture by 2030, which includes all projects still in the concept stage, still falls short of the 2050 net zero energy goal according to the International Energy Agency. What's even more concerning is that these technologies currently represent less than 0.1% of all carbon removed from the atmosphere. If we're already struggling to scale up renewables at a rapid pace, why on earth should we expect to do so with carbon removal? And we would need a massive scale-up of carbon capture technology. This paper estimates that up to 400 gigatonnes of carbon dioxide would need to be removed from the atmosphere by 2100 to limit warming to 1.5 °C... "In emissions terms, that is equivalent to running the US energy industry in reverse for around 80 years." Not to mention, these carbon removal technologies should be focused on eliminating and quickly abating any lingering sectors that we're still trying to decarbonize– not occupied with the emissions of business as usual and comparably easy sectors to switch to zero carbon. Essentially, overshoot leans heavily on the fabrication of carbon capture. It claims that we can emit all we want now because someday down the road we'll have carbon removal at a scale that can turn back the clock on the climate. But those promised technologies are unproven and untested at the scale many overshoot pathways demand.

But even if carbon capture technologies did work at the scale we need them to, shooting past 1.5C of warming will cause innumerable climate catastrophes while we wait for mass carbon capture deployment. Once we breach 1.5C of warming and head towards 2C, we increase the likelihood of four irreversible tipping points. As Malm explains in an interview with BreakDown there's a cluster of these tipping points between 1.5 and 2 degrees that's when the melting of the Greenland ice sheet becomes irreversible which means 7 MERS of sea level rise same with the West Antarctic ice sheet same with the potential collapse of the Amazon into a Savannah and the melting of the permafrost']. So, overshooting 1.5C would mean the permanent death of coral reefs, the Amazon turning into savannah, the complete meltdown of the Greenland, and West Antarctic Ice sheet, and the melting of boreal permafrost, all of which are irreversible. Put another way, no amount of carbon capture will be able to reconstruct coral reefs or the ice sheets. Again Malm argues ["the true extremism here is not to insist on 1.5 degrees as a Target but it is to just let things continue in the hope that we can have some kind of techno fix towards the end of the century if these tipping points are crossed there's no going back"]. In essence, overshoot condemns us to a world drastically different than the one we know and love today.

Not only does overshoot draw us closer to catastrophic tipping points, but it also assures the continued death and destruction wrought by supercharged droughts, storms, floods, and fires. It means more storms like Daniel that decimated Libya or even worse wildfires than those that hit Los Angeles earlier this year. And these disasters will hit poor and marginalized people the hardest. Leading Malm and Carton to claim that overshoot is an act of paupercide. The ruling class is choosing business as usual and the pursuit of profits now in exchange for the immiseration of millions in the coming future.

And given this destruction, why on earth should we put our faith in future capitalist leaders to do the heavy lifting when the current ones are avoiding the task of confronting fossil fuels at all costs? I'll say it again, overshoot is an immense gamble. One that ensures the deaths of millions and a cascade of tipping points in the hopes that untested technologies will someday save us. Overshoot exploits future generations so that the current ruling class may profit, plain and simple. Malm and Carton compare it to "hosting a massive party in which you let the guests set the roof on fire, flood the basement and spoil the garden, only to then move out and leave the repair bill on the table for your children and grandchildren to take care of." And the longer we wait to confront fossil capital–to dismantle fossil fuel production–the deeper ingrained that production will become in our economy. Infrastructure, profits, and emission will grow, making it even more difficult for future generations to scrape back below 1.5C of warming. Overshoot is not the answer nor is fossil fascism. The only way to avoid tipping points and prevent climate change is to directly confront fossil capital. To end fossil fuel use altogether.

We Must Strand Assets

We Must Strand Assets: In 2022, leftist leader Gustavo Petro ascended to the Colombian presidency on a wave of mass democratic support. This was a moment in environmental history because Petro was an unabashed climate warrior. Unlike the false promises of Biden or the German Green Party, Petro seems genuinely committed to cutting emissions. With a democratic mandate behind him, Petro announced and set in motion the phase-out of all fossil fuel production in Colombia. Petro is doing what no other state leader is doing. He is actually confronting fossil capital head-on and banning fossil fuels. Colombia is now a case study on state-led climate action. One that doesn't just scale up renewables, but also bans and dismantles fossil fuel production. Because, the solution to climate change is quite simple, we must end the fossil fuel industry, which at its core means stranding billions, if not trillions of dollars in fossil fuel pipelines, rigs, mines, tankers, and so much more. This is an economy-shattering and revolutionary task in a world where so much is reliant on fossil fuels. Indeed, this paper estimates that stranding fossil fuel assets to meet 1.8C or 1.5C would mean a $13-17 trillion loss for oil and gas producers. The authors then write "This implies a strong incentive for fossil fuel producers to continue resisting climate stabilization." Which is why we're seeing the combination of overshoot ideology and fossil fascism burst into climate politics. And when you consider the fact that the biggest banks are heavily invested in fossil fuel companies, while everything from plastics to food production runs on oil and gas extraction,

the dismantling of the fossil fuel industry would mean a complete overhaul of the economy– a mass stranding of assets on a scale we've never seen. According to the founder of the Carbon Tracker Initiative, halting fossil fuel extraction and production could mean economy-wide losses four or five times larger than the 2008 financial crisis. But the longer we wait, the larger the crisis will be. Fossil capitalists will continue to pour more money into fixed capital in the form of oil wells, pipelines, and rigs the longer we keep delaying the confrontation. As Marxist philosopher Theodor Adorno writes "The more the system expands, the more it hardens into what it has always been." So, the long we wait, the more drastic the battle with fossil capital will be.

It makes sense, then, why liberal capitalist leaders are so reluctant to confront fossil capital and end fossil fuel production. A 100% renewable world without fossil fuel emissions requires challenging the foundations of our capitalist economy. It means an escape from profit and capitalism. Overshoot allows leaders to ignore that challenge for now. The ruling class can conveniently kick the can down the road to later generations. But this confrontation must happen eventually. Otherwise, the world will continue to heat up and descend further into climate chaos. There are historical parallels to the mass stranding of fossil fuel assets, like the abolition of slavery in the US or the 1917 seizure of assets by the Bolsheviks in Russia. These were world-shaking events, but necessary for the well-being of so many. A 100% renewable world without fossil fuels is possible we just have to have the courage to challenge capitalism and dismantle the fossil fuel empire.

But right now, that fossil fuel empire is gaining steam, especially in the United States where Trump has taken power once again is attempting to rip down environmental policy left and right. It feels like every day there's a new executive action striking, firing EPA workers, or censoring climate science, and then the next day the motion is overturned in the courts. Like in the case of the USDA restoring climate change-related pages to their website after a lawsuit.

Under Trump and in this age of disinformation and media bias, it can be hard actually know what's going on, especially with climate policy, which is why I've been using this video's sponsor Ground News to peer past the curtain of media bias and stay up to date with Trump's anti-environmental agenda.

For this story, of the more than 35 sources compiled, over 40% leaned left while less than 20% leaned center. Comparing the headlines with Ground News's Bias Comparison, we can see how the contents of these articles differ (show Bias Comparison feature, located under primary story headline). For example, left-leaning outlets frame the USDA's removal of climate change webpages as a clear violation of federal law and a harmful censorship effort, while center-leaning outlets adopt a neutral, procedural tone, describing the restoration as a "positive sign" without casting blame.

I've been using Ground News for a long time because of tools like bias comparison that helps make sense of Trump's anti-climate agenda. Ground News is a website and app that collects over 50,000 media sources into one place and lets you compare how headlines are being covered across the political spectrum. Every story comes with a quick visual breakdown of the

political bias, factuality, and ownership of the sources reporting - all backed by ratings from three independent news monitoring organizations.

The layout of Ground News allows you to quickly compare headlines and articles to see what information is emphasized or left out.

I especially like the Blindspot feed, which highlights stories that are disproportionately covered by one side of the political spectrum. Especially when it comes to news about climate change, I think it's really important to see what articles on both sides of the political spectrum are missing. Which is why I use Ground News literally every day.

You can go to ground.news/occ or scan the QR code on screen today to get 40% off their Vantage Subscription, which includes a feature called my news bias. It's basically a dashboard that visualizes your news diet over time. It shows your top news sources, whether you engage with different perspectives, what topics you're interested in and a lot more.

Go to ground.news/occ, scan the QR code on screen or click the link in the description today to support an independent news platform working to make the media landscape more transparent.

2024 Volcano Art Prize (VAP) Entry. Photographer: Elizabeth O'Brien. Title: Sea Level Rise Lead-Safety Message: Take steps today to reduce your fossil fuel burning to slow the rate of sea level rise and lead pollution of the land and oceans. Description of Work: iPhone 13 photo. Lead-Safety Message from https://theconversation.com/burning-fossil-fuels-is-responsible-for-most-sea-level-rise-since-1970-57286# VAP URL: https://volcanoartprize.com/portfolio-item/sea-level-rise-2/

BFPCA Media Release - Lead-Based AvGas Threatens Children's Health

While lead-based avgas threatens children's health, Crisafulli and Miles rule out a ban

Media release Published by BFPCA - **Brisbane Flight Path Community Alliance** – people before planes - on 23/10/2024 [during International Lead Poisoning Prevention Week of Action (ILPPWA)] at https://bfpca.org.au/lead/

- Several Queensland residents who rely on rainwater harvesting have **tested positive for lead** in their tank water, likely due to lead emissions from aircraft.
- Both Steven Miles and David Crisafulli have **declined to ban** leaded aviation gasoline (avgas).
- In 2023, 69.8 million litres of avgas were sold in Australia, releasing **39 tonnes of lead** into the environment, predominantly around airports.
- Aircraft at Brisbane and Archerfield Airports are still using leaded avgas, even though it was banned in cars in 2002 due to toxic air pollution.
- Lead exposure causes **serious health harms**, particularly to children, causing cognitive impairments, developmental delays, and behavioural problems.
- No government body monitors lead emissions from aircraft in Queensland, leaving communities vulnerable to unmeasured lead exposure.
- The EU will phase out leaded avgas next year (2025) and the USA by 2030.

Brisbane Flight Path Community Alliance (BFPCA) is calling for urgent action on

the continued use of leaded aviation gasoline (avgas) by aircraft operating from Brisbane and Archerfield Airports. Despite leaded petrol being banned in cars in 2002 due to its harmful effects, avgas continues to fuel many older piston-engine aircraft in general aviation. The fleet includes aircraft with an average age of 37.7 years for fixed-wing and 21.6 years for rotary aircraft, many of which still rely on avgas containing tetraethyl lead (TEL), a toxic additive phased out in other industries decades ago.

According to the Australian Petroleum Statistics, 69.8 million litres of avgas were sold in Australia in 2023, **resulting in the release of 39 tonnes of lead into the environment**, primarily around airports.

These planes fly low over Brisbane's suburbs daily, dispersing harmful lead particles into the air, soil, and water, posing serious health risks, especially for children and pregnant women. Research has shown that lead exposure has no safe threshold, with even small amounts leading to cognitive impairments, lower IQ, learning disabilities, and behavioural problems like ADHD and aggression. The cumulative effect of lead in the body causes long-term damage, and its continued use in aviation puts communities near airports, particularly those relying on tank water, at significant risk. Several residents in Samford Valley and Upper Brookfield have already reported positive lead tests in their rainwater.

A Samford resident with grandchildren – her tank water tested positive for lead

Alarmingly, no government body monitors lead levels from aircraft emissions in Queensland or Australia. In 2013, under Premier Campbell Newman, the Queensland Government discontinued routine monitoring of lead in the air around South East Queensland. This lack of data leaves a critical gap in understanding the extent of the exposure, especially in high-traffic areas near airports. Studies from the UK and the US suggest that these areas may be experiencing elevated lead levels, potentially exceeding the National Environmental Protection Measure (NEPM) standard of 0.50 µg/m³.

In the recent Senate Inquiry hearing in Canberra on 20 Sep 2024, it was revealed that, despite the ongoing use of leaded avgas, no government body is currently monitoring lead levels from aviation in the air anywhere in Australia.

Senator HODGINS-MAY: *You don't? Basically, I was just going to follow up on that and ask if it's correct that none of you—the department, Airservices Australia or CASA—collect data about the use of leaded fuel.*

Mr Marcelja: *That's correct; yes.*

Senator HODGINS-MAY: *You don't?*

Mr Marcelja: *We don't collect data. To my knowledge nobody does.*

Senator HODGINS-MAY: *Is it correct that leaded fuel is used by aircraft at both Brisbane and Archerfield airports?*

Mr Marcelja: *Low-lead fuel is used by most general aviation aircraft around the country; yes.*

Senator HODGINS-MAY: *Is there any explanation why no-one collects data on this?*

Mr Marcelja: *I guess the data would only exist in the volumes of fuel sold. The fuel providers might be able to provide volumes, but there's no requirement for anyone at this table to collect the data, so nobody does that.*

Source: Hansard transcript, page 49

While data from the Australian Petroleum Statistics confirms that on average up to **39 tonnes of lead from avgas is released into the environment each year**, primarily around airports, there is no routine monitoring of lead emissions in the

vicinity of airports where avgas-fuelled planes operate daily. This is a significant public health oversight, particularly for children who are most vulnerable to lead exposure. This revelation is especially worrying for nearby schools such as Acacia Ridge State School, Watson Road State School (Acacia Ridge), St Brendan's Catholic Primary School (Moorooka), Airport Drive Early Learning Centre (Brisbane Airport), and Hendra State School.

A 2023 US-based study confirmed a strong correlation between proximity to airports and elevated blood lead levels in children, particularly within 500 meters of airports. It found that blood lead levels increased with the volume of piston-engine aircraft traffic and the amount of avgas sold.

This is not just a local issue—globally, the aviation industry is moving towards phasing out leaded fuel. The European Union has committed to phasing out leaded avgas by next year (2025), and the United States plans to eliminate its use by 2030. Yet, Australia has no clear strategy, and political leaders, including Steven Miles and David Crisafulli, have declined to ban leaded avgas in Queensland.

In his response letter to BFPCA, Premier Steven Miles said: ***"Thank you for your suggestion to ban all lead-based aircraft operations. Our government is committed to supporting the uptake of sustainable aviation fuel in Queensland to not only displace the use of lead in aviation fuel but to also significantly lower overall emissions."*** – BFPCA argue that this is ill-informed. A majority of Australia's general aviation fleet, due to its age, uses lead-based avgas, which cannot currently be substituted with sustainable aviation fuel (SAF).

Concerned residents across 220+ suburbs have volunteered to distribute and deliver more than 40,000 BFPCA flyers highlighting the noise and lead pollution from Brisbane's flight paths. This grassroots effort demonstrates the growing concern among Brisbane's communities about the ongoing health impacts of leaded avgas and aircraft noise pollution.

BFPCA is working tirelessly to raise awareness of these pressing issues, and has asked the three main parties were they stand. You can read their responses in full at https://bfpca.org.au/qld24/

Quotes Attributable to Prof. Marcus Foth, Chair of BFPCA

“Communities under Brisbane and Archerfield Airport’s flight paths are being exposed to lead-laced plane exhaust every day. There is no safe level of lead exposure. The continued use of leaded avgas, despite its known health risks, is unacceptable.

“Lead accumulates in the body and can cause long-term damage, particularly in children. It is time for Australia to catch up with global efforts and phase out leaded avgas before more harm is done.”

“We have seen no action from our political leaders. Despite growing evidence and thousands of complaints, there has been no meaningful response from local, state, or federal governments to monitor or regulate the use of leaded avgas. Steven Miles and David Crisafulli have both declined to engage with BFPCA on this issue.”

“The fact that Queensland stopped monitoring lead emissions in 2013, under Premier Campbell Newman, leaves us in the dark about the real extent of exposure. The United States and European Union are already moving forward to eliminate leaded avgas. Australia cannot afford to be left behind.”

“As the Queensland state election approaches, it is crucial for voters to understand the health risks posed by leaded avgas. Our children, schools, and families deserve better. We need a clear plan to transition to a sustainable aviation industry and protect the health of Brisbane residents.”

About BFPCA

With the launch of Brisbane Airport’s New Parallel Runway on 12 July 2020 came a new airspace design and flight paths that concentrate aircraft noise over densely populated residential areas.

Brisbane Airport and Airservices Australia sold this project to Brisbane communities suggesting the New Parallel Runway will enable them to prioritise

“over water” operations that direct planes away from residential areas. The CEO Gert-Jan de Graaff is on the record saying, “the net effect of aircraft flying over the city will decrease.”

Brisbane families and communities are suffering from excessive noise pollution and associated health and related impacts from Brisbane Airport’s new flight paths launched in July 2020. The Aircraft Noise Ombudsman report, the Brisbane Airport PIR Advisory Forum (BAPAF) and flight path design consultants TRAX International have all confirmed that Brisbane communities were misled using flawed noise modelling, deceiving community engagement, and offered inadequate noise abatements.

Brisbane Flight Path Community Alliance (BFPCA) came together in 2020 to fight back on behalf of all Brisbane families and communities experiencing this noise pollution.

For more background information, visit: https://bfpca.org.au/

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2021 Volcano Art Prize (VAP) Entry. Artist: Christopher Nguyen. Age 10, School: Creative Einstein. Title: Beware lead in volcano ash. LEAD-Safety Message: **The ash and smoke from volcanoes can contain as much lead as the lava. When leaded AvGas is banned and lead industry emissions are reduced, volcanoes will again become the major source of lead in the earth's atmosphere.** Description of work: Computer art. URL: https://volcanoartprize.com/portfolio-item/beware-lead-in-volcano-ash/

Letter to the Editor from Prof Marcus Foth re Leaded AvGas

Re: Senator Larissa Waters Questions re Leaded AvGas

Graphic: Screenshot from BFPCA's Facebook page: https://fb.me/bfpca.org.au

Excerpt of Wednesday 28 February 2025 email from QUT (Queensland University of Technology) Professor Marcus Foth, Chair, Brisbane Flight Path Community Alliance (BFPCA) - People before planes community group advocating since Oct 2024 for leaded AvGas ban, to Elizabeth O'Brien, The LEAD Group Inc

I'm writing to bring to your attention a segment from Monday's [26 February 2025] Senate Estimates hearings where Senator Larissa Waters [pictured, who became the Greens Leader following the May 2025 Federal Australian election] questions the Department of Infrastructure's aviation branch [Australian Government's Department of Infrastructure, Transport, Regional Development, Communications, Sport and the Arts; see https://www.infrastructure.gov.au/infrastructure-transport-vehicles/aviation where neither <leaded> nor <AvGas> are mentioned] about their soil testing for lead at and around airports. We have uploaded this video clip here: https://youtu.be/MAhOBdx_FXQ

[Editor's Note: the video is well worth watching as it shows that Senator Waters' highly informed questions about AvGas being a leaded aviation fuel used by general aircraft – not jets, about lead exposure from AvGas and about testing of soil for lead at and around airports, came as a complete surprise to the Infrastructure Department representatives.]

Senator Larissa Waters Questions re Leaded AvGas (TRANSCRIPT)

[See a full list of all the Senate Estimates Committee segment videos that Brisbane Flight Path Community Alliance (BFPCA) - People before planes community group - have uploaded to YouTube, at https://bfpca.org.au/estimates/ - Screenshot at left is of Senator Larissa Waters]

Introduction to Senate Estimates by BFPCA from https://bfpca.org.au/estimates/

Estimates of government expenditure are referred to Senate committees as part of the annual budget cycle. This opportunity to examine the operations of government plays a key role in the parliamentary scrutiny of the executive. One of the most significant features of the procedure for examining estimates is the opportunity that senators have to question officers of the public service directly. BFPCA has engaged the Australian Parliament's Senate Estimates process to hold the government to account for Brisbane Airport's excessive noise pollution experienced by Brisbane residents.

BFPCA is grateful to the Senate Standing Committee on Rural and Regional Affairs and Transport for asking the following questions. BFPCA also thanks the offices of various Senators named below for their support in tabling these questions.

[TRANSCRIPTS downloaded from Proof Committee Hansard, Monday, 24 Feb 2025, CANBERRA and https://www.youtube.com/watch?v=MAhOBdx_FXQ and corrected/edited together and screenshots and data tables (referred to by Senator Waters) added in by Elizabeth O'Brien, The LEAD Group Inc charity]

Additional Estimates 2024 / 2025: Department // Sen. Waters re lead-based AvGas pollution

Transcript of video recording: Department of Infrastructure, Transport, Regional Development, Communications and the Arts // Senator Larissa Waters re lead-based AvGas pollution; hearing date: 24 Feb 2025.

[Note from the Australian Parliament House website - https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Rural_and_Regional_Affairs_and_Transport :

The Rural and Regional Affairs and Transport Committees cover the following portfolios: Agriculture,

Fisheries and Forestry, and Infrastructure, Transport, Regional Development, Communications and the Arts (Infrastructure, Transport and Regional Development functions only).]

Senate Rural and Regional Affairs and Transport Legislation Committee

Greens Senator Larissa WATERS: Just moving quickly to the health impacts of aircraft usage, and again staying in Brisbane, Acacia Ridge State School is right next to Archerfield Airport in Brissie [*Editor's note:* short name for Brisbane, pronounced "Brizzie"]. Given the known environmental hazards of leaded aviation fuel, especially on young children, what steps has the department [*Editor's note*: as at June 2025, that's the Department of Infrastructure, Transport, Regional Development, Communications, Sports and the Arts, and this is what is meant by "department" for the rest of this transcript] taken to ensure compliance with soil and air pollution standards around airports used by lead-based AvGas planes?

Public Service Officer Ms Sarah Nattey: I think what we would suggest is that where there are known environmental impacts, that when they're… and it would depend what they are and who would deal with them, in the Commonwealth government, so some of the some of the impacts that you're suggesting Senator, such as lead, may or may not be related to Aviation gas, and there would need to be some testing and validation of that data before such time as it was presented to the government for any future action.

Screenshot from video: Public Service Officers responding to Senator Waters questions, including Front Row, 2nd from L: Ms Sarah Nattey, 3rd from L: Mr R Wood

Senator Larissa WATERS: okay sorry you're saying leaded aviation fuel isn't problematic?

Ms Nattey: I'm saying it's only one of the things that might contribute to having lead in a water supply.

Senator WATERS: Yes, okay, but are you looking at what bit you are in charge of and ensuring that your soil testing and so forth—is that you - who does that?

Ms Nattey: Yes. So, there is a program to test for PFAS contamination at 37 airports across the country, where there is reason to believe that PFAS contaminants exist as a result of the Commonwealth government having interest in those sites in the past.

Senator WATERS: Yes. Do you test for anything else?

Ms Nattey: At this stage, we're not testing for anything else Senator.

Senator WATERS: Who is responsible for enforcing environmental protections under the Airports Act and the Airports (Environment Protection) Regulations?

Public Service Officer Mr R Wood: Senator, we are [responsible], on the airport site. Effectively, the limits of the Airports Act are largely for the airport site, but I think my colleagues will be able to answer in more detail. Just going back to the previous line of questioning around AvGas, fuel standards or fuel quality issues are the responsibility of other agencies. I'm not sure if it's the Department of Climate Change, Energy, the Environment and Water [DCCEEW] or the Department of Industry, Science and Resources. It's probably DCCEEW now.

Senator WATERS: Okay. So, the interaction of that responsibility, which you rightly say, would normally be the environment department [DCCEEW], and that you're responsible for airports under the Airports Act and the Airports (Environment Protection) Regs, so who would be in charge of ensuring that the airport is complying with soil and air pollution standards? Would that be you or the environment department?

Ms Nattey: I'll ask Mrs Wright to answer your question.

Assistant Secretary, Airport Environment, Mrs Victoria "Torey" Wright: Yes, that is something the department is responsible for.

Screenshot from video: Public Service Officers responding to Senator Waters questions, including Front Row, L to R: Mrs Victoria Wright; Ms Sarah Nattey, Mr R Wood.

Senator WATERS: Your department?

Mrs Wright: Our department. My branch is, essentially, the environmental regulator of leased federal airports under the Airports Act and the Airports (Environment Protection) Regulations. We have a network of regulatory officers that oversee 19 airports under that legislative framework.

Senator WATERS: Okay. So, what steps have you and your 19 [airports] people or perhaps some other organ of the department taken to ensure compliance with soil and air pollution standards around airports used by lead based AvGas planes?

Mrs Wright: Senator, that particular issue is not one that has been brought to our regulator's attention at that airport [Archerfield Airport, Brisbane]. If there is a need to do testing, the requirements are set out under our regulations for how that would be done, which is in accordance with national standards. The National Environment Protection (Assessment of Site Contamination) Measure—things like that—apply. Our regulators would require that of the airport. As the environmental manager they are the responsible entity under our regulations for making sure that said testing would occur, and that information would feed through to our regulators to make sure that that's being done in accordance—

Senator WATERS: And how could that process be commenced, if, say, parents of kids at the Acacia Ridge School write to you and ask that that happen, given that they're worried about their children?

Mrs Wright: By all means that correspondence can come in our direction. If there is a signal that there is a problem, our regulators would look at the information that might already exist and, if needed, direct the airport to take said action.

Senator WATERS: Okay. I'm just trying to get at what you would consider a signal that there is a problem, so that the community can know what to do to start that process.

Mrs Wright: Sure. That information can be fed to us through correspondence. That is one way that a flag can be raised. Another way would be if the airport had, through its routine monitoring and testing of the airport, which it does, had identified an exceedance or exceedances of a particular contaminant that's listed under our regulations. They would identify that through the normal channels to us as well.

Senator WATERS: How frequently do those routine tests get done?

Mrs Wright: For most airports I think routine soil and surface water and groundwater monitoring is done seasonally—essentially quarterly. That information is fed through to our regulators.

Senator WATERS: Is that data published anywhere?

Mrs Wright: It is usually in the airport environment report that's provided to us, as the regulator, under the Airports Act requirements. It is not routine for those reports to be made publicly available. That's not a requirement under our legislation, but the airports are open to publish that themselves.

Senator WATERS: Okay. But if there was an exceedance, the department would notice and do something, one would hope.

Mrs Wright: That's correct.

Senator WATERS: Is it correct that each airport is required to maintain the position of airport environment officer, who's responsible for doing that soil, air and water pollution monitoring, ensuring compliance and reporting to the department on the findings of those assessments?

Mrs Wright: Each airport has assigned a regulator. That's an Airport Environment Officer

[AEO] that is an employee of our department, and it is a requirement under head lease agreements with the airports that that regulatory oversight is provided by that position.

Senator WATERS: What data have those AEOs for both Brisbane Airport and Archerfield Airport reported to the department in the last 24 months?

Mrs Wright: I don't have that information available at the moment Senator.

Senator WATERS: Okay. Could you take on notice please: I'd like full copies of all the AEO reports and the datasets, including whether any soil testing was performed and what the results were. Could you provide that on notice, please?

Mrs Wright: I will see what we have, yes. I'm not sure of the level of detail I can provide to you. There are restrictions under legislation as to what information can be shared by regulators with other parties. So I'll take that on notice.

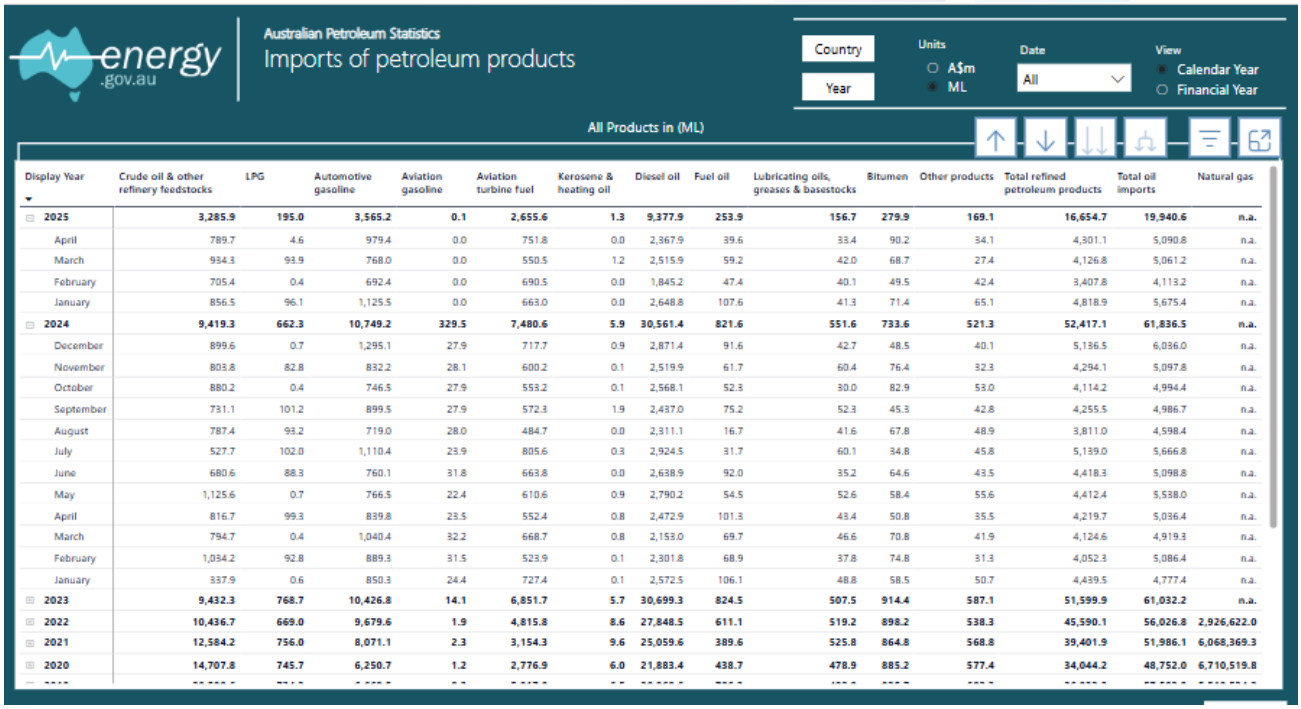
Senator WATERS: Okay. Well, I reckon if they want to take on the investigative powers of the Senate then that's probably a bigger fight than you or I. But they should be aware that when we ask for stuff we kind of like to be able to see it.

Mrs Wright: Agreed. Yes.

Senator WATERS: Thank you. According to the Australian Petroleum Statistics [see data tables below from https://www.energy.gov.au/energy-data/australian-petroleum-statistics], over 70 million litres of AvGas were sold in 2024 in Australia, resulting in the release of over 40 tonnes of lead into the environment, primarily around airports. What actions has the department undertaken to address the release of 40 tonnes of lead into the environment from AvGas sales reported just in 2024?

Australian Petroleum Statistics - Imports of petroleum products - Aviation Gasoline 2024

Monthly AvGas (Aviation Gasoline) and other Imports (in ML) in to Australia, for the twelve months of 2024 from https://www.energy.gov.au/energy-data/australian-petroleum-statistics {slide 10 of 19) by the Department of Climate Change, Energy, the Environment and Water (DCCEEW), Australia.



energy.gov.au

Australian Petroleum Statistics

Imports of petroleum products

Country | Year

Units: A$m / ML

Date: All

View: Calendar Year / Financial Year

All Products in (ML)

Display Year	Crude oil & other refinery feedstocks	LPG	Automotive gasoline	Aviation gasoline	Aviation turbine fuel	Kerosene & heating oil	Diesel oil	Fuel oil	Lubricating oils, greases & basestocks	Bitumen	Other products	Total refined petroleum products	Total oil imports	Natural gas
2025	3,285.9	195.0	3,565.2	0.1	2,655.6	1.3	9,377.9	253.9	156.7	279.9	169.1	16,654.7	19,940.6	n.a.
April	789.7	4.6	979.4	0.0	751.8	0.0	2,367.9	39.6	33.4	90.2	34.1	4,301.1	5,090.8	n.a.
March	934.3	93.9	768.0	0.0	550.5	1.2	2,515.9	59.2	42.0	68.7	27.4	4,126.8	5,061.2	n.a.
February	705.4	0.4	692.4	0.0	690.5	0.0	1,845.2	47.4	40.1	49.5	42.4	3,407.8	4,113.2	n.a.
January	856.5	96.1	1,125.5	0.0	663.0	0.0	2,648.8	107.6	41.3	71.4	65.1	4,818.9	5,675.4	n.a.
2024	9,419.3	662.3	10,749.2	329.5	7,480.6	5.9	30,561.4	821.6	551.6	733.6	521.3	52,417.1	61,836.5	n.a.
December	899.6	0.7	1,295.1	27.9	717.7	0.9	2,871.4	91.6	42.7	48.5	40.1	5,136.5	6,036.0	n.a.
November	803.8	82.8	832.2	28.1	600.2	0.1	2,519.9	61.7	60.4	76.4	32.3	4,294.1	5,097.8	n.a.
October	880.2	0.4	746.5	27.9	553.2	0.1	2,568.1	52.3	30.0	82.9	53.0	4,114.2	4,994.4	n.a.
September	731.1	101.2	899.5	27.9	572.3	1.9	2,437.0	75.2	52.3	45.3	42.8	4,255.5	4,986.7	n.a.
August	787.4	93.2	719.0	28.0	484.7	0.0	2,311.1	16.7	41.6	67.8	48.9	3,811.0	4,598.4	n.a.
July	527.7	102.0	1,110.4	23.9	805.6	0.3	2,924.5	31.7	60.1	34.8	45.8	5,139.0	5,666.8	n.a.
June	680.6	88.3	760.1	31.8	663.8	0.0	2,638.9	92.0	35.2	64.6	43.5	4,418.3	5,098.8	n.a.
May	1,125.6	0.7	766.5	22.4	610.6	0.9	2,790.2	54.5	52.6	58.4	55.6	4,412.4	5,538.0	n.a.
April	816.7	99.3	839.8	23.5	552.4	0.8	2,472.9	101.3	43.4	50.8	35.5	4,219.7	5,036.4	n.a.
March	794.7	0.4	1,040.4	32.2	668.7	0.8	2,153.0	69.7	46.6	70.8	41.9	4,124.6	4,919.3	n.a.
February	1,034.2	92.8	889.3	31.5	523.9	0.1	2,301.8	68.9	37.8	74.8	31.3	4,052.3	5,086.4	n.a.
January	337.9	0.6	850.3	24.4	727.4	0.1	2,572.5	106.1	48.8	58.5	50.7	4,439.5	4,777.4	n.a.
2023	9,432.3	768.7	10,426.8	14.1	6,851.7	5.7	30,699.3	824.5	507.5	914.4	587.1	51,599.9	61,032.2	n.a.
2022	10,436.7	669.0	9,679.6	1.9	4,815.8	8.6	27,848.5	611.1	519.2	898.2	538.3	45,590.1	56,026.8	2,926,622.0
2021	12,584.2	756.0	8,071.1	2.3	3,154.3	9.6	25,059.6	389.6	525.8	864.8	568.8	39,401.9	51,986.1	6,068,369.3
2020	14,707.8	745.7	6,250.7	1.2	2,776.9	6.0	21,883.4	438.7	478.9	885.2	577.4	34,044.2	48,752.0	6,710,519.8

AvGas / Aviation Gasoline Imports by Month in 2024 into Australia, in ML

Jan 2024	4.6
Feb 2024	5.6
Mar 2024	5.3
Apr 2024	6.6
May 2024	5.7
Jun 2024	6.6
Jul 2024	6.6
Aug 2024	5.6
Sep 2024	6.2
Oct 2024	6.9
Nov 2024	5.9
Dec 2024	5
ANNUAL TOTAL	70.6

[end of data tables inserted by The LEAD Group into this corrected/edited transcript]

Ms Nattey: I'm not aware that we have specifically addressed anything relating to the release of AvGas, Senator.

Senator WATERS: Are 40 tonnes of lead not a concern?

Ms Nattey: I didn't say it wasn't a concern. I said I didn't think that we had done anything specifically to address that issue Senator.

Senator WATERS: If you're concerned, why aren't you doing something?

Mr R Wood: Senator, I think this goes to the point I made earlier that issues to do with fuel quality are regulated by other agencies.

Senator WATERS: Okay. Lastly, how many assessments of soil contamination related to lead emissions have been conducted under regulation 6.07 of the Airports (Environment Protection) Regs, and what were the findings?

Mrs Wright: Senator, I'm not aware of testing of that nature having been done at those airports.

Senator WATERS: Okay. None. Alright. And are there any ongoing investigations into breaches of environmental standards concerning lead pollution around any Australian airport?

Mrs Wright: Not that I'm aware Senator.

Senator WATERS: But you are checking, and you're not investigating, because you think everything's fine, even though you're not looking at the 40 tonnes of lead. I'm a bit confused.

Mrs Wright: So lead is a listed contaminant under the Airports (Environment Protection) Regulations. The limits of those regulations do not extend to the fuel that we're talking about today.

Senator WATERS: Oh, so you look at lead, but not if it's come from AvGas?

Mrs Wright: That's correct Senator.

Senator WATERS: Who made that silly rule?

Mrs Wright: I don't know that Senator.

Senator WATERS: How would we go about… Who writes the rules that say that you don't…? It's just a reg, is it? We might take that up with the—

Mrs Wright: So the Airports (Environment Protection) Regulations 1997 is, as the name suggests, an old piece of legislation. The schedules attached to those regulations have contaminants listed for air, noise, water and soil. Lead is listed as a contaminant under those schedules. The scope of what we regulate under those regulations is defined elsewhere in the regulations but does not extend to aviation fuels.

Senator WATERS: Thank you. We'll take that up with the powers that be. Thanks for your help. Thank you chair [*Editor's note*: CHAIR of the Committee is Senator McKenzie.]

Earthjustice's Petition Letter on Leaded Aviation Gasoline

Earthjustice Petition to US EPA to make an endangerment finding under section 231 of the CAA that leaded aviation gasoline ("avgas") contributes to air pollution that harms public health and welfare

[By Earthjustice (USA) August 23, 2021 – https://earthjustice.org/sites/default/files/files/2021.08.23_-_leaded_avgas_petition_final_with_exhibits.pdf - this petition was signable originally at https://docs.google.com/forms/d/e/1FAIpQLSdrhhj3zeqnaC6SPJNkv5ke-uOqwFSYD9Wku8hFIzqD4YHUCw/viewform?fbclid=IwAR3q--r3Z2kYqtJwxyoIOD5rz2N70Qrv483LVB6nVXbgARmoby7b2WkrKIc]

The undersigned organizations and individuals submit this letter in support of the petition submitted on August 24, 2021, by Earthjustice, on behalf of Alaska Community Action on Toxics, Center for Environmental Health, Friends of the Earth, Montgomery-Gibbs Environmental Coalition, and Oregon Aviation Watch, and by the County of Santa Clara petitioning the U.S. Environmental Protection Agency ("EPA") to make an endangerment finding under section 231 of the Clean Air Act that leaded aviation gasoline ("avgas") contributes to air pollution that harms public health and welfare.

Emissions from leaded avgas, used by many piston-engine aircraft, make up over 70% of the lead

that is released domestically into the atmosphere. These lead emissions put the millions of people, including hundreds of thousands of young children, that live near general aviation airports at an increased risk of harm from lead. Indeed, multiple studies have shown that children who live near general aviation airports where lead is used have blood lead levels that are significantly higher than children who do not. This is particularly troubling because there is no safe level of lead, and childhood exposures to lead can lead to a host of adverse health effects, including interference with brain development. Leaded avgas emissions also exacerbate environmental injustice: most of the fifty general aviation airports with the highest lead emissions are located in communities of color, and children of color are already disproportionately burdened by chemical exposures, including by exposures to lead.

Even though EPA has known for years that the use of leaded avgas by piston-engine aircraft increases the blood lead levels of children who live near general aviation airports, increasing their risk of learning disabilities and neurodevelopmental disorders, EPA has thus far declined to regulate this largest remaining source of lead in the air. The undersigned organizations and individuals ask EPA to grant the August 24, 2021 petition, make a long-overdue endangerment finding for leaded avgas, and begin the process of regulating this source of harmful lead emissions. Doing so is an important step in fulfilling the Biden-Harris Administration's commitments to protect children's health and promote environmental justice.

2021 Volcano Art Prize (VAP) Entry. Photographer: Dennis Leight. Title: Two planes. Lead-Safety Message: Aviation Fuel - The Last Lead Frontier. URL: https://volcanoartprize.com/portfolio-item/two-planes/

Letter to the Editor from Jenny Rowbotham re Broken Hill

Broken Hill Aboriginal Children Lead Poisoning

Dear Elizabeth,

when visiting Broken Hill 29th December 2024 I had to stop and take pictures of Aboriginal children's toys (dumper trucks and other assorted trucks out the front of the Aboriginal Compass Housing Development, with the foot path, and yards inside the property's covered with lead laden (Mullock) known as cracker dust.

This material is sourced close to mine site, only 50 meters from mine site. Explosives are used to extract this material from the ground then it is crushed to become cracker dust - a cheap, crude material that all foot paths in Broken Hill have been covered with by Broken Hill City Council.

This material was also used by the Broken Hill Lead Centre for “decontamination” by top-layering it on children's yards that had high lead levels, as part of their remediation program.

2024 Volcano Art Prize (VAP) Entry. Artist: Jenny Rowbotham. Title: Broken Hill Lead Dust Lead-Safety Message: This is where my journey began with lead and I've spent more than 40 years telling my story so this cycle of lead mine lead poisoning can be broken. URL: https://volcanoartprize.com/portfolio-item/broken-hill-lead-dust/

This (and other reasons I've contributed to *LEAD Action News* and Volcano Art Prize in the past) is why Broken Hill has such lead levels because this material was used **everywhere in Broken Hill** as an acceptable form of ground cover by:

- Broken Hill City Council
- Broken Hill Lead Centre
- NSW Health Department
- NSW Environment Protection Authority (EPA).

At one stage there, back in 1995, when houses where being decontaminated by the Lead Centre, EPA and Health Department, the mullock was being sourced from the Southern Cross Mine site, where it was trucked to a Quarry at the Broken Hill City Council Dump where it was crushed and used as ground cover during decontamination of homes and foot paths in Broken Hill.

I have one lot of soil results which showed soil lead levels in the yard prior to "remediation" then results of another test after "decontamination" was completed. Lead levels in the cracker dust were actually higher than before.

Which brings me back to why should NSW tax payers pay for remediation of Council-owned

foot paths when the people in charge (government departments and council) who are responsible for keeping the community safe from lead are the ones causing the problem and making the community sick from accumulation of lead?

The community is unaware that the lead-laden foot paths are a source of heavy metal contamination - as stated in documents I have acquired, that are marked HIGHLY CONFIDENTIAL by the Health Department and Council.

The foot paths in every street in Broken Hill are covered in this hazardous material (because it was a cheap form of ground cover and is still being used today as the preferred method).

Jason Bawden Smith had tested this material in the 1990s and found it was 6 times the safe levels of lead for children: 300 mg/kg (milligrams of lead per kilogram of soil) being the limit. XRF analysis and lab testing at a NATA accredited lab were completed.

I am returning to Broken Hill to do more follow-up on this subject and take more photos and ask why has this been overlooked – why does the government turned a blind eye - was it the cheap cost to remediate the community or was it so they could say the whole community was lead-contaminated, not just the apron of the line of lode (mine site).

I was reading article where testing was done in 1995 on decontaminated homes. They were not able to access homes with cracker dust so no follow up testing could be completed with the portable XRF machine.

I have another photo of Compass Aboriginal Housing which clearly shows children's toys (a toddler's bike in the lead laden ground cover / cracker dust) in the car port of the property on Creedon Street Broken Hill.

Regards

Jenny Rowbotham, 1/1/2025

Letter to the Editor from Dr Ulrich Mack re Lead Videos

Subject: Workers exposure to lead

Sent: Sunday, 29 June 2025

Hi Elizabeth,

I came across a bunch of YouTube videos that I wish I'd found earlier.

https://youtu.be/qdTOUn5Ww9c - "Normal Blood Lead Levels Can Be Toxic" by NutritionFacts.org, **re:** Low level lead effects

https://youtu.be/CXD_hh8zRiY - "The Effects of Low-Level Lead Exposure in Adults" by NutritionFacts.org**,** re: low-level lead in the population

https://youtu.be/FTQ7q6bNtwE -"**Health Hazards of Low-level Lead Exposure to Adults"**: re: Lead in the workplace - the new science Dr Michael J Kosnett, MD MPH.

There are a lot of useful references. ☺

Regards,

Rick

Dr Ulrich Mack BSc PhD (Medicine UQ)

Member, The LEAD Group's Technical Advisory Board

LeadTox.blog https://leadtox.blog

2015 Volcano Art Prize (VAP) Entry. Artists: Professor Bruce Lanphear (Producer and Narrator), Bob Lanphear (Art Direction and Graphic Design), Trevor Phillips (Motion Graphics and Video Production), David Murphy, Chris Jeschelnik and Jason Levis (Audio/Video). Title: Little Things Matter, narrated by Bruce Lanphear. Lead-safety Message: **We've been studying the impact of toxins on children for the past 30 years and reached the inescapable conclusion: little things matter. URLs: https://volcanoartprize.com/portfolio-item/little-things-matter/; https://www.youtube.com/watch?v=E6KoMAbz1Bw**

The Cocktail Effect - Rethinking Toxicology in the Era of the Exposome

Plagues, Pollution & Poverty Substack

BRUCE LANPHEAR

MAY 20, 2025

[URL: https://blanphear.substack.com/p/the-cocktail-effect/comments]

We don't live in a world of single chemicals. We never have. And yet, for most of the past century, that's exactly how we've studied them.

Toxicology—the science of how chemicals affect our health—has long been a game of one-on-one: lead, mercury, tobacco smoke, DDT. Each chemical enters the ring alone, and we measure its punch. If the dose is high enough and the effect clear enough, it gets flagged as toxic. Case closed.

But in the real world, chemicals never act alone.

We are exposed to a complex, ever-changing cocktail of synthetic and natural compounds. They come at us in drips and traces—in our food, water, air, homes, and workplaces. They interact with each other, with our genes, with the nutrients we consume. They nudge development, tweak behavior, and sometimes, when the mix is wrong or the dose too high—they cause lasting harm.

We can see the consequences all around us: infertility, premature birth, childhood leukemia, asthma, autism, ADHD, heart disease, lung cancer, ALS—the list keeps growing.

That simple truth—that people are exposed to mixtures, not isolated substances—is what led to a quiet revolution in environmental health. The idea of studying chemical mixtures was born in a moment of humility. Scientists started asking: What if we're missing the forest for the trees?

The Real-World Toxic Soup

In epidemiology, research from the 1970s to 1990s focused on one chemical at a time—lead, PCBs, or mercury—tracing their individual effects on child development. These first-generation studies were essential. They helped prove something that now seems obvious: early-life exposures to harmful substances can have lifelong consequences.

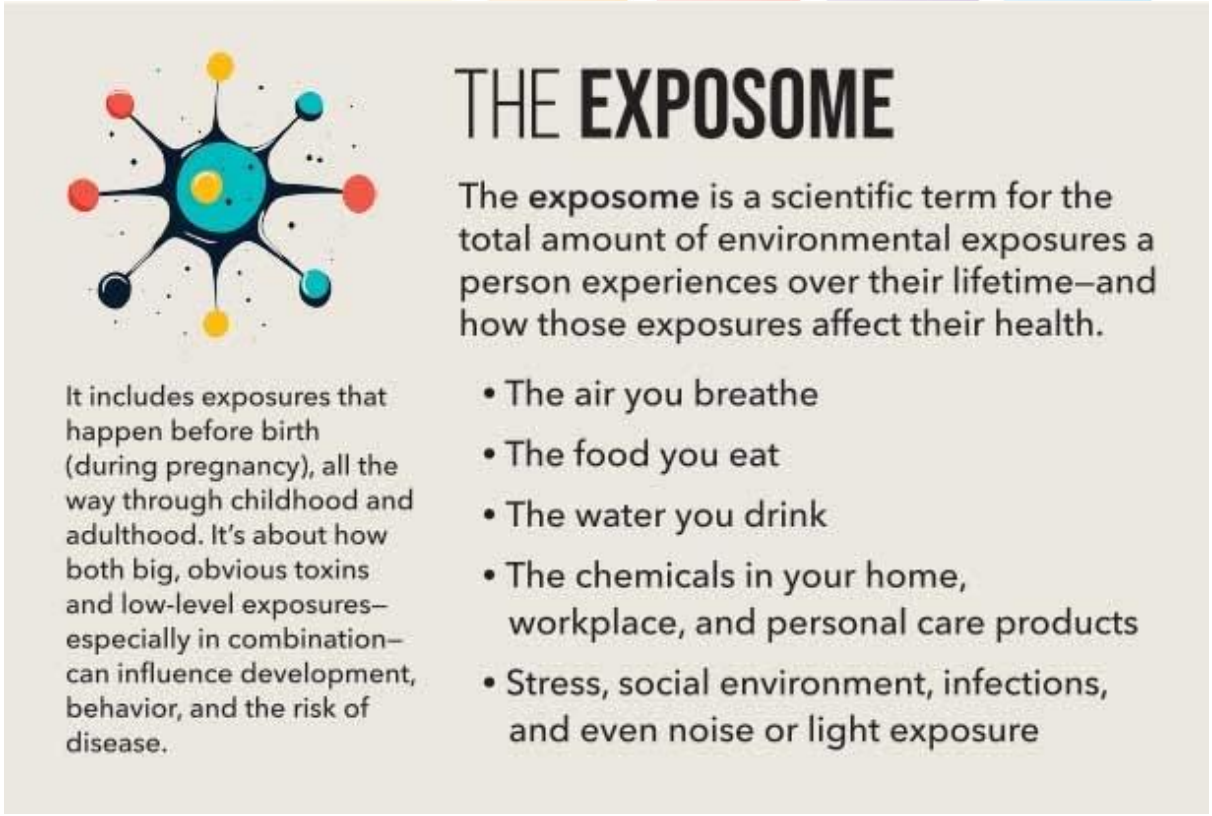
The second-generation studies, led by scientists like Frederica Perera, took a broader view—examining multiple pollutants at once, including air pollution, pesticides, and endocrine disruptors. These studies showed that it's not just how much of a substance you are exposed to that matters—it's also when you are exposed and what else you are exposed to at the same time.

The shift gained momentum as evidence piled up. Dozens of chemicals were detected in children even before birth. Researchers found that many toxic chemicals caused harm at extraordinarily low concentrations—far lower than regulators had assumed. Studies also revealed that some exposures didn't just add up; they multiplied. Lead and tobacco smoke, for example, showed synergistic effects on ADHD—each doubling the risk on its own, but increasing it more than eight-fold when combined.

It was a profound insight: children aren't exposed to just one chemical. They're exposed to hundreds of chemicals—from the moment of conception to the end of life—and they're exposed during critical windows of development.

When the Exposome Got a Name

It was a revolutionary shift in how we think about environmental risk—a counterweight to the genetic revolution. In 2005, British epidemiologist Christopher Wild gave it a name the "exposome", defined as the totality of environmental exposures over a lifetime. Think of it as everything non-genetic that influences your body—air pollution, stress, diet, and more. The concept took off. It offered a bold parallel to the genome—and it had a nice ring to it.



The exposome gave researchers a vocabulary to match reality. But it also carried a warning. Just as decoding the human genome didn't deliver on its grandest promises, mapping the exposome was never going to be simple.

Francis Collins an American geneticist known for leading the Human Genome Project, declared in 2003, "The study of the genome will reveal over the next decade the hereditary factors that contribute to virtually all common diseases, including diabetes, cancer, heart disease, mental illness, and hypertension.

Instead, we learned that complexity resists quick fixes. The genome didn't reveal a clear blueprint. It revealed a swamp of hidden interactions—with diet, stress, and yes, toxic chemicals.

Autism and the Spectrum of Interactions

Nowhere is this more evident than in our growing understanding of autism. We've discovered that prenatal exposures to certain chemicals, like pesticides and phthalates, may increase risk—but primarily in children who have specific genetic

vulnerabilities or nutritional deficiencies.

Take folate, the B-vitamin essential for fetal brain development. Studies show that adequate maternal folate can help protect against autism, even in the presence of risk factors like air pollution or endocrine-disrupting chemicals. Others have shown that in utero exposure to BPA—which affects the enzyme aromatase—can alter brain development. Still others highlight how air pollution interacts with genetic susceptibility to increase risk.

Together, these studies reveal a basic truth: brain development lies on a spectrum, shaped by a symphony of influences—genetic coding, nutrient availability, and a shifting mix of environmental chemicals. Some exposures gently adjust the tune; others throw the whole system off-key. A symphony becomes a cacophony. The cumulative effect can alter a child's developmental path in ways we're only beginning to understand.

This shouldn't be a surprise. We saw the same thing with lead. During the 20th century, widespread lead exposure didn't just lower IQs; it altered behavior, contributed to impulsivity, and likely played a role in the rise of violent crime. When you expose a population to a powerful neurotoxin, you shift the curve. You don't just harm a few; you change the norm.

Regulating One Chemical at a Time

Despite this growing evidence, our regulatory agencies still operate on a chemical-by-chemical basis. The U.S. EPA has reviewed fewer than 10% of the 80,000+ chemicals in commerce. At this pace, it would take **centuries** to evaluate them all, let alone understand how they behave in combination.

The idea of regulating chemical mixtures? That's still science fiction.

It's not that regulators are uninterested. It's that the science—and the policy frameworks—haven't caught up. Advances in statistical modeling are helping, but they're still evolving. The questions are messy, and the funding limited. Moreover, to fully explore the exposome, we need large cohort studies.

The National Children's Study That Wasn't

For a moment, it looked like we might rise to the challenge. In the early 2000s, NIH launched the ***National Children's Study***, a ground-breaking effort designed to examine environmental influences on child health. It aimed to track 100,000 children from birth through adulthood.

In 2003, I attended an invitation-only workshop with Frederica Perera, Kári Stefánsson, Francis Collins, and a dozen NIH colleagues when Collins declared, "I will do nothing to jeopardize the National Children's Study." It sounded reassuring—until I thought about it. If I'd been a little savvier, I'd have known that when a high-ranking official feels the need to make that kind of promise out loud, the study is already in trouble.

And it was.

In 2014, Collins shut down the National Children's Study after more than a decade of planning and a $1.3 billion investment. Officially, it was too ambitious and too expensive. Unofficially, it was political expediency—the chemical industry saw it as a threat, and Collins viewed it as competition for his own ambitious genetic study.

Like the former director of the study, I was convinced that Collins had personally engineered its demise. A once-in-a-generation opportunity to transform children's health and lay the groundwork for what would become the exposome was lost.

And in the end, that loss—not decoding the human genome—may be Collin's most enduring legacy.

What the Exposome Can—and Can't—Do

The exposome holds tremendous promise. It may give us the tools to see the hidden connections between chemical mixtures, nutrition, and disease or disorders. It can reveal interactions like the one between low folate and high pesticide exposure, which sharply increases autism risk. Or the synergy between childhood lead exposure and in utero tobacco exposure, which raises ADHD risk by more than eight-fold when both are present—accounting for an estimated 31% of U.S. cases.

But we should be realistic about what the exposome can do. The complexity is staggering. Decoding the human genome was like mapping every road, alley, and sidewalk in a vast, unfamiliar city. Studying the exposome alongside it is like trying to predict traffic patterns in that city—hour by hour—for every resident, while accounting for weather, construction, detours, mood, and whether they skipped breakfast.

The answers won't be simple. But we don't need to wait for perfect science before we act.

We already know enough to regulate the worst offenders. We know that many chemicals are harmful even at very low levels. We know that children are uniquely vulnerable. And we know that the human body didn't evolve to metabolize the thousands of synthetic chemicals we now carry in our bloodstreams, let alone the staggeringly high concentrations of toxic metals, like lead and arsenic.

Some of these chemicals—like thalidomide and DES—were drugs. Others are in plastics, pesticides, and other household products. But the effect is the same: whether they are prescribed or ingested along with heavily processed food or inhaled aircraft emissions, they have the potential to radically alter human evolution.

That should be enough.

So yes, let's fund exposome research. Let's push the science forward. But let's also stop pretending we need more proof before we act.

The chemical soup is already upon us. The question is whether we have the courage to clean it up.

By Bruce Lanphear · Launched 3 months ago

Exposing Hidden Threats to Human Health

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Tom Neltner

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Great post, Bruce! For what it is worth, since 1958, Congress has required FDA and the food additive industry to consider the cumulative effect of chemically and biologically related substances in the diet, a major part of the cocktail. Not one by one. And not just additives but everything in the diet. FDA adopted rules in March 1959 explaining how that is to be done.

Coupled with the reasonable certainty of no harm standard, we have a safety standard that is stronger than EU's precautionary principle. At least in theory.

Unfortunately, the FDA and industry have ignored the requirement and its own rules. Dr. Maricel Maffini and I reviewed thousands of decisions and found no instances where FDA followed the law. We documented in study after study.

In September 2020, we and other public health advocates submitted a citizen petition demanding the agency fix the problem and that it start by telling industry they needed to address it - not ignore it. FDA has ignored that request too.

FDA's failure to consider cumulative effects is, I think, one of the root causes of the ultraprocessed food problem that is not coming to the forefront. Tom Neltner.

Unleaded Kids Asks Feds to Push Harder for Tighter Int'l Lead Standards for Spices

BY TOM NELTNERMARCH 7, 2025FOOD, HEALTH RISKS, LEAD

[URL: HTTPS://UNLEADEDKIDS.ORG/UNLEADED-KIDS-ASKS-FEDS-TO-PUSH-HARDER-FOR-TIGHTER-INTL-LEAD-STANDARDS-FOR-SPICES/2025/03/07/]

Photo by Marion Botella/Unsplash

What Happened

Codex Alimentarius Commission (Codex), the international standard-setting body for foods and food ingredients, is approaching Step 7 of 8 in its process to set maximum levels (MLs) on lead in dried culinary herbs and bark spices (such as cinnamon and cassia). The latest draft calls for 2,000 parts per billion (ppb) for the culinary herbs and 2,500 ppb for bark spices.

The draft indicates that 98.1% of the culinary herbs and 95.9% of the bark spices can meet those limits and be considered "as low as reasonably achievable" (ALARA). As we noted in a **blog** last year, Codex generally assumes for lead contamination that ALARA means that at least 95% of the ingredients must meet the ML. This formulaic approach is not based on

health impacts and is contrary to FDA's **Closer to Zero program** since it effectively removes the incentive for industry to do any better than the worst 5% of the international marketplace.

In anticipation of the June meeting to consider the draft, the U.S. Delegation, led by USDA and FDA, requested comments on the draft proposal from those who signed up for notice. Unleaded Kids submitted **comments on the draft proposal**.

We repeated calls asking for the U.S. Delegation to push harder for tighter standards and recommended MLs of 1,000 ppb. This would be the same level that **New York State** has set for most spices. FDA has yet to set an action level but has recalled cinnamon over 2,000 ppb.

Why it Matters

We explained in our comment that a woman who was a big fan of both cinnamon and culinary herbs and relied on a brand with lead contamination at the draft MLs would have blood lead levels of 28 µg/dL by age 30 based on EPA's **All Ages Lead Model**.[1] This could happen without her knowledge since only **baby food companies** are required to test their products for heavy metals and make the results publicly available.

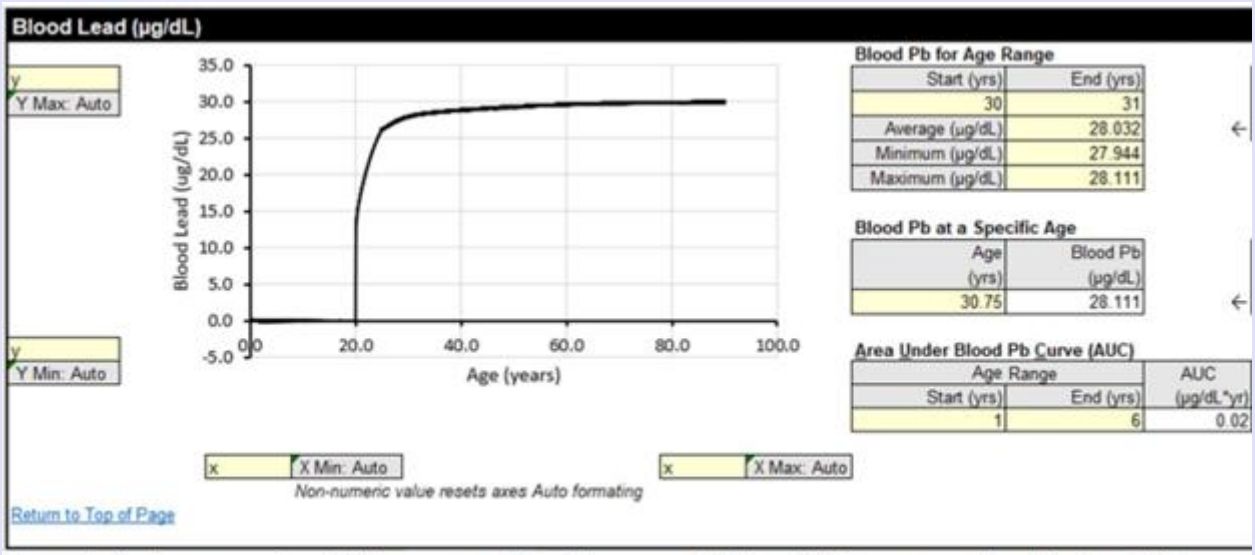

Figure 1: Daily consumption of 0.4 grams per day of cinnamon at ML and 8.89 grams per day of herbs at ML

A blood lead level of 28 µg/dL is extraordinarily high **according to CDC**! The Occupational Safety and Health Administration (**OSHA**) considers a blood lead level of 25 µg/dL as serious and warrants an inspection. It is just below the level at which the American College of Occupational and Environmental Medicine (ACOEM) and Association of Occupational and Environmental Clinics (AOEC) **recommends medical removal from work**. And this scenario considers no other source of lead exposure although lead is commonly found in other foods,

homes, and workplaces.

If the woman consumed only half the amounts of those big fan who regularly add lots of herbs and spices, her blood lead level would be about 7 µg/dL. This is still more than twice the level at which the **ACOEM would advise** women who are or may become pregnant to avoid occupational lead exposure that would elevate the BLL to be greater than or equal to 3.5 µg/dL.

The figures below show the distribution of lead levels in dried culinary herbs (Figure 2) and dried bark spices (Figure 3) from the draft document Codex is considering.

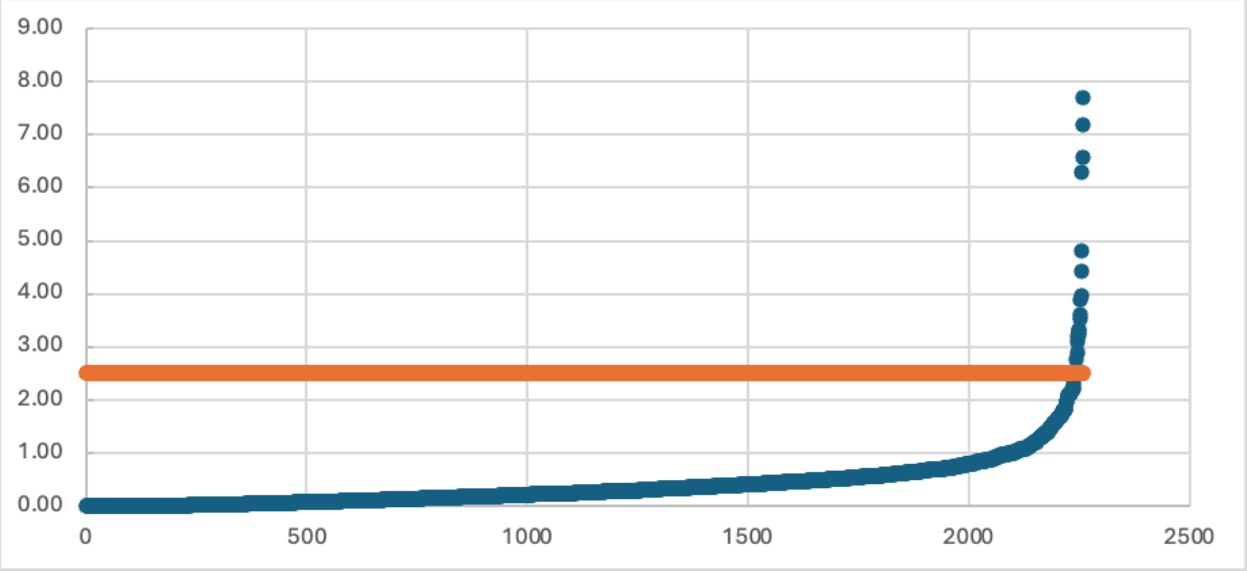

Figure 2: Lead concentration data distribution (mg/kg) in dried culinary herbs.

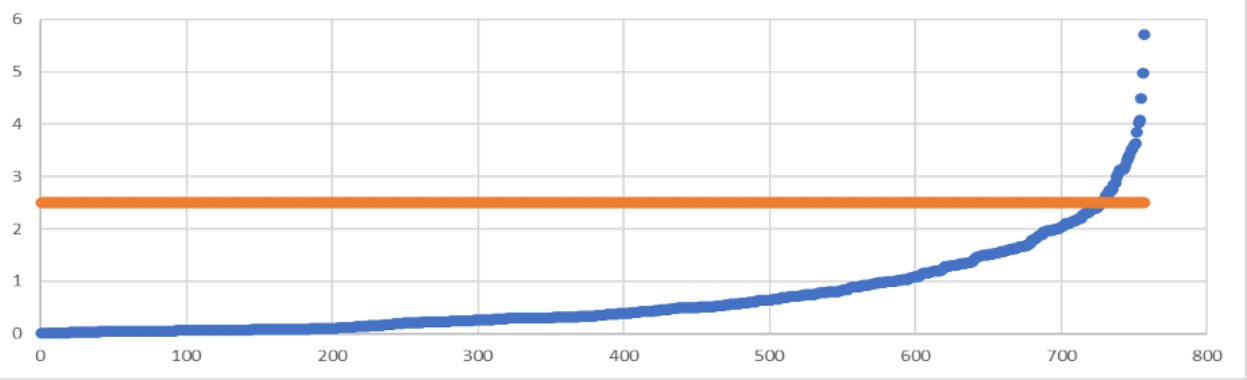

Figure 3: Lead data distribution (mg/kg) in dried bark.

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