LEAD Action NEWS

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The newsletter of The LEAD (Lead Education and Abatement Design) Group Inc.
PO Box 161 Summer Hill NSW 2130 Australia Ph: (02) 9716 0014
Web: www.lead.org.au; www.leadsafeworld.com; www.volcanoartprize.com
Editor-in-Chief: Elizabeth O'Brien. Articles Wrangling: Paul Jacobe. Web Administration: Jimmy Yang.

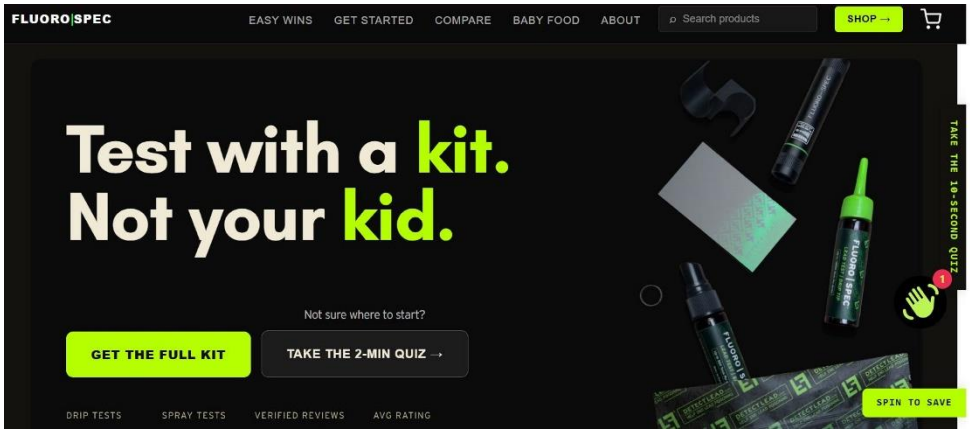
Enter VAP 2026 by 27th July 2026!

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 27th July 2026.

Once the entry deadline has passed, the Volcano Art Prize (VAP) 2026 Judge will choose the First Prize winner of $400 and 30 prize winners of a mug from Pictureproducts and you can help pick the 2026 People's Choice prizewinner. Just go to volcanoartprize.com/peoples-choice/ and following pages, to vote (by giving a ThumbsUp) for all the VAP 2026 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.

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

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



2026 Volcano Art Prize Entry. Artist: Eric Ritter, Fluoro-Spec Inc. Title: Fluoro Spec Lead Test Kit. Lead-Safety Message: Test with a kit, not your kid - every American home built before 1978 has lead somewhere inside it, and the same is true of every Australian home built before 1997 when the allowable new paint lead-paint limit got close to the US 1978 concentration. Description of Work: Screenshot from www.detectlead.com homepage. https://volcanoartprize.com/portfolio-item/fluoro-spec-lead-test-kit/

Contents

Test With a Kit Not Your Kid

Article collated by Claude AI at the request of Elizabeth O'Brien aka "Grandma Lead", to showcase the remarkable contribution to lead-safety of Eric Ritter, Secretary of The LEAD Group Committee, Australia, since October 2024

This June 2026 issue of LEAD Action News vol 24 no 1 takes our readers across the Pacific to look at an American innovation that has been quietly changing how families, contractors and advocates detect lead in 2025–2026. The product is called FluoroSpec, made by Eric Ritter of Fluoro-Spec Inc. in East Setauket, New York. The website is detectlead.com.

What is remarkable for our advocate readership is not the kit itself, but the toolkit Eric has built around it: a free 11,683-product lead database, a 50-year NHANES visualisation, a ZIP-code risk screener, a dietary lead simulator, a crowdfunded laboratory testing programme called the Lead Lottery, and a 98-page educational manual called the L·E·A·D Framework — all free, all browser-based, and all backed by open data sources including the FDA, the EU Safety Gate, the NYC Department of Health and California's AB-899 mandatory disclosure law.

A Toxic Substances Control Act (TSCA) certification is a mandatory declaration required by US Customs and Border Protection (CBP) and the Environmental Protection Agency (EPA) for all chemical substances imported into the United States. It ensures that the chemicals comply with EPA regulations. In January 2025 the US EPA granted FluoroSpec the first-ever TSCA Low Volume Exemption (L-25-0206) for a fluorescence-based consumer lead detection chemistry. This regulatory milestone matters for advocates outside the US too, because the same chemistry is now legally importable into many jurisdictions. The chemical Methylammonium Bromide has been looked at by the US EPA for safety and they determined it can be used as a lead testing kit.

The LEAD Group Inc is honoured to feature Eric's work this issue. With Eric's permission, the articles that follow are adapted from www.detectlead.com - and we have introduced a new column — "Lead Safety Tool of the Year" — beginning with the ZIP Screener.

Letters to the Editor are very welcome and can be sent from https://leadsafeworld.com/about-us/contact-us/ — we particularly want to hear from readers outside the US and Australia about whether tools like FluoroSpec's or The LEAD Group's Lead Test Kits from https://leadsafeworld.com/shop would be useful in your country.

Eric Ritter and the FluoroSpec Story

ABOUT THE FOUNDER OF DETECTLEAD.COM

Photo: Eric Ritter, founder of Fluoro-Spec Inc., East Setauket, New York. Courtesy of detectlead.com.

Adapted with permission from "A letter from Eric Ritter" and the About Us page of detectlead.com.

[URLs: https://detectlead.com/blogs/news/welcome-to-detectlead-a-letter-from-eric-ritter and https://detectlead.com/pages/about- us]

Eric Ritter is an unusual figure in the American lead-testing market: not a regulator, not a researcher, he doesn't have a lead exposed child, but is a manufacturer who has spent five years building consumer detection tools — and who has now made over 300,000 swab kits and developed consumer soil testing kits based on sodium rhodizonate. He has also consulted with hundreds of parents. He noticed the same thing The LEAD Group has been arguing in these pages since 1993: that most families only test for lead after a child has already been poisoned. He wanted to flip that order.

When he learned about Methylammonium Bromide, how it can transform lead into a fluorescent perovskite crystal he saw the oppertunity. A low cost way to identify lead, that flashy and can do stuff swabs simply cant. Finding dust, seeing where the lead literally is, it was a game changer. After helping the folks at Lumetallix develop a formula for their first consumer lead testing kit, importing and selling it, something became apparent. It would take an advertising effort to share this method with the world and that the product could be made better, more sensitive, more of it and for a lower cost. The FluoroSpec kit is the result. It is the same fluorescence-based detection method, originally developed by university researchers, that Eric refined into a commercial product, twice. Lead, when sprayed or dripped with the reagent and viewed under a 365-nanometre UV light, glows bright green — on ceramics, on paint, on dust, on jewellery, on cookware. The chemistry underlying the kit is methylammonium bromide perovskite, and in January 2025 the US EPA approved it under TSCA Low Volume Exemption L-25-0206 — the first such exemption ever granted for a consumer fluorescence-based lead test.

The kit retails at US$75 for a Full Kit (drip bottle, spray bottle, UV flashlight, reference card and ring) and is good for approximately 3,600 individual tests. But what struck the editor-in-chief of this newsletter when reading through detectlead.com was not the product. It was the toolkit Eric has built around it for free use by the public — described in the articles that follow.

But if you have seen his Instagram - https://www.instagram.com/ericeverythinglead/ - there's always deals and the entire concept is that this SHOULD be an easy problem to solve.

Eric's stated philosophy on the website is in three lines:

"Test with a kit — not a kid."

"If we can see it, we can fix it."

"Practical answers without fear or hype."

These are values readers of LEAD Action News will recognise instantly.

The FluoroSpec Full Kit: drip bottle, spray bottle, 365-nanometre UV flashlight, reference card and ring. Photo courtesy of Fluoro-Spec Inc.

Lead Safety Tool of the Year

The ZIP Risk Screener at detectlead.com is our first ever Lead safety tool of the year because it is the tool with the most obvious international replication potential.

THE ZIP RISK SCREENER

Tool URL: https://detectlead.com/pages/zip-screener

What it does: Enter a 5-digit US ZIP code and receive a 0–100 composite risk score in approximately four seconds.

Inputs the tool uses:

• Percentage of pre-1978 housing in the ZIP (the lead-paint era cutoff in the US).

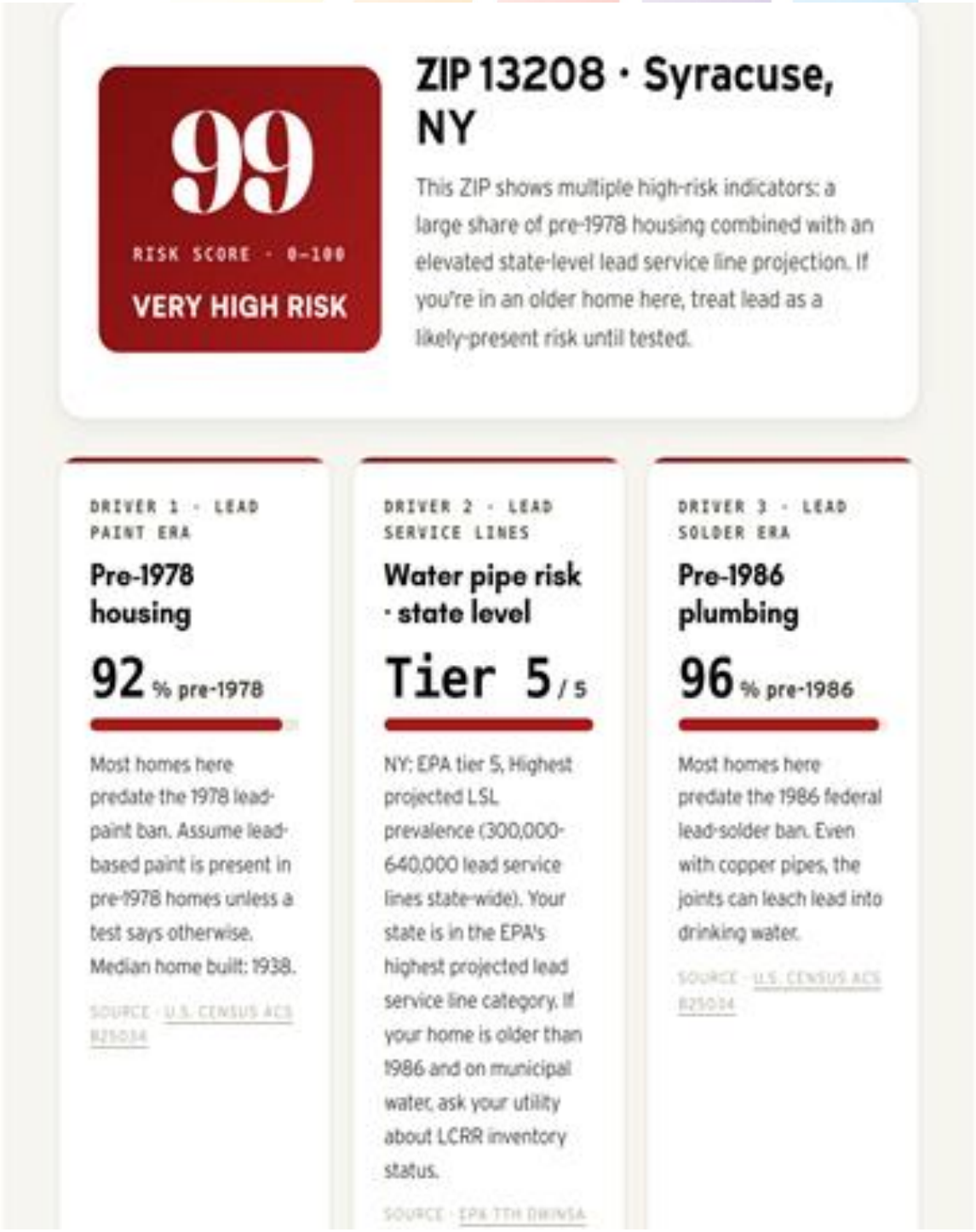
• State-level water-pipe risk drawn from the EPA's 2025 Lead Service Line Replacement projections.

• Percentage of pre-1986 plumbing (the pre-lead-solder-ban era in the US).

What you get: A neighbourhood-level risk score, with clear language reminding the user that individual homes vary, and that confirmation requires physical testing.

Why LEAD Action News (LAN) readers care: This is one of the very few public tools that combines census data with utility data to produce a meaningful screening number. The methodology is transparent and could be replicated in Australia using ABS housing-age data and state water-utility records, or in the United Kingdom using equivalent census variables.

A challenge to readers: If you live outside the US and would like to see a ZIP-equivalent screener for your country, write a Letter to the Editor - from https://leadsafeworld.com/about-us/contact-us/ — and we will pass requests to Eric and explore the possibility of a joint methodology paper.



The ZIP Risk Screener at detectlead.com, showing a high-risk result for ZIP 13208 (Syracuse, New York): risk score 99 of 100, driven by pre-1978 housing (92%), state-level water-pipe risk (EPA Tier 5 of 5) and pre-1986 plumbing (96%). Screenshot courtesy of detectlead.com.

Maybe the next Lead Safety Tool of the Year should be: The Baby Food Lookup — 17,000+ lot-level tests from California's AB-899 disclosure law.

Lead News 2025 Year in Review

CLOSER TO ZERO FINALISED, AB-899 LIVE, TSCA LVE FOR MABR

Adapted with permission from the news blog of detectlead.com.

[URL: https://detectlead.com/blogs/news/lead-news-2025-year-in-review-closer-to-zero-finalized-ab-899-live-tsca-lve-for-mabr]

For thirty-three years this newsletter has documented the slow march of US lead-safety regulation from advisory frameworks toward enforceable rule-of-the-road. Eric Ritter of detectlead.com calls 2025 the year that march finally became binding. Four developments deserve a place in the LEAD Action News record.

1. FDA Closer to Zero — finalised 6 January 2025. Action levels of 10 parts per billion (ppb) of lead for most baby foods, and 20 ppb for root vegetables, became legally enforceable after three years in draft. This is the first US analogue to Australia's ANZ Food Standards baby-food limits, though arguably more stringent on a per-category basis.

2. California AB-899 — live 1 January 2025. Every baby food sold in California must now publish lot-level heavy-metal testing data accessible via a QR code on packaging. This is the world's first mandatory disclosure law of its kind. Readers will find a dedicated article on AB-899 later in this issue, plus a tour of the resulting data via FluoroSpec's Baby Food Lookup.

3. TSCA Low Volume Exemption L-25-0206. The US EPA, in January 2025, approved methylammonium bromide (MABr) perovskite chemistry for manufacture under 10,000 kilograms per year for the specific purpose of consumer lead detection. This is the regulatory clearance that permits FluoroSpec to be sold legally as a consumer product in the United States — and, by virtue of TSCA recognition, opens the chemistry to import under many international regimes.

4. NIOSH telecom cable findings. The US National Institute for Occupational Safety and Health issued formal findings on lead exposure for telecommunications workers handling legacy lead-sheathed cables — a story first broken by the Wall Street Journal in 2023 and covered in our article later in this issue.

Eric Ritter writes that 2025 is the year fragmented frameworks became "rule-of-the-road." For advocates outside the US, the practical question is: which of these four developments is most replicable in your jurisdiction? Letters to the Editor are very welcome and can be sent from https://leadsafeworld.com/about-us/contact-us/

2024 EPA Integrated Science Assessment

THE 10-YEAR UPDATE ON WHAT LEAD DOES TO THE HUMAN BODY

Adapted with permission from the news blog of detectlead.com.

[URL: https://detectlead.com/blogs/news/the-2024-epa-integrated-science-assessment-for-lead-the-10-year-science-update]

Every ten years the US Environmental Protection Agency publishes a comprehensive "Integrated Science Assessment" (ISA) summarising the strongest available evidence on a single pollutant. The 2024 ISA for lead is the most up-to-date scientific synthesis our readers can cite. Eric Ritter's detectlead.com summary picks out the findings most relevant to advocate use.

Strengthened cardiovascular evidence in adults. Recent cohort studies have firmed up the link between low- level lead exposure and cardiovascular disease in adults, particularly hypertension and ischaemic heart disease. Meaningful risk now appears at blood lead levels as low as 2 micrograms per decilitre (µg/dL).

Confirmed dose–response for childhood neurodevelopment. The ISA confirms the dose–response pattern at blood lead levels of 0–10 µg/dL with no apparent threshold. There is no safe level of lead exposure for children or adults (aside from zero) — a refrain readers of LEAD Action News have been hearing for three decades.

Expanded coverage of immune and renal effects, and environmental distribution. The ISA also expands on lead in soil, water and dust pathways, and on emerging research into immune system and kidney effects.

A standout sentence in Eric's summary: "Essentially every American alive between roughly 1940 and 1985 carried a blood lead level that today's CDC would classify as elevated." Average childhood blood lead in the late 1970s reached 12–17 µg/dL — far above today's 3.5 µg/dL reference level. The same is true of Australians who grew up before the leaded-petrol phase-out completed in 2002.

Why this matters for advocacy: the ISA gives us a citable scientific basis for arguing that adult lead burden — not just childhood exposure — is a present-day public health issue. Readers will find this connected to the Lanphear mortality study in the next article.

Low-Level Lead and Adult Mortality

THE LANPHEAR ET AL. (2018) STUDY EXPLAINED

Adapted with permission from the news blog of detectlead.com.

[URL: https://detectlead.com/blogs/news/low-level-lead-exposure-and-mortality-in-u-s-adults-a-deep-dive]

In 2018 Bruce Lanphear and colleagues published a study in The Lancet Public Health that quietly reframed the lead conversation. They linked blood lead levels in US adults to all-cause mortality, cardiovascular mortality and ischaemic heart disease mortality — and found a dose–response relationship at levels far below any prior threshold.

The key findings, in plain English:

• Meaningful increased mortality risk appears at approximately 2 µg/dL — well below previous CDC thresholds of 5 or even 10 µg/dL.

• Modern US adults typically have blood lead levels under 1 µg/dL because of the leaded-petrol phase-out, but the cumulative damage from earlier exposure persists.

• Lead raises blood pressure primarily through neurological mechanisms, disrupting calcium-dependent regulation of vascular tone.

• Lead-related deaths are almost always coded as cardiac events rather than as lead poisoning, which is why population mortality statistics fail to flag them.

Eric Ritter draws a clear policy conclusion from the study: individual action — identifying and removing exposure sources — is achievable and impactful. Mass distribution of detection tools, he argues, can bend population-level statistics positively because every household that finds and removes a lead exposure source slightly reduces the cumulative dose.

For LEAD Action News readers, the practical takeaway is that the Lanphear study is the citation to use when arguing that adult lead burden is a present, measurable mortality risk — not an historical concern.

The 2021 CDC Blood Lead Reference Value Update

5 µg/dL → 3.5 µg/dL — AND WHAT COMES NEXT

Adapted with permission from the news blog of detectlead.com.

[URL: https://detectlead.com/blogs/news/the-2021-cdc-blood-lead-reference-value-update-5-µg-dl-3-5-µg-dl]

In October 2021 the US Centers for Disease Control and Prevention (CDC) dropped the blood lead reference value from 5 µg/dL to 3.5 µg/dL. The reference value is the threshold above which a child is identified as having an elevated blood lead level for clinical and public health follow-up.

The reduction was based on the 97.5th percentile of blood lead levels in the National Health and Nutrition Examination Survey (NHANES) — a moving target as US population lead levels decline. This means the reference value is statistical, not toxicological: it identifies the most-exposed children, not a safe level.

For Australian readers, the equivalent figure is the National Health and Medical Research Council's "investigation level" — currently 5 µg/dL. The LEAD Group has consistently argued in these pages that Australia should follow the CDC down. The 2021 update strengthens our case.

Eric Ritter's post on detectlead.com makes one further point that is worth repeating: the reference value is not a safe level. It is the level at which intervention is recommended. The actual scientific evidence indicates no safe level of lead exposure. The reference value is a triage tool, not a target.

California AB-899 Baby Food Disclosure

ONE YEAR IN — WHAT WE HAVE LEARNED

Adapted with permission from the news blog of detectlead.com.

[URL: https://detectlead.com/blogs/news/california-ab-899-baby-food-heavy-metal-disclosure-one-year-in]

California Assembly Bill 899 took effect on 1 January 2025. It is the world's first law requiring baby-food manufacturers to publish lot-level heavy-metal testing data — lead, arsenic, cadmium and mercury — accessible via a QR code printed on every package sold in the state.

After eighteen months of operation, the data is now substantial. Over 17,000 individual lot tests have been published. Eric Ritter's team has aggregated these into the FluoroSpec Baby Food Lookup (covered in the next article), and several patterns are already clear:

• Detectable lead in baby food is almost always from soil and water contamination of crops, not from pesticides or industrial contamination of the food.

• Organic certification does not predict lower lead levels. Some organic brands have weighted-average lead concentrations several times higher than conventional competitors.

• Whole-grain formulations do not predict lower lead either. Rice cereals (whole-grain or refined) carry elevated arsenic regardless of brand.

• Brand-level variation is much larger than category-level variation. The data shows that brand choice matters more than food type.

The worst performer in the database to date is reportedly the brand Yumi, with a weighted average of approximately 42 ppb lead across tested lots. This is a finding that would have been impossible to make before AB-899 existed.

In Australia, The LEAD Group believes ANZ Food Standards should adopt a similar mandatory disclosure model. We welcome member input on this question, via Letters to the Editor which can be sent from https://leadsafeworld.com/about-us/contact-us/

The Baby Food Lookup Tool

17,000+ LOT-LEVEL TESTS, SEARCHABLE BY BRAND

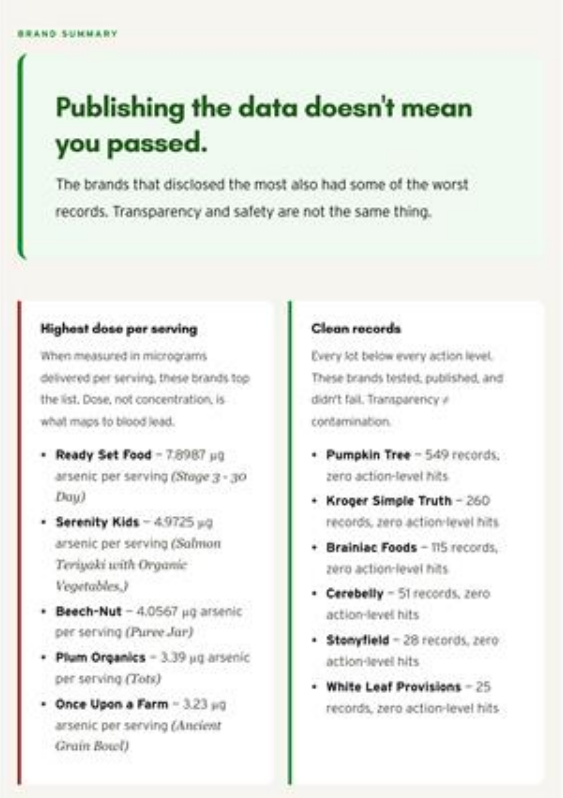
Adapted with permission from detectlead.com.

[Tool URL: https://detectlead.com/pages/babyfood-lookup]

FluoroSpec's Baby Food Lookup is a free, browser-based search tool that lets parents query the heavy-metal testing results published under California's AB-899 law. Search by brand or product, and the tool returns a sortable table of all available test results with the lead, arsenic, cadmium and mercury concentrations measured in each lot, colour-coded by severity.

The tool currently aggregates over 17,000 individual sample results. It is designed to be used by parents, not regulators — so the interface is searchable, sortable, and includes plain-English explanations of what the numbers mean.

The lookup also computes weighted-average lead concentrations by brand, allowing parents to compare manufacturer performance. This is a feature that AB-899 itself does not require, but that the public good benefits from.



For LAN readers: this is the tool we hope will be featuring as the next Tool of the Year (2027). Letters to the Editor are very welcome and can be sent from https://leadsafeworld.com/about-us/contact-us/ with any specific brand or product queries that should be tested against the lookup.

The Baby Food Lookup brand summary: brands ranked by highest dose per serving alongside brands with clean records across every published lot. Screenshot courtesy of detectlead.com.

NHANES at 50 Years

THE VISUALISATION EVERY LEAD-SAFETY ADVOCATE SHOULD BOOKMARK

Adapted with permission from detectlead.com.

[Tool URL: https://detectlead.com/pages/nhanes]

The US National Health and Nutrition Examination Survey (NHANES) has been measuring blood lead levels in representative samples of the US population since 1976. Eric Ritter's team has compiled fifty years of NHANES data into a single set of six interactive charts spanning approximately 100,000 individual records.

The visualisation is licensed Creative Commons Attribution 4.0, which means LEAD Action News can reproduce it directly with attribution. Eric's team also publishes the underlying data as a downloadable CSV.

The standout charts for advocate use:

• "Lifetime arc" — three survey periods (1976–80, 1988–94, 2017–18) overlaid on the same age axis. The chart shows the recurring pattern of childhood peaks, adult plateaus and late-life upticks (caused by lead leaching out of aged bone) while absolute concentrations decline over time.

• "Cardiovascular mortality wave" — peaking in the 1970s and 1980s, attributable to leaded-petrol exposure.

• "Dementia wave" — currently emerging among the 1945–1965 birth cohort, who are now in their seventies.

This is the chart most relevant to Australian advocacy: the same generation is alive here, and the same risk applies.

The methodology applied is what Eric calls the "Integrated Lead Burden Model" — a way of estimating cumulative lifetime exposure from blood-level snapshots. The headline finding: "Older Americans don't have more lead because they're older. They have more lead because they grew up with it."

For LAN readers, this is the citation to use when arguing that today's elderly population, in any country with a 20th-century leaded-petrol history – that is, every country - is still living with the consequences.

The Lead Database

11,683 PRODUCTS. 66,049 MEASUREMENTS. FREE TO SEARCH.

Adapted with permission from detectlead.com.

[Tool URL: https://detectlead.com/pages/lead-database]

The detectlead.com Lead Database is probably, the largest publicly accessible database of consumer-product heavy-metal testing results in the world. It aggregates results from nine open-license sources into a single searchable interface.

Current scope:

• 11,683 unique consumer products.

• 66,049 individual measurements.

• Four heavy metals (lead, arsenic, cadmium, mercury), normalised to parts per billion.

• Thirteen categories.

The thirteen categories, with current entry counts, are: baby food (1,002), spices (2,085), cookware (2,340), cosmetics (1,542), supplements (840), toys (1,372), electronics (753), paint (500), jewelry (369), candy (297), religious and ceremonial items (122), vapes (41), and food other (420).

Source contributors include the US FDA, the US CPSC, the EU Safety Gate rapid alert system, the NYC Department of Health and Mental Hygiene's product survey, the King County (Washington) hazardous waste program, and California's AB-899 disclosures.

Each entry links back to its original source, which means readers can verify any individual result independently. This is a level of editorial transparency rarely seen in consumer-product testing databases.

For LAN readers, the practical use is this: when a member writes in asking whether a specific product they own (a vintage Pyrex bowl, a brand of turmeric, a costume necklace) has been tested for lead, the Lead Database is now the first place to look.

The Dietary Lead Simulator

BLOODLEADCALCULATOR.COM — TRANSLATING PPB INTO MICROGRAMS PER DAY

Adapted with permission from detectlead.com.

[Tool URL: https://bloodleadcalculator.com]

The Dietary Lead Simulator is a separate site that detectlead.com operates: bloodleadcalculator.com. It is the tool we have been asked for most often by readers — a way to translate "X ppb of lead in this food" into "Y micrograms of lead per day in my child."

How it works. The user logs their typical diet — foods consumed, serving sizes — and selects an age category (adult or child). The tool then computes daily lead intake in micrograms per day, using lead concentrations drawn from the FDA Total Diet Study, peer-reviewed studies, and the FluoroSpec Lead Database. It also estimates the resulting steady-state blood lead level using the Carlisle pharmacokinetic model.

Coverage. The tool currently incorporates 1,343 individual foods, each with a lead concentration value attached. It also accounts for non-food exposure sources, so users can layer drinking-water lead, paint dust and other exposures into the same model.

Why this matters. Until tools like this existed, the gap between data and behaviour change was unbridgeable. A parent reading that turmeric averages 200 ppb lead does not know whether the family teaspoon-per-week dose matters. The Dietary Lead Simulator answers that question in plain numbers.

For Australian readers, the food database is US-weighted, but the tool accepts custom entries. We welcome reader feedback via Letters to the Editor which can be sent from https://leadsafeworld.com/about-us/contact-us/ on whether to commission an Australian-specific version with FSANZ data.

Prenatal Vitamins Containing Lead

A DEVASTATING FINDING HIDDEN IN THE SUPPLEMENT AISLE

Adapted with permission from the news blog of detectlead.com.

[URL: https://detectlead.com/blogs/news/prenatal-vitamins-containing-lead]

Of all the categories in the detectlead.com Lead Database, none is more troubling than prenatal vitamins. These are products specifically marketed to pregnant women — the most lead-sensitive population in any country — and a meaningful fraction of them contain measurable lead.

The mechanism is well-understood: many prenatal supplements derive their calcium from oyster shell or bone meal, both of which naturally accumulate environmental lead. Other supplements derive minerals from soil- extracted compounds where lead is a co-occurring contaminant. Manufacturers are not required to test for lead before sale, and rarely do.

The article documents specific brand-level findings. The LEAD Group makes no recommendation here, but readers are encouraged to use the Lead Database to look up any prenatal product before purchase, and to ask the manufacturer for a Certificate of Analysis showing heavy-metal testing.

For LAN advocates, this article is one of the more powerful ones in this issue, because it cuts directly against the trust that pregnant women place in supplement marketing. The argument is not "supplements are bad" — it is "supplements should be tested, and the testing should be public."

Lead Levels in Bottled Water

WHEN "BOTTLED" DOES NOT MEAN "SAFER"

Adapted with permission from the news blog of detectlead.com.

[URL: https://detectlead.com/blogs/news/lead-levels-in-bottled-water-a-deep-dive]

For many families, switching from tap to bottled water is an instinctive response to lead concerns. Eric Ritter's investigation into bottled water lead concentrations finds that the instinct is often misplaced.

Bottled water in the US is regulated by the FDA, not the EPA. The FDA action level for lead in bottled water is 5 ppb, while the EPA action level for tap water under the Lead and Copper Rule is also 15 ppb at the 90th percentile (with a 10 ppb threshold proposed under the LCR Improvements). In practice, however, well-run municipal water systems often deliver water with non-detectable lead, while some bottled brands have repeatedly tested above 1 ppb.

The article tabulates several major brands by published test results. Where municipal water is properly treated and the plumbing is post-1986, tap water is often the cleaner choice. Where the home contains pre-1986 plumbing, the story flips — but the solution is not to switch to bottled, it is to run the cold tap for 30 seconds before drinking, the single most effective free intervention available.

For Australian readers, the equivalent message is to check the age of plumbing and to follow the run-the-tap protocol where the home was built before the 2003 lead-solder phase-out.

Lead in Ammunition

THE SINGLE BIGGEST UNREGULATED DOMESTIC LEAD SOURCE

Adapted with permission from the news blog of detectlead.com.

[URL: https://detectlead.com/blogs/news/lead-in-ammunition-the-single-biggest-unregulated-domestic-lead-source]

In the US, the manufacture of lead ammunition is exempt from the Toxic Substances Control Act under a specific statutory carve-out. The result, as Eric Ritter documents in this article, is that ammunition manufacture and disposal now emits more environmental lead than any other regulated industry combined.

The numbers are striking. Annual US production of lead bullets and shotshells exceeds tens of millions of pounds. Most of this lead is ultimately deposited in soil at shooting ranges, in wetlands frequented by waterfowl hunters, or in carcasses of game animals consumed by humans and scavenging birds (including the endangered California condor).

Australian readers will recognise this pattern. The LEAD Group has campaigned for years against lead shot in wetlands, and this newsletter has featured ongoing Australian lead shot recovery operations (most recently in LANv23n3, "Current Lead Shot Recovery Operations in Australia"). The Volcano Art Prize 2026 features entries from Green Range and Lead Pro Aus — the two Australian companies actively recovering spent lead from shooting ranges.

The US story is large but the Australian story is more tractable because of our smaller industry and stronger general firearms regulation. The link to LAN's ongoing campaigning on this issue is direct, and we welcome member input via Letters to the Editor which can be sent from https://leadsafeworld.com/about-us/contact-us/

Lead-Sheathed Telecom Cables

THE WSJ INVESTIGATION, NIOSH FINDINGS, AND EPA RESPONSE

Adapted with permission from the news blog of detectlead.com.

[URL: https://detectlead.com/blogs/news/lead-sheathed-telecom-cables-the-wsj-investigation-niosh-findings-epa-response]

In July 2023 the Wall Street Journal published a multi-part investigation revealing that thousands of miles of legacy lead-sheathed telecommunications cabling were still in place across the United States — beneath cities, in lakebeds, suspended overhead in residential neighbourhoods. The cables were laid by AT&T and Bell predecessors between the 1880s and the 1960s. Many are leaching lead into surrounding soil and water.

The detectlead.com article tracks the regulatory response: the NIOSH investigation into worker exposure (formal findings issued in late 2025), the EPA's preliminary risk assessment, and the litigation that telecom carriers are now facing. As of the time of writing in 2026, no broad remediation program has been announced.

For Australian readers, we already know from LEAD Action News vol 23 no 4 "Victorian Lead Risk Work Notification Compliance and Workers Compensation Case Study" at https://leadsafeworld.com/wp-content/uploads/2026/05/LANv23n4-04.pdf - the answer to the question as to whether Telstra's legacy infrastructure includes any equivalent lead- sheathed cabling, is a definitive **YES**. The LEAD Group welcomes Letters to the Editor - which can be sent from https://leadsafeworld.com/about-us/contact-us/ - from anyone else who has worked on lead-sheathed cable removal from Australian or any other country's telecommunications infrastructure.

Lead in Toys

FROM THE 2007 MATTEL RECALLS TO THE CPSIA AND BEYOND

Adapted with permission from the news blog of detectlead.com.

[URL: https://detectlead.com/blogs/news/lead-in-toys-from-the-2007-mattel-recalls-to-the-cpsia-and-beyond]

In August 2007 Mattel recalled approximately 1.5 million Fisher-Price toys for excess lead paint, followed by a recall of more than 18 million additional toys later that year. The recalls were the largest toy safety event in US history and triggered the Consumer Product Safety Improvement Act (CPSIA) of 2008.

The CPSIA established a 100 parts per million lead limit on any accessible component of a children's product. This is the strictest such standard in the world. It applies to all imported toys, all domestic toys, and any accessory marketed to children under 12 years of age.

Despite the CPSIA, the US Consumer Product Safety Commission still issues several dozen toy recalls per year, almost always identifying imports as the source. The detectlead.com article documents specific 2024 and 2025 recalls. Items most frequently recalled include vintage Fisher-Price reissues, die-cast metal cars, painted wooden blocks, teethers, and costume jewelry sold in the toy aisle.

The LEAD Group has campaigned in past LANs (LANv1n2 1993, "Lobbying the peak body of the developed nations the OECD" at https://lead.org.au/lanv1n2/lanv1n2-9.html ; LANv22n1 2024, "Time to Check Blood Lead Levels" at https://leadsafeworld.com/lanv22n1-contents/lanv22n1-04-children-time-to-check-blood-lead-levels/) for stronger lead-safety governance globally, national regulations and national blood lead surveys (to determine where further lead-safety actions should be focused) - as have occurred in the US since the 1970s - yet Australians must still rely on the US for enforcement of strict limits on lead in consumer products at the point of import. The world's best practice legislation and enforcement in the US on this issue is a useful national model that The LEAD Group recommends in its "LEAD Group Model National Lead-Safety Policy" now in PLF Resources Library (see https://leadsafeworld.com/wp-content/uploads/2026/03/LANv23n2-05.pdf).

The L·E·A·D Framework

A FREE 98-PAGE MANUAL FOR RESIDENTIAL LEAD SAFETY

Adapted with permission from detectlead.com.

[Tool URL: https://detectlead.com/pages/lead-framework]

The L·E·A·D Framework is detectlead.com's flagship free educational resource — a 98-page PDF that walks a household through identifying, assessing, abating and dietarily managing lead exposure. It is published under permissive terms and can be reproduced for educational purposes with attribution.

The acronym unpacks into four sections:

• L — Learn. Historical context, biological effects of lead exposure, and identification of common contamination sources within homes.

• E — Examine. Systematic room-by-room assessment strategies, including plumbing evaluation, household items, soil testing and food safety protocols.

• A — Abate. Practical remediation techniques covering cleanup, paint removal, containment procedures and renovation safety.

• D — Diet. Nutritional strategies emphasising mineral saturation through calcium, zinc, iron and magnesium to reduce bodily lead absorption.

The "Diet" section is unusually thorough by comparison to most public lead-safety guides. It draws on the same body of evidence that LANv9n3 (Taylor, "Iron Nutrition and Lead Toxicity," 2009) covered for our readers — namely, that adequate iron, calcium and zinc status reduces gastrointestinal absorption of dietary lead.

The LEAD Group has corresponded with Eric Ritter about translating the L·E·A·D Framework into other languages and adapting the housing-age sections for non-US jurisdictions. The LEAD Group welcomes Letters to the Editor - which can be sent from https://leadsafeworld.com/about-us/contact-us/ - regarding reader interest in such adaptations.

Glowing Lead Tests Explained

A PLAIN-ENGLISH PRIMER ON FLUORESCENCE-BASED DETECTION CHEMISTRY

Adapted with permission from the news blog of detectlead.com.

[URL: https://detectlead.com/blogs/news/what-are-glowing-lead-tests]

How does the FluoroSpec kit actually work? The reagent is a methylammonium bromide solution. When it comes into contact with lead (in paint film, dust, glaze, or jewellery surface), a chemical reaction forms a perovskite — a crystal structure that absorbs ultraviolet light and re-emits visible green light.

Under a 365-nanometre UV flashlight, a positive reaction appears as a bright green glow within approximately 30 seconds. No glow means no detectable lead at the sensitivity of the test. The same reagent works on multiple surface types: ceramic glazes, painted wood, painted metal, vinyl, plastic, brass and copper alloys, and dust collected on a wipe.

A FluoroSpec test on a drinking glass under 365-nanometre UV light: the painted decoration fluoresces bright green where lead is present. Photo courtesy of detectlead.com.

How does this compare with the alternatives?

• EPA-recognised swabs (LeadCheck, D-Lead) use rhodizonate or sulfide chemistry and detect via colour change. They are single-use and have known false negatives on certain glazes.

• Lumetallix (a competing fluorescence-based kit) uses a similar perovskite chemistry. The chemistries differ in stability and sensitivity.

• Laboratory ICP-MS testing is the gold standard for quantitative analysis but costs hundreds of dollars per sample and requires shipping a physical sample to a lab.

• XRF analysers are quantitative and non-destructive but cost tens of thousands of dollars and require professional licensing.

The role FluoroSpec occupies is the qualitative screening role — a tool that tells a household where to look more carefully, not a tool that produces a number for a regulator. This is an important distinction for our advocate readership.

PPM Explained with Grains of Rice

WHY ONE CHOCOLATE BAR CAN TECHNICALLY MEET THE STANDARD AND STILL POISON A CHILD

Adapted with permission from the news blog of detectlead.com.

[URL: https://detectlead.com/blogs/news/ppm-explained-with-grains-of-rice-and-a-stipple-generator]

One of the recurring difficulties of lead-safety advocacy is that the public has no intuition for parts-per-billion (ppb) or parts-per-million (ppm). Eric Ritter's "PPM stipple generator" is a small interactive tool that fixes this. The user enters a concentration in ppm, and the tool generates a visual analogue — a sheet showing the equivalent ratio in rendered grains of rice.

100 ppm (the CPSIA toy standard): one black grain in every 10,000 white grains. Visually almost invisible — yet enough to register as a recall.

500 ppm (the EPA pre-1978 paint definition): one black grain in every 2,000 white grains. Still hard to see without looking carefully.

5,000 ppm (a typical lead-painted window sill): one black grain in every 200 white grains. Now visible to the naked eye.

50,000 ppm (5% lead by mass — common in pre-1950s paint): one in every 20 grains. Roughly the density of poppy seeds on a piece of bread.

This is a tool Grandma Lead recommends bookmarking. It is the most useful single resource for community education sessions, parent meetings and primary-school visits.

The Lead Lottery

CROWDFUNDED ICP-MS TESTING FOR US$100 PER PRODUCT

Adapted with permission from detectlead.com.

[Tool URL: https://detectlead.com/pages/lead-lottery]

The Lead Lottery is the most innovative of the detectlead.com tools, and the one with the most obvious replication potential outside the US. The mechanism is simple: any member of the public can nominate a consumer product for laboratory testing. Other members contribute small donations. When contributions reach US$100, FluoroSpec purchases a sealed retail unit of the product, submits it to Purity Labs for ICP-MS analysis of lead, arsenic, mercury and cadmium, and publishes the results publicly with full lab documentation.

The transparent breakdown is US$80 for the laboratory analysis and US$20 for the sealed retail sample. No markup. No administration fee. The model is explicitly designed to compete on cost with established crowdfunded testing services, which typically charge US$495 or more per product tested.

Current open campaigns include cinnamon blends, cacao powders, and matcha products — categories where a competing organisation, "Lead Safe Mama," has open fundraising at the higher price point.

For LAN readers, the Lead Lottery is interesting on three levels. First, as a model for democratised testing access. Second, as a public-interest reduction of cost in a market that has historically been opaque. Third, as a possible template for an Australian equivalent — perhaps administered through The LEAD Group itself.

The LEAD Group welcomes Letters to the Editor - which can be sent from https://leadsafeworld.com/about-us/contact-us/ - if you would be interested in seeing such an Australian programme. If sufficient interest emerges, the Committee will consider whether to approach Eric Ritter regarding methodology sharing.

The Contested Foods Explorer

WHEN TWO LABORATORIES TEST THE SAME PRODUCT AND DISAGREE

Adapted with permission from detectlead.com.

[Tool URL: https://detectlead.com/pages/contested-foods]

One of the more unusual pages on detectlead.com is the Contested Foods Explorer — a small database of cases where two different laboratory tests of the "same" product produced significantly different lead measurements. The page currently catalogues two formal contested pairs and one example of natural batch variation.

Example 1: Philadelphia Original Cream Cheese. One published laboratory result reported 120.6 ppb lead. A subsequent retest at a different laboratory found non-detectable (below 2 ppb). Same product, same shelf, different lots.

Example 2: 365 Whole Foods Organic Morning O's. Initial testing reported 362 ppb lead. A community- funded retest produced a substantially different value (unpublished at time of writing).

Example 3 (illustrative): FDA data for raw baby carrots across 27 samples. Range: non-detectable to 36 ppb. This is natural batch variability in a food commodity that depends on soil lead concentrations at the farm of origin.

Why this page exists. Most lead-testing organisations hide their methodological disagreements. The Contested Foods Explorer publishes them. The argument is that single-batch food testing creates misleading certainty — "same product" usually means "same brand, different batch" — and that the public is better served by knowing this than by being given a single confident number.

This is the kind of editorial honesty LEAD Action News readers will recognise. It is one of the reasons the Elizabeth O'Brien chose detectlead.com as the featured website of this issue.

Field Notes: Why Are Children Still the Lead Test?

A SHORT ESSAY FROM THE "FIELD NOTES" BLOG ON DETECTLEAD.COM

Adapted with permission from the Field Notes blog of detectlead.com.

[URL: https://detectlead.com/blogs/field-notes/why-are-children-still-the-lead-test]

In every other area of public health, when a chemical has been definitively linked to neurodevelopmental harm at vanishingly low doses, we test the environment first and the child only when something is found.

With lead, we still do it the other way around. The screening protocol — universal where it exists at all — is to draw blood from a one-year-old or two-year-old child and look for elevated lead. If the blood is positive, only then do we begin the environmental investigation. Eric Ritter calls this "using the child as the test instrument," and the phrase is sharp enough to bear repeating.

The argument of the FluoroSpec project, at its core, is simple: test the house before the child is conceived. Test the dishes before the food is served. Test the toys before they are wrapped. Test with a kit, not a kid.

For LEAD Action News readers, this is not a new argument. It is the argument The LEAD Group has been making, in some form, since 1991. But it is unusually well-articulated by Eric, and the Editor-in-Chief recommends the original blog post.

Field Notes: Awareness Is the Prevention

A SECOND SHORT ESSAY FROM DETECTLEAD.COM

Adapted with permission from the Field Notes blog of detectlead.com.

[URL: https://detectlead.com/blogs/field-notes/awareness-is-the-prevention]

There is no pill for lead poisoning, in any meaningful population-scale sense. There are chelation protocols for the most severe acute cases, but they are partial, expensive, and only deployed when the harm is already advanced. For the chronic low-level burden that affects most adults and many children, there is no medical intervention that meaningfully reduces lifetime body burden.

What works, instead, is awareness. Awareness of where lead lives in the built environment. Awareness of which foods, which dishes, which toys, which water pipes carry it. Awareness sufficient to remove the source before exposure occurs.

Eric Ritter writes that "the hard part is not finding the lead. The hard part is having the right reaction to it." LEAD Action News has been saying the same thing for over three decades. This short essay is worth reading in full.

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Department of Health and Mental Hygiene, King County (Washington) hazardous waste programme, and the State of California under AB-899.

Each part of this article contains the canonical detectlead.com URL for the source material, so that readers may consult the original directly.

The LEAD Group welcomes Letters to the Editor - which can be sent from https://leadsafeworld.com/about-us/contact-us/ - on any content in this issue.

Lead Detox by Food, Supplements and Oral Chelation

Annotated Bibliography - in Publication Date Order

Compiled by Claude AI in answer to Elizabeth O'Brien's guiding questions re: Lead Detox Literature found and data-entered in The LEAD Group's Library by Paul Jacobe and Marie Villarosa; Edited by Elizabeth O'Brien, The LEAD Group Inc, June 2026. Note that LID stands for Library Identifier.

Robert S. Waters, Noella A. Bryden, Kristine Y. Patterson, Claude Veillon & Richard A. Anderson. "EDTA chelation effects on urinary losses of cadmium, calcium, chromium, cobalt, copper, lead, magnesium, and zinc." Biological Trace Element Research (Springer Nature), 2001.
https://link.springer.com/article/10.1385/BTER:83:3:207 [LID 29490]

Yes, this is a lead detox article. This human clinical study, conducted in the USA, examined the effect of intravenous (IV) EDTA chelation on urinary excretion of multiple minerals including lead in a small group of adult patients. The study confirmed that IV EDTA significantly increases urinary lead excretion. However, it also showed simultaneous losses of essential minerals - calcium, magnesium, zinc, copper, chromium, and cobalt - raising the importance of mineral repletion alongside chelation. IV EDTA requires medical supervision and clinic administration. Oral EDTA is commercially available without prescription, though its bioavailability and lead-mobilising effect is far lower than IV. The study underscores that any EDTA protocol should be paired with mineral supplementation to replace what is lost.

2025 Volcano Art Prize (VAP) Entry. Artist: Grandma Lead. Title: Daily Detox. Lead-Safety Message: In February 2025 I added CaEDTA biscuits or crackers and then FeEDTA crackers or bread to my usual breakfast &/or lunch lead detox foods (fresh ginger and garlic, garlic paste and garlic-infused oil, red onion, coriander &/or parsley, mixed pepitas, sunflower & black & white sesame seeds, sesame seed halva, psyllium, wild blueberries, orange rind in syrup, lime/lemon zest & juice, a brazil nut, LivOn Vit C, Calcium with Vit D, Magnesium) then in September 2025 I added RC3 Sea Minerals in milk, omega-3 oil, creatine (after it was ok'ed by my GP) & pistachio nuts & sour cherries for dementia prevention and improved sleep (when the brain is being detoxed). [June 2026 update: As at 13 April 2026 and following blood lead result in early June 2026, I've brought my blood lead level down by 55% on this daily lead detox regime such that it is finally compliant with The LEAD Group goal for a blood lead level to be below 1ug/dL]. Description of Work: iPhone13 photos collaged in Powerpoint and Paint. URL: https://volcanoartprize.com/portfolio-item/daily-detox/ [LID 28964]

J.D. Campbell. "Lifestyle, minerals and health." Medical Hypotheses (Science Direct), 2001. https://www.sciencedirect.com/science/article/abs/pii/S0306987701913519 [LID 29497]

This is not primarily a lead detox article. It is a review paper examining the relationship between lifestyle factors, dietary mineral intake, and overall health. It likely appeared in a lead detox search because it discusses how adequate intake of competing minerals - particularly calcium, zinc, and iron - reduces the absorption and toxicity of heavy metals including lead. The paper presents no primary human or animal subjects. Its practical value for someone seeking to reduce lead levels lies in its discussion of how optimising dietary minerals can competitively inhibit lead uptake in the gut, an approach that is fully replicable at home without medical supervision through food choices and standard mineral supplements.

Parris M. Kidd. "Autism, An Extreme Challenge to Integrative Medicine. Part II: Medical Management." Alternative Therapies in Health and Medicine, Vol. 7 No. 6, 2002. https://chiro.org/Graphics_Box_NUTRITION/Autism_PartII.pdf [LID 29506]

This is not a primary lead detox study, but it is highly relevant. This review, published in the USA in 2002, covers integrative medical management of autism in children, including the role of heavy metal toxicity - particularly lead and mercury - as a contributing factor. The author reviews the use of DMSA (succimer), DMPS, and oral EDTA for heavy metal removal in autistic children, alongside nutritional support with antioxidants, essential fatty acids, B vitamins, and minerals. No new primary subjects were studied. It is a narrative review drawing on existing case series and clinical experience. While the chelating agents discussed require prescriptions or physician oversight, the nutritional support strategies (vitamins, minerals, diet) described are accessible at home and are a useful complement to any detox programme.

Parris M. Kidd. "Autism, an extreme challenge to integrative medicine. Part 1 - The knowledge base." Alternative Therapies in Health and Medicine (PubMed), 2002. https://pubmed.ncbi.nlm.nih.gov/12197782/ [LID 29530]

This article (published 2002, filed in this database later) is Part 1 of a two-part series on autism as an integrative medicine challenge. It is not a primary lead detox study. It reviews the knowledge base for autism, including genetic, immunological, gastrointestinal, and environmental (including heavy metal exposure) factors. It makes the case that heavy metal toxicity - particularly from lead and mercury - is a significant contributor to ASD in a subset of children, and that integrative treatment including detoxification should be part of management. Part 2 (LID 29506) covers the medical management in more detail. No primary subjects were studied. Useful as a conceptual framework for understanding how lead toxicity intersects with neurodevelopmental disorders, particularly for parents whose

children have ASD diagnoses alongside elevated lead levels.

Lyn Patrick. "Mercury toxicity and antioxidants - Part 1: role of glutathione and alpha-lipoic acid in the treatment of mercury toxicity." Alternative Medicine Review (PubMed), 2003. https://pubmed.ncbi.nlm.nih.gov/12495372/ [LID 29523]

This is not a lead detox article - it focuses specifically on mercury toxicity. It appeared in this search because glutathione and alpha-lipoic acid (ALA), reviewed here as mercury chelators and antioxidants, are also widely used in lead detox protocols. The paper is a narrative review with no primary subjects. It summarises evidence that N-acetyl cysteine (NAC), glutathione, and ALA support heavy metal excretion and reduce oxidative damage from mercury. The relevance to lead is indirect: ALA in particular has documented lead-chelating properties in some studies, and glutathione is a critical component of the body's own metal detox pathways. All three supplements - NAC, liposomal glutathione, and ALA - are available without prescription and replicable at home, though ALA should be used carefully in the presence of mercury amalgam fillings.

Guy E. Abraham. "Chelation Therapy Explained." Talk International, Mercury Free Community Since 1997. Undated but includes: "The first study on oral EDTA in human subjects was published in 1953, some 50 years ago"; circa 2003. https://www.talkinternational.com/heavy-metal-detoxification/chelation-therapy-explained/ [LID 29477]

Abraham has written an accessible overview of chelation therapy for lead and other heavy metals. This article explains chelation therapy from first principles: what chelation is (a chelating agent forming stable ring structures with metal ions), the history of its use (beginning with wartime treatment of arsenic poisoning and lead poisoning in munitions workers), and the main chelating agents in clinical use (EDTA, DMSA, DMPS). It also covers natural chelating agents (vitamin C, alpha-lipoic acid, garlic compounds) and their mechanisms. No primary subjects are studied. The article is intended for a general audience and is useful for someone seeking to understand the conceptual framework of chelation before exploring specific protocols. It helps orient the reader on where prescription chelation ends and home-accessible nutritional chelation begins.

Ward Dean. "DMSA and Detoxing Heavy Metals." Ward Dean M.D. © 2021. Undated but most recent reference cited was published in 2003; first published circa 2004. https://www.warddeanmd.com/dmsa-and-detoxing-heavy-metals/ [LID 29476]

This is a practical lead detox article. Dr. Ward Dean - a physician and researcher in anti-ageing and nutritional medicine - reviews DMSA (dimercaptosuccinic acid/succimer) for heavy metal detoxification including lead. The article covers DMSA's history (originally developed in the Soviet Union), mechanism (orally bioavailable chelator with affinity for lead,

mercury, arsenic), standard dosing protocols (10 mg/kg body weight, given in cycles over several weeks with rest periods), and the importance of mineral replacement (zinc, copper, selenium, iron) between rounds. Blood lead reductions of 40-60% per treatment course are discussed. In the USA, DMSA/Chemet requires a prescription for its FDA-approved indication. The article provides a clear practical framework and is highly relevant reading before consulting a physician about oral DMSA chelation therapy.

Ryan H. Harrison. "What You Should Know About Heavy Metals." BeWholeBeWell.com, circa 2004.
https://www.bewholebewell.com/articles/WhatYouShouldKnowAboutHeavyMetals.pdf [LID 29478]

This is a consumer-oriented heavy metal and lead awareness article. This practitioner-authored guide covers the health effects of lead, mercury, cadmium, and arsenic, common sources of exposure, testing methods, and an overview of detox approaches. Detox strategies discussed include dietary changes (reducing processed foods, increasing fibre and antioxidants), targeted supplements (vitamin C, zinc, selenium, alpha-lipoic acid, chlorella, modified citrus pectin), infrared sauna, and when to seek medical chelation. No primary subjects are studied. It provides a well-rounded introduction to the topic and a practical starting framework for someone new to heavy metal detox. All dietary and supplement strategies discussed are home-replicable without medical supervision.

Dietrich Klinghardt. "A Comprehensive Review of Heavy Metal Detoxification and Clinical Pearls from 30 Years of Medical Practice." First published in 2006; Sophia Health Institute, 2018.
https://static1.squarespace.com/static/5a3438fad0e62852ac16c76d/t/5a8dbac2f9619ac30ea665a9/1519237827912/HeavyMetalDetox.pdf [LID 29467]

This is one of the most comprehensive lead and heavy metal detox articles in this bibliography. Dr. Dietrich Klinghardt - an integrative physician practising in the USA with extensive experience in neurotoxicology - provides a thorough review of heavy metal detoxification drawn from 30 years of clinical practice. The paper covers testing modalities (blood, urine, hair, provoked urine), the biology of metal storage (bone, brain, fat tissue), and a comprehensive protocol covering: nutritional preparation (vitamins C, B, minerals), natural binders (chlorella, cilantro, zeolite, modified citrus pectin, MSM), far-infrared sauna for sweat excretion, and when and how to use prescription chelators (DMSA, DMPS, EDTA). While the prescription-chelator components require physician oversight, much of the protocol - sauna, dietary changes, chlorella, MCP, vitamins - is fully home-replicable. This is among the most practically useful documents in this bibliography.

Isaac Eliaz; Elaine Weil; Barry Wilk. "Integrative Medicine and the Role of Modified Citrus Pectin/Alginates in Heavy Metal Chelation and Detoxification - Five Case Reports." Forschende Komplementarmedizin/Research in Complementary Medicine (Karger), 2007. https://karger.com/fok/article-abstract/14/6/358/356016/Integrative-Medicine-and-the-Role-of-Modified [LID 29515]

Yes, this is a lead detox article. This 2007 US case series reports on five adult patients treated with a commercial blend of modified citrus pectin (MCP) and sodium alginate (PectaSol-C Detox Blend). The protocol involved taking the supplement orally over several weeks. Urine and blood heavy metal levels were measured before and after. Across the five cases, significant reductions in urinary and blood heavy metals - including lead - were documented, with some cases showing 70%+ reductions in urinary lead over the treatment period. The MCP/alginate combination is available over the counter without prescription. MCP acts as a soluble fibre that binds heavy metals in the gut and bloodstream, while alginate provides additional binding in the gastrointestinal tract. This protocol is replicable at home, making it one of the more accessible approaches documented in this bibliography.

Zhao ZY, Liang L, Fan X, Yu Z, Hotchkiss AT, Wilk BJ, Eliaz I. "The role of modified citrus pectin as an effective chelator of lead in children hospitalized with toxic lead levels." Alternative Therapies in Health and Medicine, Jul/Aug 2008; 14(4):34, 2008. https://d1wqtxts1xzle7.cloudfront.net/125961187/MCP_Chinese_20Children_20Lead_20Study_20ATHM_202008-libre.pdf [LID 12017]

Yes, this is a landmark lead detox article. This 2008 clinical study conducted in China examined the use of modified citrus pectin (MCP) in children hospitalised with elevated blood lead levels. The children were given oral MCP supplementation over a defined period. Results showed significant reductions in blood lead levels, with urine lead excretion increasing by approximately 161% - reflecting mobilisation of stored lead - while blood lead fell. This is one of very few published clinical trials demonstrating that an OTC supplement (MCP) reduces blood lead levels in children with documented lead poisoning. PectaSol-C and other MCP products are commercially available without prescription. This protocol could potentially be replicated at home for milder lead elevations, though children with severely elevated blood lead levels should always have medical supervision.

2018 Volcano Art Prize (VAP) Entry. Artist: Elizabeth O'Brien. Title: Medical

Medium Anthony William's Heavy Metal Detox Smoothie. Lead-Safety Message: Drinking this delicious Heavy Metal Detox Smoothie nearly every day in 2018 has definitely brought my blood lead level down. Description of Work: iPhone photos collaged in Powerpoint & saved using Paint URL: https://volcanoartprize.com/portfolio-item/medical-medium-anthony-williams-heavy-metal-detox-smoothie/ [LID 19162]

Luke T. Curtis & Kalpana Patel. "Nutritional and Environmental Approaches to Preventing and Treating Autism and Attention Deficit Hyperactivity Disorder." Journal of Alternative and Complementary Medicine (SAGE), 2008. https://journals.sagepub.com/doi/abs/10.1089/acm.2007.0610 [LID 29522]

This is not a primary lead detox study. It is a review article published in the USA in 2008 that examines the role of nutritional and environmental interventions - including reduction of heavy metal exposure - in managing autism and ADHD. The paper reviews evidence that lead, mercury, and other heavy metals contribute to neurodevelopmental disorders, and surveys the literature on dietary approaches, supplements (zinc, magnesium, B vitamins, omega-3s), and chelation (DMSA) as treatment strategies. No primary subjects were studied. Relevant for parents as it summarises accessible nutritional interventions alongside medical options, but the chelation protocols discussed require physician oversight.

Rita Ellithorpe, Tony Jimenez & Brett Jacques. "Calcium disodium EDTA chelation suppositories: A novel approach for removing heavy metal toxins in clinical practice." Townsend Letter (Research Gate), 2009. https://www.researchgate.net/publication/235923312_Calcium_disodium_EDTA_chelation_suppositories_A_novel_approach_for_removing_heavy_metal_toxins_in_clinical_practice [LID 29471]

Yes, this is a lead detox article. This 2009 US clinical report evaluated calcium disodium EDTA administered via rectal suppositories as an alternative to intravenous chelation. Patients in a clinical practice setting received the suppositories and were monitored for urinary heavy metal excretion including lead. Results showed measurable increases in urinary excretion of lead and other heavy metals. EDTA suppositories are commercially available without prescription (e.g., Detoxamin) and can be self-administered at home, unlike IV EDTA which requires clinical administration. The study found the suppository route to be convenient and well-tolerated. Mineral supplementation was recommended alongside use to replace co-excreted essential minerals. This represents one of the most accessible medical-grade chelation approaches for home use.

Sally Bradberry & Allister Vale. "A comparison of sodium calcium edetate (edetate calcium disodium) and succimer (DMSA) in the treatment of inorganic lead poisoning." Clinical Toxicology (Taylor & Francis), 2009. https://www.tandfonline.com/doi/abs/10.3109/15563650903321064 [LID 29498]

Yes, this is a lead detox article. This 2009 UK review critically compares two of the main medical chelating agents used for lead poisoning: sodium calcium edetate (IV EDTA) and succimer (oral DMSA). The review synthesises published clinical trial data. It finds that both agents effectively reduce blood lead levels, with DMSA (oral) producing blood lead reductions of approximately 40-60% from baseline in treated children in various trials, and IV EDTA producing similar or greater reductions. DMSA (succimer/Chemet) is FDA-approved for children with blood lead of 45 micrograms per decilitre or higher and requires a prescription. IV EDTA requires clinical administration. Neither is replicable at home without medical supervision, but this review is valuable for understanding the two main prescription chelation options and their comparative efficacy and safety profiles.

Jennifer A. Lowry. "Oral Chelation Therapy for Patients with Lead Poisoning." Children's Mercy Hospitals and Clinics, Division of Clinical Pharmacology and Medical Toxicology, 2010. https://jeffreydachmd.com/wp-content/uploads/2015/07/Lead_Oral_Chelators_J_A_Lowry_2010.pdf [LID 29466]

This is a key lead detox article. Written by a clinical toxicologist in the USA and published circa 2010, this paper reviews oral chelation options for lead poisoning. It focuses primarily on DMSA (succimer/Chemet), which is FDA-approved as an oral chelating agent for children with blood lead levels of 45 micrograms per decilitre or higher. The review discusses DMSA dosing (10 mg/kg three times daily for 5 days, then twice daily for 14 days), efficacy (typically reducing blood lead by 30-50% per course), side effects, and the limitations of chelation (it removes lead from blood but may mobilise bone lead stores). DMSA requires a prescription. The paper also notes that source removal is the most important intervention. Highly relevant for parents of children with elevated blood lead seeking to understand their medical options.

William Shaw. "The Unique Vulnerability of the Human Brain to Toxic Chemical Exposure and the Importance of Toxic Chemical Evaluation and Treatment in Orthomolecular Psychiatry." Journal of Orthomolecular Medicine, 2010. https://www.national-toxic-encephalopathy-foundation.org/brainvul.pdf [LID 29502]

This is not primarily a lead detox article - it is a review/commentary on the susceptibility of the human brain to toxic chemical exposure, including heavy metals such as lead, mercury, and aluminium. Published in 2010, it reviews mechanisms by which these toxins damage the brain and discusses the importance of testing and treating toxic chemical exposure in psychiatric patients. The paper recommends nutritional and orthomolecular approaches

(high-dose vitamins, minerals, antioxidants) as well as chelation. No primary subjects were studied. It appeared in a lead detox search because it discusses lead's neurotoxicity and treatment options. The nutritional interventions suggested (vitamins C, B6, zinc, selenium) are accessible at home; chelation protocols require physician oversight.

2019 Volcano Art Prize (VAP) Entry. Artist: Elizabeth O'Brien. Title: Lead detox food and drink to go. Lead-Safety Message: Medical Medium Anthony William recommends this Heavy Metal Detox Smoothie, Juice and Tea, plus leafy green Salads, Celery Sticks and Dates. Description of Work: iPhone 4S Photograph stretched to landscape shape using Word and Paint. URL: https://volcanoartprize.com/portfolio-item/lead-detox-food-and-drink-to-go/ [LID 26252]

John Neustadt & Steve Pieczenik. "Heavy-metal Toxicity - With Emphasis on Mercury." ProQuest / International Journal of Integrative Medicine, 2011. https://www.proquest.com/openview/066eae3d46118ff4d0214900dccc7351/1?pq-origsite=gscholar&cbl=736337 [LID 29480]

This is not primarily a lead detox article - the emphasis is on mercury. However, it appeared in this search because the paper reviews general heavy metal toxicity and treatment with overlapping relevance to lead. Published in 2011, this US review covers mechanisms of mercury and heavy metal toxicity, diagnostic testing (provoked urine testing, hair analysis), and treatment with DMSA, DMPS, alpha-lipoic acid, NAC, and nutritional support. No primary subjects were studied. The paper's discussion of NAC, ALA, and high-dose antioxidants for supporting detoxification pathways is directly applicable to lead detox and these supplements are available without prescription. The prescription chelator protocols (DMSA, DMPS) require physician oversight.

Chukwuemeka R. Nwokocha et al. "Comparative analysis on the effect of Lycopersicon esculentum (tomato) in reducing cadmium, mercury and lead accumulation in liver." Food and Chemical Toxicology (Science Direct), 2012. https://www.sciencedirect.com/science/article/pii/S0278691512002700 [LID 29500]

Yes, this is a food-based lead detox article. This 2012 Nigerian animal study (rats) examined the effect of tomato (Lycopersicon esculentum) consumption on hepatic accumulation of cadmium, mercury, and lead. Results showed that tomato consumption significantly reduced lead, cadmium, and mercury levels in liver tissue compared to control animals, attributed primarily to lycopene and other antioxidants reducing oxidative damage and chelating metals. While direct translation to humans requires caution, tomatoes are a common, safe food with well-established antioxidant properties. Regular tomato consumption represents an entirely home-replicable, low-cost dietary strategy to reduce heavy metal accumulation.

The study's relevance is as supporting evidence for a diet rich in antioxidant-containing vegetables.

Eleonore Blaurock-Busch, Omnia R. Amin, Hani H. Dessoki & Thanaa Rabah. "Efficacy of DMSA Therapy in a Sample of Arab Children with Autistic Spectrum Disorder." PubMed Central / Maedica, 2012.
https://pmc.ncbi.nlm.nih.gov/articles/PMC3566884/ [LID 29511]

Yes, this is a lead detox article with clinical outcome data. This 2012 study (Egypt/Germany collaboration) examined DMSA (succimer) chelation therapy in approximately 44 Arab children diagnosed with autism spectrum disorder (ASD) who had confirmed elevated heavy metal levels including lead. The children received multiple rounds of oral DMSA. Post-treatment urinary excretion of lead and other metals increased significantly, and behavioural symptom scores improved in many children. Blood lead levels were reduced in the treated group. DMSA requires a prescription and medical supervision. The study is relevant because it demonstrates DMSA's effectiveness in children with elevated lead as well as potential cognitive and behavioural benefits from lead reduction. Parents should not administer DMSA without physician oversight.

Margaret E. Sears, Kathleen J. Kerr, Riina I. Bray. "Arsenic, Cadmium, Lead, and Mercury in Sweat - A Systematic Review." Journal of Environmental and Public Health (Wiley), 2012.
https://onlinelibrary.wiley.com/doi/full/10.1155/2012/184745 [LID 29518]

Yes, this is a lead detox article with direct practical application. This 2012 Canadian systematic review examines published evidence that arsenic, cadmium, lead, and mercury are excreted in human sweat. The review synthesises multiple human studies across several countries. Key finding: lead is measurably present in sweat, and sweat-inducing activities (vigorous exercise, sauna bathing) represent a meaningful route of lead excretion. Some studies cited show sweat lead concentrations comparable to urine lead concentrations. This supports the use of regular exercise and sauna therapy as accessible, home-replicable lead detox strategies. Sauna and exercise are among the most accessible and safest lead detox approaches reviewed in this bibliography. No specific blood lead reduction percentages are quantified, but the evidence base for sweat-based excretion is assessed as credible.

Kapoor Neeti & Tiwari Prakash. "Effects of Heavy Metal Poisoning during Pregnancy." International Research Journal of Environment Sciences (India), 2012. https://www.karunaflame.com/karunaflame/wp-content/uploads/2017/02/Effects-of-Heavy-Metal-Poisoning-during-Pregnancy.pdf [LID 29524]

This is a review article on the effects of heavy metal exposure - including lead - during pregnancy, published in India in 2012. It is not a detox protocol study. It reviews the adverse effects of lead, mercury, arsenic, and cadmium on maternal and foetal health, documenting

links to miscarriage, low birth weight, preterm birth, and neurodevelopmental deficits in exposed children. No primary subjects were studied. It appeared in a lead detox search because it discusses the urgency of reducing heavy metal burden in pregnant women and nursing mothers. The paper briefly mentions that chelation is contraindicated during pregnancy and recommends preventive dietary strategies (calcium, iron, vitamin C) as the safe approach. All of the dietary measures discussed are home-replicable.

2019 Volcano Art Prize (VAP) Entry. Artist: Elizabeth O'Brien. Title: Richard Turnbull's Lead Detox Concoction. Lead-Safety Message: See Richard Turnbull's recipe for this apparently effective garlic & lemon lead detox concoction, at

https://lead.org.au/lanv19n4/LANv19n4-28.pdf . Description of Work: iPhone 4S Photographs collaged using Word and Paint. URL: https://volcanoartprize.com/portfolio-item/richard-turnbulls-lead-detox-concoction/ [LID 20989]

Blaurock-Busch & Albrecht Friedle. "Metal Exposure in the Children of Punjab, India." Clinical Medicine: Therapeutics (SAGE), 2012. https://journals.sagepub.com/doi/full/10.4137/CMT.S5154 [LID 29526]

This is primarily an exposure documentation study. Published in 2012, it reports heavy metal levels including blood lead in children in Punjab, India - a follow-up to an earlier cohort study. Children showed significantly elevated lead levels, along with arsenic, mercury, and other metals, in a population with industrial and agricultural contamination exposure. The paper documents correlations between metal levels and developmental disabilities. Treatment discussion is limited; the paper advocates for reduced exposure, nutritional support, and where appropriate medical chelation. Useful as context for understanding how widespread lead exposure affects children's health; less directly applicable to home-based detox protocols.

Victor Raj Mohan Chandrasekaran, Dur-Zong Hsu & Ming-Yie Liu. "Beneficial Effect of Sesame Oil on Heavy Metal Toxicity." Journal of Parenteral and Enteral Nutrition (PubMed), 2013. https://pubmed.ncbi.nlm.nih.gov/23744838/ [LID 29492]

Yes, this is a food-based heavy metal detox article. This 2013 study from Taiwan examined sesame oil's protective and chelating effects against heavy metal toxicity in animal models (rats). Sesame oil, rich in sesamol, sesamin, and sesamolin, was found to significantly reduce oxidative stress, organ damage, and metal accumulation caused by lead, cadmium, and other

heavy metals in treated animals compared to controls. While this is an animal study, sesame oil and its active compounds have known antioxidant properties in humans. Regular consumption of sesame oil or sesame seeds is a safe, affordable, and home-replicable dietary strategy that may help reduce heavy metal burden. The study does not provide specific blood lead reduction percentages in humans.

Sante Guido Zanella & Paolo Roberti di Sarsina. "Personalization of Multiple Sclerosis Treatments - Using the Chelation Therapy Approach." EXPLORE: The Journal of Science & Healing (Science Direct), 2013.
https://www.sciencedirect.com/science/article/abs/pii/S1550830713001092 [LID 29517]

This is not a lead detox article in the conventional sense. It discusses chelation therapy as a personalised treatment approach for multiple sclerosis (MS) patients in Italy, based on the hypothesis that heavy metal accumulation (including lead, mercury, and iron) contributes to MS pathology. The paper reports on a small cohort of MS patients treated with chelation and documents reduced heavy metal levels. It appeared in a lead detox search because it documents the use and outcomes of chelation therapy for reducing heavy metal burden. The paper provides limited blood lead reduction data specific to lead. Chelation in this context was physician-administered. This article is more relevant as background reading on chelation therapy in general than as a practical guide to home-based lead detox.

Natalia V. Solenkova et al. "Metal pollutants and cardiovascular disease - Mechanisms and consequences of exposure." American Heart Journal (Science Direct), 2014.
https://www.sciencedirect.com/science/article/pii/S0002870314004268 [LID 29485]

This is a cardiovascular medicine review article rather than a home lead detox guide. Published in the USA in 2014, it reviews how environmental metal pollutants - especially lead, cadmium, and arsenic - cause cardiovascular disease through oxidative stress, endothelial dysfunction, hypertension, and atherosclerosis. The paper also discusses the TACT (Trial to Assess Chelation Therapy) trial, which showed that IV EDTA chelation reduced cardiovascular events in post-heart-attack patients. No primary subjects were studied in this paper. It appeared in a lead detox search because of its discussion of chelation therapy (EDTA) as a cardiovascular intervention. It helps understand why lead reduction is important beyond direct toxicity. The chelation therapy discussed requires medical administration.

E. Blaurock-Busch. "Comparison of chelating agents DMPS, DMSA and EDTA for the diagnosis and treatment of chronic metal exposure." British Journal of Medicine and Medical Research, 2014.
https://www.researchgate.net/publication/269809108_Comparison_of_chelating_agents_DMPS_DMSA_and_EDTA_for_the_diagnosis_and_treatment_of_chronic_metal_exposure [LID 29514]

Yes, this is an important lead detox reference article. This 2014 review by a specialist in trace element medicine compares the three main medical chelating agents - DMPS, DMSA, and EDTA - for both diagnosing and treating chronic heavy metal exposure including lead. DMSA is found to be most appropriate for lead, as it is orally bioavailable, FDA-approved for children, and has reasonable selectivity for lead. EDTA (IV or suppository) is a broader chelator also effective for lead. DMPS is used in some European countries but is not FDA-approved in the USA. All three chelating agents require prescription or medical supervision. The paper provides a useful clinical framework for understanding which agent is preferred for lead versus other metals, their dosing, and monitoring requirements.

Diana J. Felton, Stefanos N. Kales & Rose H. Goldman. "An Update and Review of Unconventional Metals Testing and Treatment." Toxics (MDPI), 2014.
https://www.mdpi.com/2305-6304/2/3/403 [LID 29521]

Yes, this is a relevant lead detox review. Published in the USA in 2014, this paper reviews unconventional approaches to heavy metal testing (provoked/challenge urine testing, hair analysis) and treatment, including both prescription chelation and alternative approaches. The paper is somewhat sceptical of provoked urine testing as a diagnostic tool, noting it may inflate apparent metal burden. It reviews evidence for DMSA, EDTA, and various natural supplements in reducing metal body burden. No primary subjects were studied. The review is valuable for understanding the evidence base - and limitations - for various testing and treatment approaches, both conventional and integrative. It cautions against unsupervised chelation and emphasises that source removal remains the primary intervention.

2019 Volcano Art Prize (VAP) Entry. Artist: Noela Whitton (aged 89). Title: Still life with pears - Vale Margaret Olley. Lead-Safety Message: Pears have long been said to be good for lead detox due to their pectin content but Anthony William says they're good for detoxing all heavy metals. Description of Work: Smartphone photo of oil painting on canvas by Noela Whitton, aged 89 - a copy done in Aged Care Art Therapy class, of "Still life with pears" by the great Australian artist Margaret Olley (1923-2011). URL: https://volcanoartprize.com/portfolio-item/still-life-with-pears-vale-margaret-olley/ [LID 19561]

Laura Breeher, Marek A. Mikulski, Thomas Czeczok, Kathy Leinenkugel & Laurence J. Fuortes. "A cluster of lead poisoning among consumers of Ayurvedic medicine." International Journal of Occupational and Environmental Health, 2015.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4727589/ [LID 20181]

This is a lead poisoning and medical chelation treatment article. Published in the USA in 2015, this paper documents a cluster of approximately 12 adults who developed lead poisoning after consuming Ayurvedic herbal supplements containing intentionally added lead, mercury, or arsenic as part of traditional formulations. Blood lead levels in affected patients ranged from moderately to severely elevated (some exceeding 50-70 micrograms per decilitre). The paper is an important warning that some herbal supplements - particularly Ayurvedic, traditional Chinese, and some South Asian products - may contain added or contaminating heavy metals. Home lesson: verify the heavy metal content of any herbal supplement before use by sourcing only third-party-tested products.

Hyun Soo Kim, Yeo Jin Kim & Young Rok Seo. "An Overview of Carcinogenic Heavy Metal - Molecular Toxicity Mechanism and Prevention." Journal of Cancer Prevention (South Korea), 2015.
https://pmc.ncbi.nlm.nih.gov/articles/PMC4699750/ [LID 29479]

This is a scientific review on heavy metal carcinogenicity and prevention rather than a practical detox guide. Published in South Korea in 2015, it reviews molecular mechanisms by which lead, cadmium, arsenic, chromium, and mercury cause cancer - including DNA damage, epigenetic changes, and interference with DNA repair. Prevention strategies briefly discussed include antioxidant supplementation (vitamins C, E, selenium) and chelation. No primary subjects were studied. It appeared in a lead detox search because of its discussion of prevention through antioxidants. The antioxidant strategies mentioned are accessible at home. Useful as motivation for taking lead reduction seriously, given the documented links between lead exposure and cancer risk.

Ehimen C. Aneni, Esteban Escolar & Gervasio A. Lamas. "Chronic Toxic Metal Exposure and Cardiovascular Disease - Mechanisms of Risk and Emerging Role of Chelation Therapy." Current Atherosclerosis Reports (Springer Nature), 2016. https://link.springer.com/article/10.1007/s11883-016-0631-0 [LID 29469]

Yes, this is a relevant lead detox article in the cardiovascular context. Published in the USA in 2016, this review by TACT trial investigators examines how chronic exposure to lead, cadmium, and arsenic causes cardiovascular disease and how chelation therapy (primarily IV EDTA) may reduce that risk. The TACT trial in over 1,700 post-heart-attack patients showed that IV EDTA chelation significantly reduced subsequent cardiovascular events, with particularly strong benefits in diabetic patients. Lead burden was associated with increased cardiovascular risk. The paper supports the use of medical EDTA chelation in cardiovascular

patients with metal burden. IV EDTA requires clinic administration. The paper also briefly mentions nutritional antioxidants as supportive measures.

Maria Elena Ferrero. "Rationale for the Successful Management of EDTA Chelation Therapy in Human Burden by Toxic Metals." BioMed Research International (Wiley), 2016.
https://onlinelibrary.wiley.com/doi/full/10.1155/2016/8274504 [LID 29510]

This one is an important lead detox review article. Published in Italy in 2016, this paper reviews the scientific rationale and clinical evidence for EDTA chelation therapy in humans with elevated toxic metal burden, including lead. It covers both the pharmacology of EDTA and clinical outcomes data from multiple studies and trials, including the TACT trial. The paper discusses both IV EDTA (clinic-administered) and oral EDTA (OTC-available) and notes that while oral EDTA has lower bioavailability (approximately 5-18% absorbed), it can still produce meaningful increases in faecal and urinary metal excretion. Mineral replacement (calcium, magnesium, zinc) alongside EDTA is emphasised. Rectal suppository EDTA is also mentioned as a middle-ground option. Of the EDTA delivery routes, oral and suppository forms are home-replicable without prescription.

2017 Volcano Art Prize (VAP) Entry. Artist: Cherry Qin (age 12). Title: Kid Eating Apples. Lead-Safety Message: A healthy apple a day keeps the lead away as it contains lots of pectin. Description of Work: Colour pencil. URL: https://volcanoartprize.com/portfolio-item/kid-eating-apples/ [LID 18574]

Michele Payne-Salomon. "The Secrets of Oral Chelation." GALE Academic OneFile, 2017.
https://go.gale.com/ps/i.do?id=GALE%7CA165167534&sid=googleScholar&v=2.1&it=r&linkaccess=abs&issn=&sw=w&p=AONE&userGroupName=anon%7Ec7bdb37c&aty=open-web-entry [LID 29472]

Yes, this is a directly relevant lead detox article focused on home-accessible approaches. Published in 2017, this article reviews oral chelation strategies for heavy metal removal including lead. It covers prescription oral DMSA, oral EDTA, and natural chelating supplements such as modified citrus pectin, chlorella, cilantro, garlic, and N-acetyl cysteine. The distinction between prescription agents and OTC supplements is made clear. No primary clinical subjects are studied; it is a practitioner/consumer review. The article is practical and accessible, making it particularly valuable for someone seeking to understand the spectrum of oral chelation options from prescription to grocery-store-accessible. Natural chelating agents discussed are fully home-replicable.

ACAM (American College for Advancement in Medicine). "IV Chelation Therapy - Finding a Doctor Who Will Test for and Treat Heavy Metal Toxicity." ACAM Integrative Medicine Blog, 2017.
https://www.acam.org/blogpost/1092863/ACAM-Integrative-Medicine-Blog?tag=toxins [LID 29505]

Yes, this is a practical consumer-oriented lead detox article. Published in 2017, this blog article guides patients in finding qualified practitioners who test for and treat heavy metal toxicity including lead. It explains what IV chelation therapy is, what testing to request (blood lead, urine metals, hair mineral analysis), and what types of practitioners offer chelation services (integrative MDs, naturopathic doctors, osteopaths). No clinical subjects or outcomes data are presented. The article is most useful as a guide for someone who wants to access medical-grade chelation therapy (IV EDTA or prescription DMSA) and needs to know how to find a qualified provider. All the preliminary testing options mentioned can be self-ordered in many US states.

Aditya Marianti, Debi Anatiasara & Fachrudyn Faisal Ashar. "Chitosan as Chelating and Protective Agents from Lead Intoxication in Rat." Biosaintifika: Journal of Biology & Biology Education (Indonesia), 2017.
https://journal.unnes.ac.id/nju/biosaintifika/article/view/8943 [LID 29513]

Yes, this is a lead detox animal study. Published in Indonesia, this study examined chitosan - a natural polysaccharide derived from shellfish exoskeletons - as a chelating agent for lead intoxication in rats. Rats were exposed to lead and then given oral chitosan at various doses. Results showed that chitosan administration significantly reduced blood lead levels and mitigated lead-induced organ damage in liver and kidneys compared to controls. Chitosan is thought to chelate lead in the gastrointestinal tract, reducing absorption and increasing faecal excretion. Chitosan supplements are commercially available without prescription, commonly sold as weight management and cholesterol-lowering supplements. This animal study supports the use of chitosan as a home-accessible oral lead-binding supplement, though human clinical trials in lead poisoning specifically are limited.

Dietrich Klinghardt. "A Comprehensive Review of Heavy Metal Detoxification and Clinical Pearls from 30 Years of Medical Practice." First published in 2006; Sophia Health Institute, 2018.
https://static1.squarespace.com/static/5a3438fad0e62852ac16c76d/t/5a8dbac2f9619ac30ea665a9/1519237827912/HeavyMetalDetox.pdf [LID 29467]

This is one of the most comprehensive lead and heavy metal detox articles in this bibliography. Dr. Dietrich Klinghardt - an integrative physician practising in the USA with extensive experience in neurotoxicology - provides a thorough review of heavy metal detoxification drawn from 30 years of clinical practice. The paper covers testing modalities (blood, urine, hair, provoked urine), the biology of metal storage (bone, brain, fat tissue), and a comprehensive protocol covering: nutritional preparation (vitamins C, B, minerals), natural

binders (chlorella, cilantro, zeolite, modified citrus pectin, MSM), far-infrared sauna for sweat excretion, and when and how to use prescription chelators (DMSA, DMPS, EDTA). While the prescription-chelator components require physician oversight, much of the protocol - sauna, dietary changes, chlorella, MCP, vitamins - is fully home-replicable. This is among the most practically useful documents in this bibliography.

Marissa Hauptman, Bryan Stierman & Alan D. Woolf. "Children With Autism Spectrum Disorder and Lead Poisoning - Diagnostic Challenges and Management Complexities." Clinical Pediatrics / PubMed Central, 2019. https://pmc.ncbi.nlm.nih.gov/articles/PMC6982422/ [LID 29486]

Yes, this is a lead detox article with particular relevance to children with autism. Published in the USA in 2019, this paper reviews the overlapping presentations of autism spectrum disorder (ASD) and lead poisoning - both can cause speech delay, hyperactivity, and behavioural problems - and how this complicates diagnosis and management. It reviews evidence for chelation (DMSA) in ASD children with elevated lead levels, noting that treating lead poisoning in autistic children may improve some symptoms but results are mixed. A clinical framework for testing and treating lead in ASD children is provided. Chelation requires medical supervision. Home-relevant takeaway: children with ASD should routinely have blood lead levels checked, and reducing environmental lead exposure (paint, soil, water, some supplements) is essential.

2019 Volcano Art Prize (VAP) Entry. Artist: William Nguyen (age 11). Title: Kiwi fruit are full of Vitamin C. Lead-Safety Message: Kiwi fruit has a lot of antioxidants which are helpful in eliminating lead from the body. Include them in your diet. Description of Work: Colour pencil URL: https://volcanoartprize.com/portfolio-item/kiwi-fruit-are-full-of-vitamin-c/ [LID 22024]

Jose Joaquin Merino et al. "The Long-Term Algae Extract (Chlorella and Fucus sp) and Aminosulphurate Supplementation Modulate SOD-1 Activity and Decrease Heavy Metals (Hg++, Sn) Levels in Patients with Long-Term Dental Titanium Implants and Amalgam Fillings." Antioxidants (MDPI), 2019. https://www.mdpi.com/2076-3921/8/4/101 [LID 29512]

This is a relevant supplement-based heavy metal detox article, though focused on mercury and tin rather than lead. Published in Spain in 2019, this human clinical study examined the effect of long-term supplementation with chlorella algae extract and fucus (bladderwrack seaweed) combined with taurine in patients with dental amalgam fillings and titanium implants. The study found significant reductions in mercury and tin levels alongside

modulation of antioxidant enzyme activity. While lead was not the primary target, chlorella is widely used in lead detox protocols due to its documented heavy metal binding properties. All supplements used (chlorella, fucus, taurine) are available without prescription. The study supports the general principle that algae-based supplementation can reduce heavy metal body burden and is replicable at home.

Chetan Rajak, Neelu Singh & Poonam Parashar. "Metal toxicity and natural antidotes - prevention is better than cure." Environmental Science and Pollution Research (Springer Nature), 2020.
https://link.springer.com/article/10.1007/s11356-020-10783-3 [LID 29468]

Yes, this is a highly relevant food- and supplement-based lead detox review. Published in India in 2020, this comprehensive review covers natural antidotes to heavy metal toxicity including lead, from the perspective that prevention through natural agents is preferable to pharmaceutical chelation. Reviewed natural agents include: garlic (allicin chelates lead), coriander/cilantro, onion, green tea (EGCG reduces metal absorption), turmeric (curcumin chelates and reduces oxidative stress), vitamin C, vitamin E, selenium, zinc, and various medicinal herbs. Human, animal, and in-vitro studies are summarised. No primary subjects were studied. This paper provides a practical framework for constructing a home-based lead reduction diet and supplement programme. All agents discussed are accessible without prescription and most are available as everyday foods or common supplements.

Akshatha Shetty & Dr Pushparaja Shetty. "The Effect of Micronutrients on Lead (Pb) Toxicity: Lead interaction with Micronutrients." Research Journal of Dentistry and Nutritional Medicine, 2020.
https://rjdnmd.org/index.php/RJDNMD/article/view/691/534 [LID 29474]

Yes, this is a highly practical lead detox article focused on accessible nutritional approaches. Published in India in 2020, this review comprehensively examines how specific micronutrients compete with, displace, or counteract lead toxicity. Key findings: calcium, iron, and zinc all compete with lead for absorption in the gut - ensuring adequate intake of these minerals significantly reduces lead absorption. Vitamin C chelates lead directly and promotes its urinary excretion. Vitamin E and selenium reduce lead-induced oxidative damage. Vitamin D affects lead deposition in bone. The paper reviews human and animal studies supporting each nutrient's role. All micronutrients discussed are available OTC as supplements, and dietary sources are listed. This constitutes a fully home-replicable nutritional protocol for reducing lead burden and mitigating its harm - one of the most practically useful papers in this bibliography.

Joanna M. Gaitens et al. "The management of embedded metal fragment patients and the role of chelation therapy - A workshop of the Dept of Veterans Affairs / Walter Reed National Medical Center." American Journal of Industrial Medicine (Wiley), 2020. https://onlinelibrary.wiley.com/doi/abs/10.1002/ajim.23098 [LID 29496]

This is a specialised military medicine article rather than a general lead detox guide. Published in the USA in 2020, it reports on a Department of Veterans Affairs workshop on managing US military veterans with embedded metal fragments (bullet/shrapnel fragments, many containing lead). The paper reviews evidence on when chelation therapy is appropriate for such patients, concluding that chelation is generally not recommended for asymptomatic patients with stable blood lead levels from embedded fragments, as it may remobilise lead from storage sites. Medical monitoring and symptom management are recommended instead. This paper reinforces that chelation decisions for elevated lead require medical supervision and careful risk-benefit assessment.

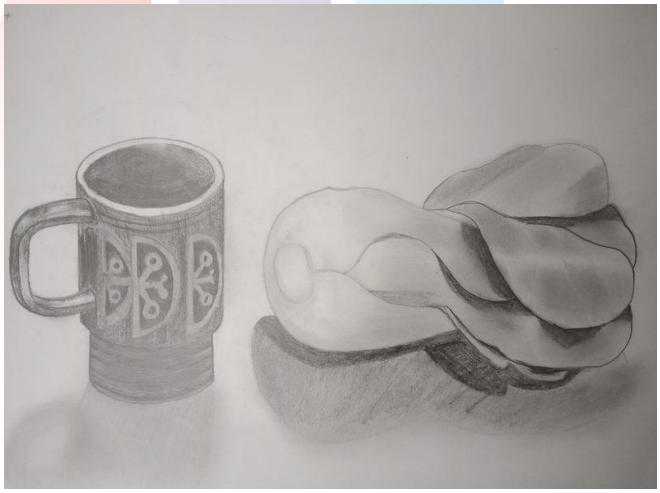
Rehab M. Abdel-Megeed. "Probiotics - a Promising Generation of Heavy Metal Detoxification." Biological Trace Element Research (Springer Nature), 2020. https://link.springer.com/article/10.1007/s12011-020-02350-1 [LID 29516]

Yes, this is an accessible lead detox article. Published in Egypt in 2020, this review examines the evidence for probiotic bacteria as agents for heavy metal detoxification, including lead. Multiple strains of Lactobacillus and Bifidobacterium have been shown in laboratory and animal studies to bind lead in the gut, reduce intestinal absorption, and increase faecal excretion. Some human studies also show reduced blood heavy metal levels with probiotic supplementation. The paper reviews mechanisms: probiotics bind metals to cell wall components (peptidoglycan, teichoic acids), produce organic acids that chelate metals, and may stimulate the body's own detox enzyme systems. Probiotics are widely available without prescription, inexpensive, and safe for most people including children. This represents one of the most accessible lead detox approaches, fully replicable at home. Specific strains cited include Lactobacillus rhamnosus, L. plantarum, and L. acidophilus.

Faraz Ahmad & Ping Liu. "(Ascorb)ing Pb Neurotoxicity in the Developing Brain." Antioxidants (MDPI), 2020. https://www.mdpi.com/2076-3921/9/12/1311 [LID 29533]

Yes, this is an important lead detox article focused on vitamin C (ascorbic acid). Published in 2020, this review examines the evidence that vitamin C protects the developing brain from lead (Pb) neurotoxicity. Vitamin C has multiple mechanisms: it directly chelates lead and promotes its urinary excretion, competes with lead for absorption at the gut level, reduces lead-induced oxidative stress, and protects neurons from lead-induced damage. Several human epidemiological studies cited show that higher vitamin C status is associated with lower blood lead levels in children. Animal studies show that vitamin C supplementation

significantly reduces blood and brain lead levels. This is one of the most accessible and evidence-supported lead detox interventions: vitamin C supplements are inexpensive, available without prescription, safe at moderate doses, and can be given to children. Applicable to both prevention and active detox, fully home-replicable.



2019 Volcano Art Prize (VAP) Entry. Artist: Mark Ju (age 13). Title: Bok Choy. Lead-Safety Message: All leafy green vegetables remove lead from the body. Description of Work: Colour pencil. URL: https://volcanoartprize.com/portfolio-item/bok-choy/ [LID 23995]

Haisu Liu et al. "Garlic (Allium sativum) and Fu-ling (Poria cocos) mitigate lead toxicity by improving antioxidant defense mechanisms and chelating ability in the liver of grass carp (Ctenopharyngodon idella)." Ecotoxicology (Springer Nature), 2021. https://link.springer.com/article/10.1007/s10646-021-02405-6 [LID 29528]

Yes, this is a food-based lead detox article. Published in China in 2021, this animal study examined the effects of garlic (Allium sativum) and a traditional Chinese medicinal mushroom, Fu-ling (Poria cocos), on lead toxicity in grass carp fish exposed to lead-contaminated water. Fish given garlic and Fu-ling showed significantly lower hepatic lead accumulation, improved antioxidant enzyme activity, and reduced oxidative damage compared to controls. Garlic's organosulphur compounds (allicin, diallyl sulphide) are known to chelate heavy metals. While the subjects are fish, the mechanisms are biochemically relevant to mammals. Garlic is an accessible, inexpensive food fully replicable at home. Poria cocos mushroom is also available as a supplement in traditional Chinese medicine outlets. This study adds to a body of evidence supporting garlic as a dietary lead detox aid.

Osikemekha Anthony Anani et al. "Insights to proteomics and metabolomics metal chelation in food crops." Journal of Food Measurement and Characterization (Springer Nature), 2022. https://link.springer.com/article/10.1007/s42485-022-00090-5 [LID 29493]

This is a technical scientific review on the mechanisms by which plants chelate heavy metals, published in 2022. It uses proteomics and metabolomics approaches to understand how food crops produce phytochelatin and metallothionein compounds that bind and sequester heavy metals including lead. While primarily plant-science focused, it is relevant to lead detox because it identifies which food crops accumulate vs. exclude heavy metals - important for dietary lead reduction (avoiding leafy greens grown in contaminated soil) - and provides insights into plant-derived dietary chelating compounds. The paper is more technical than

practical but supports the dietary lead reduction strategy of consuming foods with documented metal-chelating properties. No human or animal subjects studied for detox outcomes.

Xingyao Long et al. "Preventive Effect of Limosilactobacillus fermentum SCHY34 on Lead Acetate-Induced Neurological Damage in SD Rats." Frontiers in Nutrition, 2022. https://www.frontiersin.org/journals/nutrition/articles/10.3389/fnut.2022.852012/full [LID 29499]

Yes, this is a probiotic lead detox study. Published in China in 2022, this animal study (Sprague-Dawley rats) examined a specific probiotic strain - Limosilactobacillus fermentum SCHY34 - for its ability to prevent lead-induced neurological damage. Rats given oral lead acetate with concurrent probiotic supplementation showed significantly lower blood lead levels (approximately 30-40% lower than lead-only controls), reduced neurological damage markers, better antioxidant status, and lower hippocampal lead accumulation. While the specific SCHY34 strain may not be widely commercially available, broadly available Lactobacillus fermentum strains are found in many commercial probiotic products. The study reinforces the principle that probiotic supplementation during lead exposure reduces absorption and neurological impact - home-replicable with commercially available probiotics.

Runquin Chen, Huaijun Tu & Tingtao Chen. "Potential Application of Living Microorganisms in the Detoxification of Heavy Metals." Foods (MDPI), 2022. https://www.mdpi.com/2304-8158/11/13/1905 [LID 29527]

Yes, this is a relevant heavy metal detox review. Published in China in 2022, this review examines the use of various living microorganisms - bacteria, yeast, algae, and fungi - for heavy metal detoxification including lead. Multiple probiotic strains are shown to adsorb and sequester lead through cell wall binding, biofilm formation, and enzymatic transformation. Yeast species including Saccharomyces cerevisiae also show lead-binding capacity. While most evidence is from in-vitro or animal studies, the principle that probiotic microorganisms can reduce gastrointestinal lead absorption is well-supported. Commercial probiotics containing Lactobacillus and Bifidobacterium strains are the most accessible home-replicable application of this science. The review provides mechanistic basis for why probiotic supplementation may complement other lead detox strategies.

Sonia Sethi. "Phytochelatins - Heavy Metal Detoxifiers in Plants." Springer Nature (Chapter in book: Advanced and Innovative Approaches of Environmental Biotechnology in Industrial Wastewater Treatment), 1 Aug 2023. https://link.springer.com/chapter/10.1007/978-981-99-2598-8_16 [LID 29483]

This is primarily a plant biology and biochemistry chapter rather than a human lead detox guide. It reviews phytochelatins - small peptides produced by plants in response to heavy

metal stress - and their role in sequestering and detoxifying metals including lead within plant tissues. The chapter covers synthesis, regulation, and mechanism of phytochelatins, and discusses applications in phytoremediation (using plants to clean contaminated soil). Its relevance to human lead detox is indirect: understanding which plants accumulate vs. exclude heavy metals is important for dietary lead reduction (avoiding leafy greens grown in contaminated soil), and for understanding plant-derived dietary chelating compounds. No human subjects are involved. Relevant as academic background context.

2025 Volcano Art Prize (VAP) Entry. Artist: Tony Lennon. Title: Growing Garlic. Lead-Safety Message: Grow your own garlic for maximum health benefits and minimum food travel miles! Near the winter solstice,

plant good organic garlic cloves tip-upwards just below the surface 10 cm apart in deep rich well-drained elevated soil and water in well. Near the summer solstice pick the whole plants and hang up in a well-ventilated room in your home with no direct sun. Remember to keep the best bulbs for next season for seeds so to speak. You will then end up with garlic suited to your soil and location. Description of Work: Smart phone photos collaged together. URL: https://volcanoartprize.com/portfolio-item/growing-garlic/ [LID 28958]

Neluwa-Liyanage R. Indika et al. "Abnormal Porphyrin Metabolism in Autism Spectrum Disorder and Therapeutic Implications." Molecular Neurobiology (Springer Nature), 2023. https://link.springer.com/article/10.1007/s12035-023-03722-z [LID 29487]

This is relevant to lead detox in children with autism, though it is primarily a biochemistry review. Published in 2023, this paper examines abnormal porphyrin metabolism in autism spectrum disorder (ASD), noting that elevated porphyrins in urine are a marker of heavy metal toxicity - particularly lead and mercury - that interferes with haem synthesis. The paper explains how lead inhibits key enzymes in the porphyrin pathway (ALA-D, ferrochelatase), producing a characteristic pattern of elevated urinary porphyrins that can serve as a biomarker of lead burden. Treatment implications include chelation to reduce metal burden and support for the porphyrin pathway with cofactors (zinc, B6, B12). Useful for clinicians and informed parents as it explains why children with ASD may benefit from heavy metal testing using porphyrin panels. Nutritional cofactors are home-accessible; chelation requires medical supervision.

Netranandini Lakka et al. "Potential diagnostic biomarkers for lead-induced hepatotoxicity and the role of synthetic chelators and bioactive compounds." Toxicology Research (Oxford), 2023. https://academic.oup.com/toxres/article-abstract/12/2/178/7076144 [LID 29504]

Yes, this is a lead detox article. Published in India in 2023, this review examines biomarkers for lead-induced liver damage and evaluates both pharmaceutical chelators and natural bioactive compounds as treatments. Synthetic chelators (DMSA, EDTA) are reviewed alongside bioactive food compounds including curcumin, quercetin, silymarin (milk thistle), vitamin C, and N-acetyl cysteine, all of which have documented hepatoprotective and lead-chelating or antioxidant properties in animal models. These bioactive compounds are all available without prescription. The paper is particularly relevant for adults concerned about lead's effects on liver health, and suggests that a home protocol combining dietary antioxidants and liver-supportive herbs (milk thistle, turmeric) may complement more aggressive chelation.

Michael Gerber. "Thirty Years of Progress in Cardiovascular Health: Intravenous Disodium Edetate (chelation)." Chelation.me, 2023. https://chelation.me/gerber-thirty-years/ [LID 29508]

Yes, this is a lead/metal detox article from a physician's perspective. Published online in December 2023, Dr. Michael Gerber - an integrative physician - reviews three decades of clinical experience and research on IV disodium EDTA chelation therapy for cardiovascular and general heavy metal detoxification including lead. He discusses the TACT trial results, his own clinical experience, and the practical administration of IV EDTA chelation. The paper argues that chelation's cardiovascular benefits are substantially mediated by removal of lead and other metals from arterial tissues. IV EDTA requires clinical administration and is not home-replicable. However, the paper provides valuable context for adults with cardiovascular disease and documented lead burden who are considering chelation therapy with an integrative physician.

Fereshteh Ansari et al. "The role of probiotics in improving food safety: detoxification of heavy metals and chemicals." Toxin Reviews (Taylor & Francis), 2024. https://www.tandfonline.com/doi/abs/10.1080/15569543.2023.2283768 [LID 29473]

Yes, this is a practical lead detox review focused on probiotics. Published in 2024, this paper comprehensively reviews the evidence for probiotic bacteria in detoxifying heavy metals including lead. It covers mechanisms: gut microbiome composition influences metal absorption; specific bacterial strains bind lead in the gut lumen reducing intestinal uptake; probiotics increase faecal lead excretion; and certain probiotic metabolites chelate metals. Human and animal studies showing blood lead reductions with probiotic supplementation are reviewed. Dietary sources of probiotics (fermented foods: yoghurt, kefir, kimchi,

sauerkraut, miso) as well as commercial probiotic supplements can both be used. This is a fully home-replicable approach, particularly appropriate for children and pregnant women who should not use pharmaceutical chelators. The paper suggests combining probiotics with other dietary interventions (high-fibre diet, antioxidants) for best effect.

Adil Hussain & Asma Saeed. "Hazardous or Advantageous - Uncovering the Roles of Heavy Metals and Humic Substances in Shilajit with Emphasis on Heavy Metals Toxicity and Their Detoxification Mechanisms." Biological Trace Element Research (Springer Nature), 2024. https://link.springer.com/article/10.1007/s12011-024-04109-4 [LID 29481]

This article is relevant to lead detox primarily as a warning. Published in 2024, it critically reviews shilajit - a mineral pitch/resin used in Ayurvedic and traditional medicine - noting that while shilajit contains beneficial minerals and humic/fulvic acids with claimed detox properties, many commercial preparations contain significant heavy metal contamination including lead, arsenic, and mercury. The paper reviews both the potential benefits (fulvic acid may chelate some metals) and risks (adding to heavy metal burden). The conclusion is nuanced: purified, tested shilajit preparations may have some metal-chelating benefit, but unpurified or poorly regulated products may increase lead exposure. Critical practical takeaway: any Ayurvedic supplement, including shilajit, should be third-party tested for heavy metals before use.

2021 Volcano Art Prize (VAP) Entry. Artist: Alex Jewson. Title: We're growing beans, carrots and basil. Lead-Safety Message: I already know that I have to wash the garden soil off my hands before I help mummy make my favourite chilli basil chicken! Description of Work: iPhone photo URL: https://volcanoartprize.com/portfolio-item/were-growing-beans-carrots-and-basil/ [LID 27731]

Salimi Zohreh et al. "Iron chelators as therapeutic agents in diseases." Annals of Medicine & Surgery, 2024. https://journals.lww.com/annals-of-medicine-and-surgery/fulltext/2024/05000/iron_chelators__as_therapeutic_agents_in_diseases.69.aspx [LID 29484]

This is not primarily a lead detox article. It focuses on iron chelation therapy for diseases of iron overload such as thalassaemia and haemochromatosis. It appeared in a lead detox search because many chelating principles overlap - EDTA, for example, chelates both iron and lead - and because understanding iron-lead competition is relevant (adequate iron intake reduces lead absorption). The iron chelators discussed (deferoxamine, deferasirox, deferiprone) are prescription-only and not relevant to typical home lead detox. Home-relevant takeaway: ensuring adequate (but not excessive) iron stores reduces lead absorption at the gut level, since iron and lead compete for the same transporter (DMT1).

Jessica Ceramella et al. "Phytochemicals Involved in Mitigating Silent Toxicity Induced by Heavy Metals." Foods (MDPI), 2024. https://www.mdpi.com/2304-8158/13/7/978 [LID 29531]

Yes, this is a comprehensive food-based lead detox article. Published in Italy in 2024, this review examines phytochemicals - bioactive plant compounds - that mitigate heavy metal toxicity including lead. Phytochemicals reviewed include polyphenols (quercetin, resveratrol, curcumin), carotenoids (lycopene, beta-carotene), glucosinolates (from cruciferous vegetables), allicin (from garlic), chlorophyll (from green vegetables), and pectin (from citrus fruits and apples). Each is assessed for its ability to chelate lead, reduce lead absorption, or protect against lead's oxidative damage. Human, animal, and in-vitro evidence is summarised. This is one of the most practically useful papers in the bibliography for home use: a diet rich in coloured vegetables, fruits, garlic, onions, cruciferous vegetables, and spices such as turmeric translates directly into everyday food choices that collectively reduce lead burden. Fully home-replicable.

Roopkumar Sangubotla et al. "Zinc-Mediated Defenses Against Toxic Heavy Metals and Metalloids - Mechanisms, Immunomodulation, and Therapeutic Relevance." International Journal of Molecular Sciences (MDPI), 2025. https://www.mdpi.com/1422-0067/26/19/9797 [LID 29475]

Yes, this is a highly relevant lead detox article with direct practical application. Published in 2025, this comprehensive review examines how zinc protects against toxic heavy metals including lead. Key mechanisms: zinc and lead compete for the same intestinal absorption transporters (DMT1), so adequate zinc intake significantly reduces lead absorption in the gut; zinc upregulates metallothionein proteins that bind and sequester lead; zinc supports antioxidant defences against lead-induced oxidative stress; and zinc modulates immune responses disrupted by lead. Multiple human and animal studies are reviewed. Zinc deficiency is identified as a major risk factor for lead toxicity. Zinc supplementation at standard doses is one of the most accessible, safe, and evidence-supported home strategies for reducing lead toxicity and absorption. Fully replicable at home without medical supervision.

George J. Kontoghiorghes. "Development of Iron-Chelating Antioxidant Nutraceuticals and Natural Products as Pharmaceuticals for Clinical Use in Diseases with Free Radical Pathologies." PubMed Central, 2025. https://pmc.ncbi.nlm.nih.gov/articles/PMC12567410/ [LID 29495]

This is relevant to lead detox in an indirect way. This review by a leading chelation researcher discusses the development of nutraceuticals and natural products that combine iron-chelating with antioxidant properties - such as polyphenols (curcumin, quercetin, resveratrol), vitamins (C, E), and plant extracts - for use in diseases driven by free radical pathology. While the primary focus is iron overload and oxidative stress diseases, many of the nutraceuticals reviewed also have lead-chelating or lead-protective properties. The paper

appeared in a lead detox search because polyphenols that chelate iron also bind other divalent metals including lead, and because oxidative stress is a common pathway in both iron and lead toxicity. All nutraceuticals discussed are available without prescription. Supports incorporating polyphenol-rich foods and supplements into a lead detox protocol.

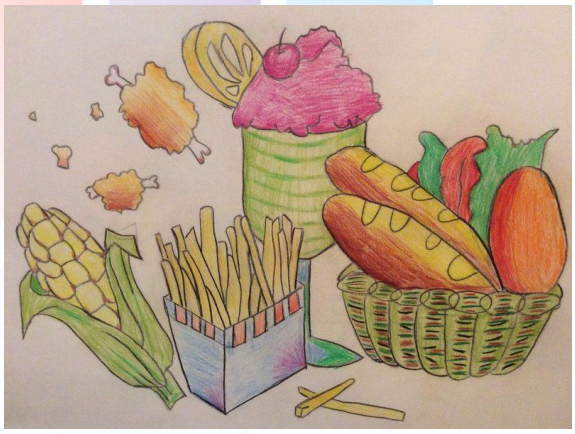
Angie Arriesgado. "Can Antioxidants Like Glutathione Help With Heavy Metal Detox?" Intelligent Labs (EU), 2025. https://eu.intelligentlabs.org/en-gb/heavy-metal-detox/ [LID 29507]

Yes, this is a practical, consumer-oriented lead detox article. Published in February 2025 by a supplements company (Intelligent Labs), this article reviews the evidence for antioxidants - particularly glutathione, N-acetyl cysteine (NAC), alpha-lipoic acid, and vitamin C - in heavy metal detoxification including lead. The article summarises how glutathione binds to heavy metals including lead through glutathione-S-transferase enzymes and facilitates their excretion via bile. The review discusses liposomal and reduced glutathione supplements, noting their improved bioavailability compared to standard oral supplements. NAC is highlighted as a glutathione precursor. All supplements discussed are available without prescription. Note: as a supplements company publication, independence of the information should be considered alongside peer-reviewed sources.

Rustam Turakulov et al. "Role of medicinal plants in mitigating environmental toxin effects - Protective and detoxification mechanisms." Caspian Journal of Environmental Sciences, article in press, corrected proof online 4 Sept 2025. https://cjes.guilan.ac.ir/article_9030.html [LID 29482]

This is a lead detox review focused on medicinal plants. Published by researchers in Central Asia/Uzbekistan, this comprehensive review documents medicinal plants with protective and detoxification effects against environmental toxins including heavy metals such as lead. Plants reviewed include turmeric (curcumin), garlic, cilantro, milk thistle, ginkgo biloba, green tea, rosemary, and various others with documented antioxidant, hepatoprotective, and metal-chelating properties. The paper is relevant to home practitioners because all of the plants discussed are available as foods, teas, or supplements without prescription. It provides a useful catalogue of plant-based agents to incorporate into a dietary lead reduction strategy, with mechanistic support.

2017 Volcano Art Prize (VAP) Entry. Artist: Mark Ju (age 11). Title: Fast Food. Lead-Safety Message: Watch out what you consume. Aim at lead free, healthy diet. Description of Work: Colour pencil drawing. URL: https://volcanoartprize.com/portfolio-item/fast-food/ [LID 18569]



Nurshash Zhexenbay et al. "Using Pectin as Heavy Metals Detoxification Agent to Reduce Environmental Contamination and Health Risks." Procedia of Environmental Science, Engineering and Management, 2025. https://www.procedia-esem.eu/pdf/issues/2020/no4/8_60_Zhexenay_20.pdf [LID 29509]

Yes, this is a relevant lead detox article focused on an accessible food-derived agent. This paper by Kazakh researchers reviews pectin - a soluble dietary fibre found in apple skins, citrus pith, and many fruits and vegetables - as a heavy metal detoxification agent. Pectin binds to lead and other heavy metals in the gastrointestinal tract, reducing their absorption and increasing their faecal excretion. The paper reviews in-vitro and animal studies demonstrating pectin's lead-binding capacity, and discusses its food safety applications. Modified citrus pectin (MCP), which is more bioavailable than standard pectin, is the pharmaceutical form studied for systemic lead chelation (see LID 12017, LID 29515). Standard pectin from foods or as a supplement is available without prescription. Eating more apples, citrus fruits, and other pectin-rich foods is a simple home-replicable strategy for reducing gut lead absorption.

Subhashini Sivaji et al. "Detoxification and Herbal Cleanses" Taylor and Francis Group (Chapter from the Book: "Exploring Herbal Synergies for Optimal Human Health"), 2026. https://www.taylorfrancis.com/chapters/edit/10.1201/9781003539131-6/detoxification-herbal-cleanses-subhashini-sivaji-arpita-oriel-lavanya-jayaraman-swarnalingam-thangavelu-ramasamy-vasantharekha-barathi-seetharaman-gaurav-mudgal [LID 29470]

Yes, this is a relevant lead detox chapter (publication 2026). This book chapter reviews herbal and natural approaches to detoxification, including removal of heavy metals such as lead. It covers traditional and evidence-based herbal agents with documented detoxification properties: milk thistle (liver support), dandelion (bile stimulation), cilantro, garlic, ginger, turmeric, and algae (chlorella, spirulina). The mechanisms by which these herbs support detox pathways (Phase I and II liver detox, biliary excretion, antioxidant activity) are reviewed. The chapter emphasises integrating herbal approaches with dietary strategies. All herbs discussed are available without prescription as teas, tinctures, powders, or capsules. Home-replicable as part of a dietary and supplement-based lead reduction programme.

Romi Singh, Jayant Kumar, Mohini Chaurasia, Abhiram Kumar & S.J.S. Flora. "Role of Micronutrients in the Treatment of Metal-Metalloid Toxicity - Mechanisms and Therapeutic Potential." Springer Nature (book chapter), 2026. https://link.springer.com/chapter/10.1007/978-3-032-14445-4_12 [LID 29488]

Yes, this is a comprehensive and practically applicable lead detox reference. Published by Indian researchers with expertise in metal toxicology (S.J.S. Flora is a leading researcher in heavy metal chelation), this chapter reviews the role of micronutrients in treating metal and metalloid toxicity including lead. The chapter covers: how zinc, iron, and calcium compete with lead for absorption; how vitamins C, E, and B-complex support detox pathways and reduce lead's oxidative and biochemical damage; how selenium supports glutathione peroxidase activity; and how combined micronutrient protocols may reduce lead burden comparably to some pharmaceutical chelators in mild-to-moderate exposure. The paper reviews both animal and human studies. All micronutrients discussed are OTC-available. This is one of the most useful scientific references for constructing a comprehensive home-based nutritional protocol for lead detox.

Benjamin Busch. "IV Chelation Therapy - Benefits and How It Works." ViveWell Health, 2026. https://vivewell.health/blog/about-iv-chelation-therapy/ [LID 29489]

Yes, this is a practical lead detox article from an integrative health clinic. This article explains IV chelation therapy for heavy metal detoxification, including lead. It covers what IV chelation is, which agents are used (EDTA, DMPS), what conditions it is indicated for (heavy metal toxicity, cardiovascular disease), what to expect during treatment, and how many sessions may be needed (typically 10-30 for significant metal reduction). IV chelation requires clinic administration by trained medical professionals and is not home-replicable. The article is useful for someone considering IV chelation along with or as the next step after home-based approaches, and helps set realistic expectations about the process. Extract - home-based protocol - follows:

> *How to maximize chelation results?*
>
> *Recommended for all chelation treatments. Our supplement protocol:*
>
> - *Vitamin C | 3,000 - 12,000 mg daily*
> - *Multi-vitamin*
> - *N-acetyl-cysteine (NAC) | 600 mg once or twice daily*
> - *Whey Protein Powder | 2 tablespoons daily*
> - *Fiber (RBF/Psyllium) | 3-7 caps at night with water*
> - *Hydrochloric acid (Betaine HCL) with meals*
> - *Urine alkalinizing support (potassium bicarbonate or potassium citrate) see*

Shop

- *In between chelation cycles - consider additional minerals and trace elements. Extra magnesium (either glycinate, maleate, or threonate) is generally needed.*
- *Probiotics*
- *Sauna, hot bath, or exercise to speed up detoxification through your body's largest organ - the skin.*

Mito Health. "How to Reduce Heavy Metal Exposure and Support Detoxification Naturally." Mito Health, 2026. https://mitohealth.com/guide/reducing-heavy-metal-exposure-naturally [LID 29503]

Yes, this is a practical, consumer-oriented lead and heavy metal detox guide. Published in 2026 by Mito Health (an integrative health platform), this guide provides actionable advice for reducing heavy metal exposure and supporting the body's natural detoxification systems. It covers: identifying and removing exposure sources (water filters, lead paint, contaminated soil, some foods); dietary strategies (increasing fibre, antioxidant-rich foods, garlic, cruciferous vegetables, cilantro); targeted supplements (vitamin C, zinc, NAC, alpha-lipoic acid, chlorella, modified citrus pectin, glutathione); lifestyle measures (exercise, sauna for sweat-based excretion, adequate sleep and hydration); and when to seek professional testing and medical chelation. No primary subjects are studied. This is the most practically comprehensive home-use guide in this bibliography, covering all major accessible lead detox strategies in one place. Fully replicable without medical supervision.

2021 Volcano Art Prize (VAP) Entry. Artist: Lucinda Curran. Title: Supporting Detoxification. Lead-Safety Message: Our bodies are designed to remove toxicants, such as lead. However, in the presence of stress, our ability to detoxify reduces. A bit like a seesaw, as stress increases, detoxification decreases. And as stress decreases, detoxification increases. Sound Healing triggers the relaxation response, which therefore supports our natural healing abilities by reducing stress. This can also help our bodies reduce toxic load and may be useful in reducing lead levels. Description of Work: Digital Art URL: https://volcanoartprize.com/portfolio-item/supporting-detoxification/ [LID 24271]

Prasann Kumar. "Chapter 11 - Role of glutathione in heavy metal detoxification." Science Direct (book chapter), 2026. https://www.sciencedirect.com/science/chapter/edited-volume/abs/pii/B9780443365751000066 [LID 29525]

Yes, this is a relevant lead detox chapter. This book chapter comprehensively reviews glutathione's role in heavy metal detoxification, including lead. Glutathione (GSH) is the cell's primary endogenous antioxidant and metal-binding molecule. The chapter covers: glutathione synthesis and the rate-limiting role of cysteine availability; how glutathione forms conjugates with lead and other metals via glutathione-S-transferase enzymes; transport of metal-glutathione conjugates for biliary and urinary excretion; and how lead exposure depletes glutathione stores, increasing toxicity. Strategies for boosting glutathione - N-acetyl cysteine (NAC), liposomal glutathione supplements, sulphur-rich foods (cruciferous vegetables, garlic, onions), and selenium - are all discussed. All supplements and food strategies are home-accessible. This chapter provides strong mechanistic rationale for including NAC, liposomal glutathione, and sulphur-rich foods in a home lead detox protocol.

Interactions Between Climate and Lead Contamination, Exposure and Detox

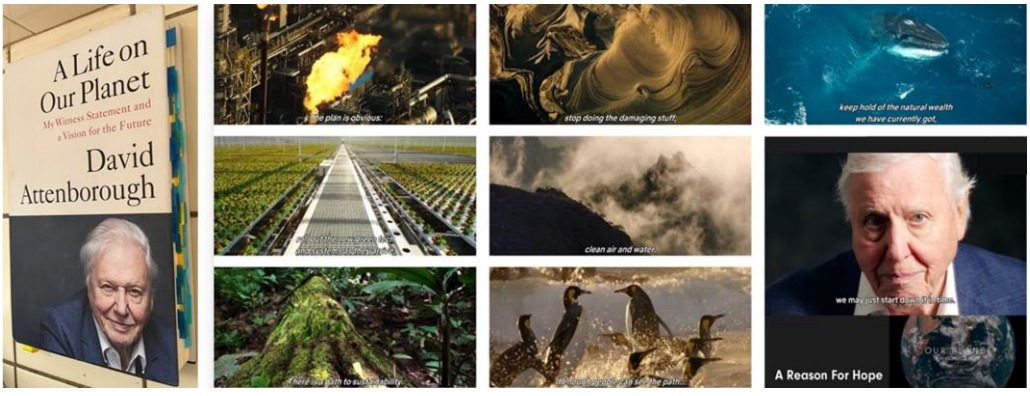
How climate change amplifies lead exposure - and what The LEAD Group's Model National Lead Safety Policy recommends

By Ian Smith BSc BEng MBA, LEAD Group Systems Analyst, using Claude AI (Opus 4.6, 1M context), edited by Elizabeth O'Brien BSc GradDipHealthEd, Lead Scientist, The LEAD Group Inc. Article completed on Fri 8th May 2026. Special note from the Editor: ***Happy 100th Birthday today to my hero David Attenborough!***

Photo: David Attenborough 100th Birthday on Planet Earth, BBC, UK, as reported on ABC World News Tonight USA

Abstract

Climate change and lead contamination are deeply intertwined. Lead is released whenever any type of fuel, including all fossil fuels, is mined, transported, refined, burned, or permitted to enter any environmental medium / waste-stream. Warmer temperatures mobilise lead dust, floods spread contaminated sediments, bushfires release lead stored in vegetation and infrastructure, and the global shift to renewable energy is driving demand for lead-acid batteries. Meanwhile, lead poisoning reduces the cognitive capacity humanity needs to solve the climate crisis. Drawing on three decades of research published by The LEAD Group, this article traces the interactions between climate and lead across three domains: contamination, exposure, and detox. It concludes with policy recommendations from The LEAD Group's Model National Lead Safety Policy.



2024 Volcano Art Prize (VAP) Entry. Artist: Elizabeth O'Brien. Title: Stop Doing the Damaging Stuff. Lead-Safety Message: Eliminate fossil fuel combustion, particularly leaded aviation gasoline, to prevent lead poisoning in children and preserve cognitive capacity needed to address climate challenges. Description of Work: iPhone photograph of 'A Life on Our Planet' annotated to highlight connections between lead safety and climate protection. URL: https://volcanoartprize.com/portfolio-item/stop-doing-the-damaging-stuff/ [LID 28173]

Introduction: Two Crises Walk Into a Bar

You're standing in your backyard, watching the kids play on the grass. The news on the radio is about climate targets. You're thinking about solar panels, maybe an electric car. Noble thoughts. Green thoughts. What you're probably not thinking about is that the dust your toddler just wiped off the outdoor table and put in her mouth contains lead from petrol your grandfather's car burned in 1973. Or that the solar panels you're considering will need electronics and batteries. Or that the heatwave-induced dust storm making everyone cranky this week is mobilising more of that old lead out of your soil and into the air your family is breathing.

Welcome to the intersection of climate change and lead contamination - two crises that, as it turns out, have been sharing a cab for decades.

In 2009, Elizabeth O'Brien and Robert Taylor wrote a paper that was presented by Dr Thuppil Venkatesh in Islamabad with a deceptively simple thesis: climate change abatement actions must also reduce exposure to lead, the most common industrial contaminant (O'Brien and Taylor 2009). Nearly two decades later, the proposition has only grown more urgent. The mechanisms linking climate and lead are not speculative; they are documented, measurable and inconveniently accelerating.

Lead enters the environment through the combustion of coal, petrol, and aviation fuel; through mining and smelting; through deteriorating paint and plumbing; and through the manufacture and recycling of lead-acid batteries. Climate change acts as a force multiplier across every single one of these pathways. Heat mobilises dust. Drought concentrates contamination in shrinking water sources. Floods redistribute lead-laden sediments across communities. Bushfires release lead stored in vegetation and painted infrastructure. And the green energy transition, while essential for the climate, is increasing global demand for the very lead acid batteries that poison the communities where the lead is mined, smelted and refined and where the batteries are informally recycled.

Let's take this pathway by pathway. Bring your LEAD Group lead test sampling kit.

Contamination: The Many Ways Climate Spreads Lead Around

Coal: still dirty after all these years

You'd think we'd have sorted coal by now. We have not. CSIRO data show lead concentrations in coal range from under 1 to 22 parts per million, averaging 7 ppm. That doesn't sound like much until you do the maths: based on 1991 global consumption, approximately 35,700 tonnes of lead were released from coal combustion alone (O'Brien and Roberts 2009). Coal consumption has increased by 2–3 per cent annually since. The black carbon produced by burning coal and biomass is the second or third most potent greenhouse pollutant after CO_2, responsible for up to 30 per cent of Arctic warming (O'Brien and Roberts 2009). So every tonne of coal burned is a climate problem AND a lead problem. Two for one, and not the good kind.

The legacy lives in your ceiling. Van Alphen (1999) documented how ceiling dust preserves a complete pollution history of your neighbourhood, from horse-drawn carts and ubiquitous coal and wood burning through to the motor car era. In Broken Hill, geometric mean lead concentrations in ceiling dust reached approximately 6,000 mg/kg. Your ceiling cavity is basically a museum of everything your suburb has ever mined or burned. Except nobody charges admission and the exhibits are toxic.

2016 Volcano Art Prize (VAP) Entry. Artist: Arindam Bala. Title: Dust and smoke in Rajasthan India. Lead-Safety Message: Every time you burn something it adds more lead into the air. That's why The LEAD Group is part of the Global Alliance for Clean Cookstoves. Description of Work: Canon EOS500D photo. URL: https://volcanoartprize.com/portfolio-item/dust-and-smoke-in-rajasthan-india/ [LID 18241]

AvGas: the leaded fuel we forgot to ban

We banned leaded petrol for cars worldwide in 2021. Job done, right? So close. Leaded aviation gasoline, AvGas, is still being pumped into piston-engine aircraft across the globe. Blum (2021) reports that AvGas now accounts for approximately 70 per cent of airborne lead emissions in the United States. **Seventy. Per cent.** Blood lead level increases in children living downwind of airports using AvGas are comparable to those documented during the Flint, Michigan water crisis. And the sole global manufacturer of tetra-ethyl lead, the additive that makes fuel leaded? A company called Innospec that pleaded guilty to defrauding the United Nations and violating anti-corruption laws (Roberts and O'Brien 2011). You genuinely could not make this up or hallucinate it.

2024 Volcano Art Prize (VAP) Entry. Artist: Zoe Lu. Age: 7, School Name: Creative Einstein, Lead-safety Message: In the 1920s when tetra ethyl lead (TEL) was first made, the factory became known as the House of the Butterflies as lead poisoned workers had hallucinations and went insane or died. When will we stop using TEL in aviation fuel (AvGas)? Description of Work: Coloured pencil drawing collaged in Paint and Powerpoint. Lead Safety Message from *The House of the Butterflies: Lead Poisoning among Workers and Consumers*. [LID 29362]. URL: https://volcanoartprize.com/portfolio-item/butterflies-and-tulips/ [LID 28182]

Leaded aviation fuel does not confine itself to the fuel tank. In Australia's Northern Territory, children have broken into remote airstrips to sniff AvGas, recording blood lead levels up to 17 times the acceptable limit. The NT Centre for Disease Control's acting director Charles Douglas stated that the Northern Territory has the highest levels of lead detected in blood of anywhere in the developed world (Daily 2017). And it is the lead that mostly kills. As O'Brien (2002) wrote: "The higher the blood lead level on admission to hospital of a petrol sniffer, the more likely the person is to leave in a box." Every year, Aboriginal children and adolescents die from sniffing leaded petrol - deaths rarely attributed to lead at autopsy, instead recorded as accidents, blood loss, self-immolation, kidney failure, or heart attack. The case histories documented by Mosman (1996) are harrowing. We couldn't make those up either. You'd wish they would be.

2020 Volcano Art Prize (VAP) Entry. Artist: Theresa Gordon. Title: Lighter and lighter. Losing the lead weight. Lead-Safety Message: This is my feeling about what the LEAD Group has done for generations of Australian children. Description of Work: Watercolour artwork. URL: https://volcanoartprize.com/portfolio-item/lighter-and-lighter-losing-the-lead-weight/ [LID 19826]

Bushfire: when the trees give back what they took

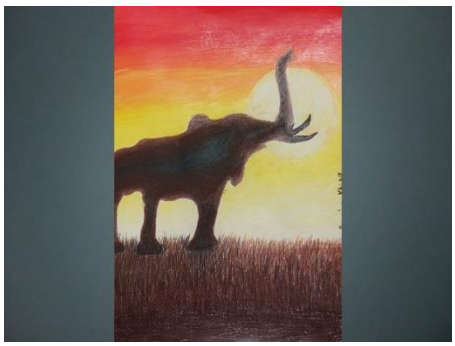
Trees absorb lead from contaminated soil. This is generally considered a good thing - phytoremediation, the scientists call it. Until the trees burn. When they do, the stored lead is released as smoke and ash. O'Brien and Taylor (2009) observed that when lead-painted buildings and infrastructure burn, lead pollution becomes a serious issue, and global warming is predicted to increase the length of the annual fire season. Gee (2014) contended that burnt bark in inner-city bushland carries higher-than-background lead levels, particularly in areas historically impacted by leaded petrol emissions. O'Brien (2004) warns that burning lead-painted wood releases lead fumes that can contaminate rainwater tanks within 100 metres. A hundred metres. That's your neighbour's bonfire and your drinking water.

2023 Volcano Art Prize (VAP) Entry (as printed on the Pictureproducts mug prize). Artist: Suvana Parajuli (Age 11, Creative Einstein). Title: Burnt Bush. Lead-Safety Message: Trees take up lead from the soil which is why oil, coal, and gas contain lead. If we stop burning fossil fuels to stop climate change, we'll have fewer bushfires releasing that lead as smoke and ash! Description of Work: Colouring pencils on paper. URL: https://volcanoartprize.com/portfolio-item/burnt-bush/ [LID 27698]

Flood and drought: too much water, too little water, same problem

If you're starting to sense a theme here - that lead is everywhere and climate just moves it around - you're paying attention. Flooding redistributes lead-contaminated sediments across communities. The Islamabad speech describes a 'perfect storm' for regions with glacier-fed rivers, heavy precipitation, and seasonal flooding combined with arid dusty lowlands (O'Brien and Taylor 2009). Post-hurricane sediment analysis in New Orleans found elevated concentrations of lead reworked from older, highly contaminated urban soils (O'Brien and Roberts 2009). The water didn't bring the lead; it moved the lead that was already there.

Drought concentrates the problem differently. In the drought year of 2007, Broken Hill children experienced the first increase in blood lead levels since 1992. Soil resuspension can contribute 40–75 per cent of atmospheric lead after leaded petrol phase-out (O'Brien and Roberts 2009). And then there's Esperance. Nine thousand five hundred native birds died from lead poisoning during port handling operations, with deaths peaking on the hottest days - 42.5°C and 38.5°C (Crisp 2008). Heat, wind, and lead dust. A lethal trifecta, and one that climate change is making more frequent.



2026 Volcano Art Prize (VAP) Entry. Artist: Devrim Yasar (Age 11, Creative Einstein). Title: Elephants, Droughts and Lead. Lead-Safety Message: During droughts, shrinking water holes can concentrate heavy metals like lead. As water levels fall, elephants are forced to consume sediment, mud, and water with high concentrations of contaminants. Description of Work: Coloured pencil drawing with side panels created using Paint and PowerPoint. URL: https://volcanoartprize.com/portfolio-item/elephants-droughts-and-lead/ [LID 29363]

Mining: the deeper you dig, the worse it gets

Here's an irony that would make T.S. Eliot reach for his pen. The extraction of lead is becoming more carbon-intensive at precisely the moment we need less carbon. Mudd (2010) documents long-term declines in lead ore grades, meaning that extracting one tonne of lead now requires processing ever greater volumes of material. More energy. More greenhouse gas emissions. More water. More waste. And 77 per cent of world lead production goes into lead-acid batteries (O'Brien et al. 2005) - the same batteries needed for storing renewable energy. The green energy transition is increasing demand for a toxic metal whose extraction contributes to the very problem it's supposed to solve. Eliot would have called it a hollow endeavour. I'd call it a policy failure we can fix.

In communities near lead mines and smelters, the contamination is anything but abstract. In Broken Hill, open-cut mining within city limits since 1991 has sent dust spilling across the city, with workers recording blood lead levels up to 80 µg/dL (Rowbotham 1999). At Port Kembla, roof dust near the copper smelter contained 2,471 ppm of lead (Mosman 1997). Taylor et al. (2013) estimate that if the pre-2021 US CDC's 5 µg/dL reference were applied in Broken Hill, Mt Isa, and Port Pirie, more than 50 per cent of young children would need intervention. Half the kids. Let that land.

2023 Volcano Art Prize (VAP) Entry. Artist: Elizabeth O'Brien. Title: Stop New NSW Lead Mines. Lead-Safety Message: The artist envisions the NSW Parliamentary Inquiry will halt proposed lead mines like Bowdens. She advocates using recycled lead instead, with government rebates to remove and recycle lead roof flashing. Description of Work: PowerPoint collage of screenshots from ABC TV broadcast. URL: https://volcanoartprize.com/portfolio-item/stop-new-nsw-lead-mines/ [LID 27683]

Rainwater tanks: the climate adaptation that bites back

This one's particularly cruel. You install a rainwater tank because you're a responsible citizen adapting to water scarcity. Except your roof has lead flashing. Or lead-based paint on the guttering. Or lead solder. A Monash University study found excessive lead in 33 per cent of Melbourne rainwater tanks. Griffith University found 10–20 per cent of Brisbane tanks exceeded the 0.01 mg/L guideline (O'Brien 2012). In June 2025 the guideline was halved to 0.005 mg/L but still most rainwater tank owners are completely oblivious to the fact that they are responsible if their tankwater exceeds this guideline or that The LEAD Group actually recommends that all drinking water should contain less than 0.001 mg/L. Lead flashing expands thermally by 3 mm per 2 metres of length (Brackaflash n.d.), so temperature extremes progressively crack and degrade it. Hailstorms do the rest. Your climate adaptation strategy may be slowly poisoning your drinking water. Test your tank water. If you have a new brass tap, test your water before you drink it. In Australia, you can buy a LEAD Group Posted Kit to test for lead in drinking water (and surface dust wipes).

2019 Volcano Art Prize (VAP) Entry. Artist: Elizabeth O'Brien. Title: Rainwater should always be lead tested. Lead-Safety Message: The original rainwater tank on my childhood Kingaroy post-war home was almost certainly lead-contaminated but even the new tank water on the shed should be tested for lead. Description of Work: iPhone 5S Photographs collaged using Word and Paint. URL: https://volcanoartprize.com/portfolio-item/rainwater-should-always-be-lead-tested/ [LID 20253]

Exposure: Climate Turns Up the Dose

The Summer Disease

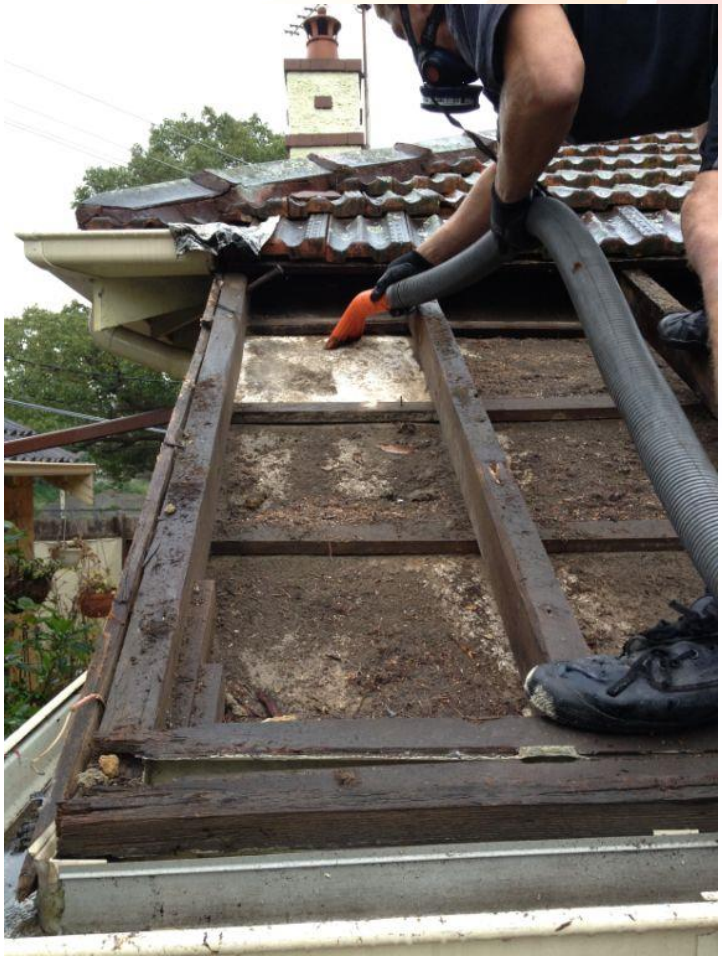
Lead poisoning has been called the 'Summer Disease' since the 1920s, when researchers first documented elevated hospital admissions for childhood lead poisoning during warmer months (O'Brien 1996). Freeman's 1970 study of Sydney cases noted that most children presented in the hot summer months of December to February. The mechanisms are multiple and mutually reinforcing: solar radiation enhances vitamin D synthesis, which paradoxically aids lead absorption; heat-induced dehydration and acidosis mobilise lead from bone storage; and warm, dry conditions generate more airborne dust.

Climate change is extending the 'summer' of lead exposure. Over 50 per cent of seasonal blood lead changes are predictable from weather patterns (O'Brien 1996). As heatwaves become more frequent and more intense, the seasonal peak in lead exposure is becoming broader and nastier. A firearms instructor with elevated blood lead described heat-triggered symptoms as feeling like 'spontaneously combusting from inside' (O'Brien 1996). That's not a metaphor anyone would choose lightly.

2023 Volcano Art Prize (VAP) Entry. Artist: Rishab Vohra (Age 9, Creative Einstein). Title: Moon High Tide Flooding. Lead-Safety Message: By age 21, NASA forecasts the moon's tilt cycle will worsen coastal flooding if climate change continues raising sea levels. Make the world lead-safe now to increase brainpower so we can avert the climate crisis. Description of Work: Coloured pencils on paper. URL: https://volcanoartprize.com/portfolio-item/moon-high-tide-flooding/ [LID 27694]

Ceiling dust: the insulation trap

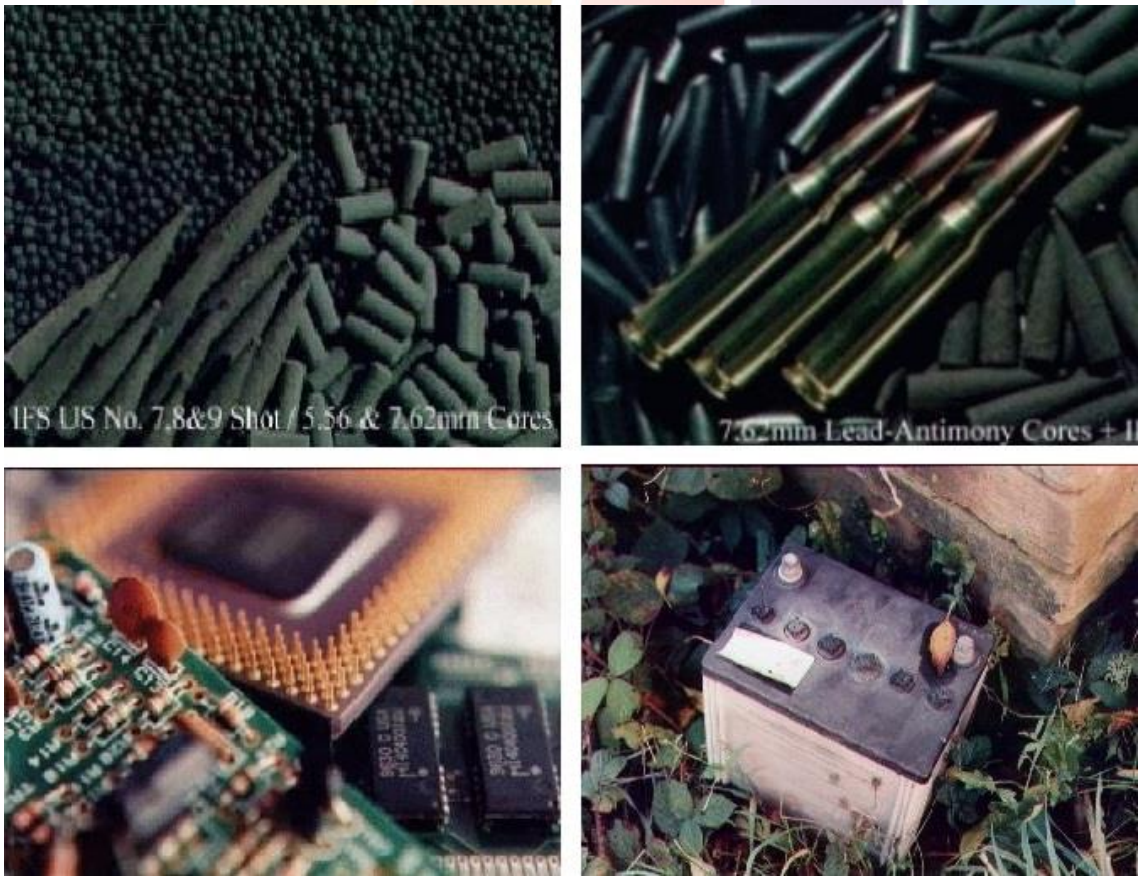
Here's a scenario that plays out every time a government launches an energy efficiency rebate program. Householder gets excited about free insulation. Installer goes into the ceiling cavity. Installer disturbs decades of accumulated lead-contaminated dust, breathing it in. Dust enters living spaces when installer exits manhole. Family gets exposed. The LEAD Group has been banging on about this for years: ceiling dust removal contractors who are members of the Australian Dust Removalists Association should remove ceiling dust before insulation is installed (O'Brien 2009). Van Alphen (1999) showed that ceiling dust preserves the complete pollution history of your neighbourhood. In homes built before 1970, the dust should be assumed guilty until proven innocent (LRC 1998). Even hail damage can trigger the problem - the NSW Department of Housing conducted ceiling dust removal in Glebe and in south-eastern Sydney after hailstorms (O'Brien 1999). The well-intentioned climate fix becomes the lead exposure pathway nobody saw coming. Except The LEAD Group, who saw it coming and published the fact sheet.



2015 Volcano Art Prize (VAP) Entry. Artist: Richard Jones (Licensed Builder, Kaleidoscope NSW). Title: Ceiling dust removal by Insulvac in Sydney (slide show). Lead-Safety Message: Vacuuming of ceiling dust by an Australian Dust Removalists Association (ADRA) Member Company is a must before ceiling demolition. Description of Work: Photographic slideshow documenting five stages of ceiling dust removal. URL: https://volcanoartprize.com/portfolio-item/ceiling-dust-removal-by-insulvac-in-sydney-slide-show/ [LID 17878]

Battery recycling: the dark side of the green revolution

Lead-acid batteries consume 77 per cent of world lead production (O'Brien et al. 2005), and demand is growing as renewable energy storage expands. In developed nations, formal recycling achieves recovery rates above 90 per cent. In developing countries, it's a different story entirely. In Bangladesh, rural entrepreneurs extract lead by breaking battery shells with hammers and melting plates over open fires, generating 3–5 tonnes of recycled lead daily with no environmental controls (LEAD Group 2007). In Shanghai, only 1.5 per cent of consumed batteries were actually collected between 1998 and 2002 (O'Brien et al. 2005). One-point-five per cent. As O'Brien and Taylor (2009) warned, more lead-acid batteries will hit the recycling black market where lead poisoning rates are already deeply concerning. The green revolution runs on batteries. Batteries contain lead. And the people who dismantle them are the ones who can least afford to be poisoned.



2016 Volcano Art Prize (VAP) Entry. Artist: Peter Hurley. Title: Leaded ammo, ewaste and used lead acid battery. Lead-Safety Message: Recycle toxic lead waste safely! Never let it contaminate soil or be licked or ingested by animals – especially if it also contains toxic antimony like the bullets shown here. Description of Work: Collaged photos using MS Word and Paint, enlarged with AlSee software. URL: https://volcanoartprize.com/portfolio-item/leaded-ammo-ewaste-and-used-lead-acid-battery/ [LID 18252]

Detox: Eating Your Way Out (Sort Of)

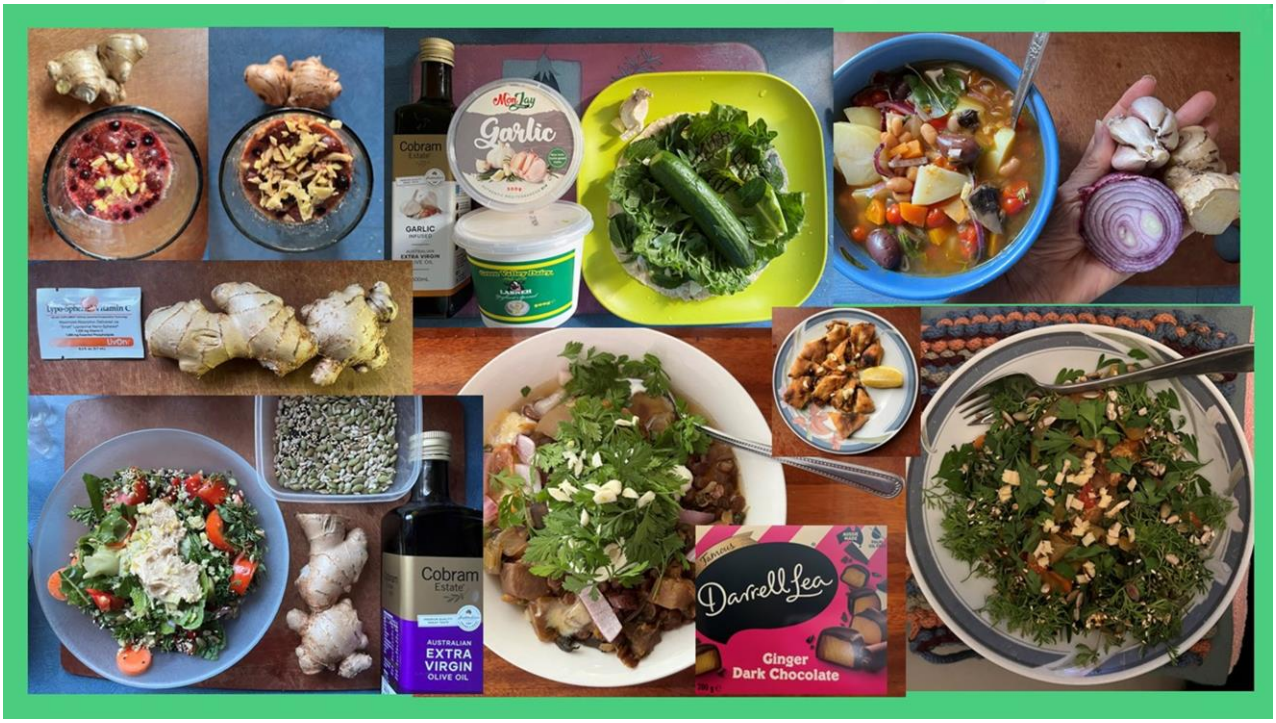
So. The climate is spreading lead around, heating it up, washing it into new places, and shaking it loose from where it's been stored. Can we at least eat something helpful? As it happens, yes. With caveats.

The LEAD Group's comprehensive guide to foods that fight lead poisoning (O'Brien 2015) identifies key nutrients that reduce lead absorption and support detoxification. Vitamin C is consistently linked to lower blood lead levels. Iron deficiency is particularly dangerous: iron-deficient individuals absorb up to seven times more lead (Taylor 2010). Calcium supplementation reduces blood lead during pregnancy, protecting mother and child from lead released from bone stores during foetal development. Pectin, found abundantly in citrus peel and apples, binds lead in the digestive system and increases urinary excretion while preserving essential minerals (Srikaran 2010). Garlic, turmeric, and rosemary support liver function and toxic substances clearance.

Here's the climate sting, though. Drought reduces crop yields. Flooding destroys harvests. Rising temperatures affect nutrient content in staple foods. Food price volatility hits the poorest hardest, the

same communities most likely to live near lead contamination sources and least likely to afford the broccoli, kale, and salmon that fight it. When the nutritional safety net frays, lead absorption increases. The climate-lead interaction is not merely environmental; it is metabolic. Your body's ability to defend itself against lead depends on a food system that climate change is destabilising.

A hard-rocking metallurgist in the kitchen this morning might start with a citrus-heavy breakfast. Pectin in the lemon zest and pith. Iron in the eggs cooked in a cast-iron pan. Vitamin C in the capsicum. Calcium in the yoghurt. It's not chelation therapy, but it's not nothing, either.



2024 Volcano Art Prize (VAP) Entry. Artist: Elizabeth O'Brien. Title: Daily Lead Detox Foods. Lead-Safety Message: The artist describes consuming 30 different plants plus mushrooms daily along with various supplements and fresh ginger and garlic, experimenting to lower blood lead levels. Description of Work: iPhone 13 photos collaged in Powerpoint. URL: https://volcanoartprize.com/portfolio-item/daily-lead-detox-foods/ [LID 28166]

Policy: What Should Actually Be Done

The LEAD Group's Model National Public Health Policy on the Prevention of Lead Poisoning (O'Brien and Roberts 2008), updated in 2023 (O'Brien 2023), provides a framework that, if governments bothered to adopt it, would address every interaction documented in this article. It operates across three tiers:

Primary Prevention - preventing exposure in the first place. Ban leaded AvGas. Mandate ceiling dust removal before insulation installation in every energy efficiency program. Require lead testing of rainwater tanks. Regulate lead flashing on roofs. Ensure that renewable energy battery supply chains don't create new exposure pathways in developing nations. The only safe level of lead is zero (O'Brien and Roberts 2008). Every policy should start from that premise.

Secondary Prevention - finding and fixing exposure that's already occurring. Establish national blood lead surveillance systems. Test at-risk populations. Implement nutritional intervention programs. The updated Policy proposes blood lead action levels by sub-population, from birth cord blood through to adults over 100, and explicitly covers fossil fuel burning facility workers, lead-acid battery workers, and mining and smelter workers (O'Brien 2023).

Tertiary Prevention - preventing lead already in the body from causing further harm. Fund research into links between elevated blood lead and conditions including heart attack, stroke, dementia, Alzheimer's disease, depression and even diabetes. Require independent research into detox claims - because the supplement industry will sell you colloidal silver and zeolite all day long, and somebody should probably check if any of it works (O'Brien and Roberts 2008).

Critically, the updated Policy addresses Climate Change as a ministerial responsibility, alongside Public and Occupational Health, Environment, Education, Agriculture, Aviation, Mining, Housing, Police, Defence and Transport (O'Brien 2023). Lead safety is not a single-portfolio problem. It is a whole-of-government problem that intersects with climate policy at every level. Any Minister who thinks lead isn't their problem hasn't read the evidence.

Conclusion: Same Solutions, Same Fight

The interactions between climate and lead are pervasive, bidirectional, and intensifying. Climate change mobilises stored lead through heat, drought, flood, and fire. It drives demand for lead through lead acid battery production. It undermines nutritional defences through food insecurity. And lead poisoning, by reducing cognitive capacity across populations, diminishes humanity's ability to respond to the climate crisis itself. It's a feedback loop that would impress even the most pessimistic systems analyst.

But here's the thing. Every action that reduces fossil fuel combustion simultaneously reduces lead emissions. Every ceiling dust removal before insulation installation is a win for both energy efficiency and lead safety. Every lead-free roof flashing protects both rainwater quality and human health. Every battery recycled formally rather than by a man or child with a hammer in Bangladesh prevents both lead poisoning and environmental contamination. The solutions are not in competition. They are the same solutions.

The LEAD Group's Model National Lead Safety Policy provides the framework. Three decades of *LEAD Action News* provides the evidence. The Volcano Art Prize entries illustrating this article - many created by children whose responsible adults understand the problem better than most parliamentarians - provide the vision.

What remains is the political will. And perhaps, on a warm Tuesday evening, the awareness that the dust on the outdoor table, the solar panels on the roof, the tank water in the glass, and the broccoli on the plate are all connected by a single element with an atomic number of 82.

A lead-safe world and a climate-safe world are not two goals. They are one.

Next time I pass a community garden in Sydney's inner west, I'll bring a LEAD Group sampling kit. And maybe some lemon peel to share.

2025 Volcano Art Prize (VAP) Entry. Artist: Grandma Lead. Title: Solar Electrifying. Lead-Safety Message: I actually feel joyful now that I've had solar panels and a battery installed and replaced my gas hot water and stove with an electric heat pump and electric stove. Description of Work: iPhone 13 photographs collaged in PowerPoint and Paint. URL: https://volcanoartprize.com/portfolio-item/solar-electrifying/ [LID 28956]

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[Note that the LID number refers to the Library ID from The LEAD Group's Library Database]

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June 2026 LEAPP Alliance Report

By Tim Pye, LEAPP Alliance, - Lead Exposure and Poisoning Prevention Alliance - A joint initiative of the Lead Containing Materials Association, Lead In The Water and Lead Safe World UK, United Kingdom

To: Supporters of the LEAPP Alliance

With two workshops, a conference, and dinner briefing it has been "lead-heads assemble" since my last update. It has been a real privilege to meet some of the greats of lead poisoning prevention.

The acceleration of lead poisoning prevention initiatives continues - hitting velocities I could only have imagined when I started on this journey 12 years ago.

Highlights

- Niamh O'Regan has started as our Policy and Advocacy Manager funded by Coefficient Giving and is already making a difference.
- The Pure Earth/Centre for Global Development - Second Annual Research Conference on Global Lead Exposure was wonderful and inspiring.
- A very interesting and useful workshop on Lead & Health was hosted by Professor Seif Shaheen of Queen Mary University London.
- Tekin Djemil, of EnviroHive Ltd, gave a presentation to the ECLIPS team about the Fellowship of Lead Paint Assessors (FoLPA).
- A briefing for MPs is being planned.
- I am expecting to talk to a partner at Leigh Day about developing an expert legal practice.

Campaign

Policy and Advocacy Manager

Niamh O'Regan has started as our Policy and Advocacy Manager funded by Coefficient Giving organised by Aveek Bhattacharya. Niamh will be in post for 2 months. In the meantime, we will be seeking to hire someone for the rest of the two-year period.

PALs

Just a reminder that if you would like to share your experience of the effects of lead on you and your children in a private forum, please apply to join the Parents Against Lead Facebook group.

MPs' Briefing

Aveek, Lee, Lauren and Niamh are planning an MPs' briefing in Westminster. It is probable that this will be in September.

News Media

The I

Inside the fight against the global $6 trillion lead poisoning problem

Nick Ferris, The I, Wednesday 03 June 2026

This was a report about the Research Conference on Global Lead Exposure. Perhaps Nick Ferris would also like to report on lead hazards in his own country.

New Statesman

Niamh is writing an article for the New Statesman. I have not yet seen it, but I am looking forward to reading it.

Government

HSE Consultation

I responded to the Health and Safety Executive consultation on the Control of Lead At Work Act. I commented on the proposed change in the action blood lead concentration in women of reproductive capacity. The consultation proposed lowering it from 25 to 5 µg/dL. I suggested that this should be further lowered to 2 µg/dl to provide a margin of safety. This is above the child UKHSA investigation level, above the TOXBASE action level, and above the level where the UKHSA have stated "BLCs of as low as 2 µg/dL have been reported to cause developmental neurotoxicity". Most lead in maternal blood is passed to the unborn baby.

DEFRA

A further response has received from DEFRA regarding withdrawal of their leaflet on how to decorate safely. They declined to reinstate the leaflet stating that "it is widely recognised that lead is toxic" and "concerns over the presence of lead paint should be referred to a relevant professional specialist". This is not satisfactory as, in my experience, hazards from lead paint are not well known and there are very few specialists in the UK.

We will continue to see what we can do about this. Their letter is attached.

Business and Professional

Leigh Day

I met with a partner from Leigh Day solicitors at the global lead conference. I have arranged an online meeting and hope to discuss whether Leigh Day could develop an expert practice in lead poisoning and contamination cases. I am sometimes asked if I can direct enquirers to legal representation so this would be very useful.

"Leigh Day is a law firm established to combat injustice. Championing the underdog, the firm stands against entities and their wrong doings."

Law Society

We still need to respond to the letter from a Policy Adviser at The Law Society to our letter of October last year and also try to ensure that the Ministry of Housing, Communities and Local Government includes information on lead hazards as part of the requirements of 'material information' for buyers.

FolPA

Tekin Djemil, of EnviroHive Ltd, gave a presentation to the ECLIPS monthly management meeting about the Fellowship of Lead Paint Assessors (FoLPA). He explained that there are similar bodies for other environmental hazards, e.g. asbestos, legionella, but not for lead. He noted that responses to lead exposure in the UK are usually downstream. We are not so good at managing pre-exposure risks in the pre-construction phase or renovations and are behind the USA and Australia in this. Tekin aims to provide methodology for assessing lead hazards before disturbing lead paint.

I very much welcome this initiative as the UK has been poorly provisioned with lead risk assessment and mitigation services.

Research

Briefing

I attended a briefing hosted by Pure Earth. I was impressed by presentations from Lee, Howard Hu, Chris Kinally. Drew McCartor repeated his excellent TED talk which should be available to stream soon.

CGD Conference

The Centre for Global Development "Second Annual Research Conference on Global Lead Exposure" was held in London from 3rd to 4th June.

The slides from the conference are here a video of the entire conference here. The message from Phyllis Omido (the “East African Erin Brockovich”), the first presentation, made me tearful both in the conference and on viewing it again. It was very inspiring and I recommend you watch it.

Lead and Health Workshop

I was honoured to be invited to present at a workshop on Lead and Health organised by Professor Seif Shaheen at Queen Mary University of London. This featured a presentation on population strategies by Bruce Lanphear, Simon Fraser University, Canada together with talks on the links between extremely low exposure on working memory, fine motor skills and pre-natal kidney size; statistical and laboratory challenges; risk factors in south Asian communities; toxin release from landfills; exposure from old mines; lead and learning; ECLIPS and the LEAPP Alliance.

ECLIPS

I am only permitted to report that the ECLIPS pilot is proceeding as planned and most blood samples have been returned, but, as yet, we do not have complete data to release. The next phase is seeking participants via health care and special education settings. I am in the process of submitting a freedom of information request that may enable me to say more.

Actions

The list of opportunities to influence health and housing policy managers continues to grow. Far more than I take action on alone. Here are some of the things I am doing.

- Complete the HSE CLAW consultation - **Done**
- Respond to requests for help or advice from individuals as they arise and send test or sampling kits if appropriate - **ongoing**
- Continue to support the ECLIPS project **- ongoing**
- Work with television producers **- ongoing**
- Ask the Law Society again about including lead hazards in standard forms completed by vendors on sale of homes **– Passed to Niamh**
- Keep telling Chris Packham that he should help us because he knows lead is toxic and is linked to the conditions he covered in his "Our ... minds" television series **- ongoing**
- Have meeting with the partner from Leigh Day – **to do**
- Investigate the emerging healthy homes standards - **to do**
- Ask the Ministry of Housing, Communities and Local Government to include lead hazards as material information in house selling reports **- to do**

UK National Screening Committee Counter

3030 days since the last review on screening children for lead in their blood closed - and recommended against screening.

4-5 years overdue for review.

Letter to the Editor from Jeremy Auerbach

Subject: Re: May 2026 LANv23n4 "Global Lead News" is online

Hi all,

We can't support the use of AI. AI leads to more lead in our environment!

AI chip production uses lead along with cancer-causing forever chemicals (PFAS) and data centres are dumping their liquid cooling chemicals, including lead, in our environment. The primary application of water in data centres is for cooling and during this process chemicals contaminate the water[5]. The most common are biocides[6] as liquid cooling creates ideal conditions for organic buildup, but exposure to biocides can disrupt nervous systems and cause organ damage. Anti-corrosives are also added[7], with some of which are carcinogenic, while dangerous heavy metals, such as copper, zinc and lead are used in components and over time can release trace amounts into the water[8]. A single data centre can consume up to 5 million gallons of water per day, equivalent to the daily water usage of more than 15,000 homes, and at this scale, even minor impurities in wastewater can scale and cause significant environmental harm, especially where wastewater is concentrated. The issue is further exacerbated because centres don't always discharge wastewater into public sewage systems, which typically route water to treatment facilities capable of filtering out many contaminants. Instead, centre wastewater may be released directly into nearby lakes, streams, or groundwater aquifers, where pollutants can enter the ecosystem unchecked.

Jeremy

Jeremy Auerbach, PhD, Assistant Professor, School of Geography, University College Dublin

12 June 2026

Stop using AI, technology and voting won't save us

Join the Climate Justice Universities Union

Letter to the Editor from Margaret

Subject: Re: April 2026 LANv23n3 "Leaded Humans Weigh Heavily on the Earth" is online

Elizabeth,

Could you please unsubscribe me from newsletters? I get too many emails and I don't get round to reading them and storing them is contributing to the problems of data centres - too much electricity and water use, too much noise for nearby residents, too many greenhouse emissions, too much fire risk and too much use of valuable land.

Regards, Margaret, Victoria, Australia
12 June 2026

Letter to the Editor from ESDO Bangladesh

Updates from Bangladesh on Lead Safety and Lead-Free Paint Action

Subject: Re: May 2026 LANv23n4 "Global Lead News" is online

Dear Editor,

Greetings from the Environment and Social Development Organization (ESDO), Bangladesh.

Environment and Social Development Organization

Thank you for sharing the May 2026 issue of **LEAD Action News** and for continuing to provide an important platform for global updates, reflections, and learning on lead safety. We appreciate The LEAD Group's continued effort to highlight lead exposure prevention, lead paint elimination, and the wider public health importance of protecting children and vulnerable communities from toxic lead exposure.

We are pleased to share a brief update from Bangladesh on ESDO's recent work on lead safety, particularly following last year's **International Lead Poisoning Prevention Week (ILPPW) 2025**. During ILPPW 2025, ESDO launched and shared findings from its investigative study, **"Colors of Concern: Assessing Lead in Paints and Progress Toward a Lead-Safe Bangladesh,"** which reviewed the effectiveness of Bangladesh's existing lead paint regulation and identified areas where further enforcement and market transition support are still needed. The press briefing brought together government officials, media, and industry representatives to discuss the way forward for a lead-safe Bangladesh.

ESDO has been working on lead paint elimination in Bangladesh since 2008, from awareness raising and scientific research to policy advocacy and regulatory engagement. Earlier studies conducted by ESDO with support from IPEN and other partners helped generate national evidence on lead in paint, while continued advocacy contributed to Bangladesh's progress in adopting a mandatory lead limit for household paint. In 2018, BSTI finalized the national standard limiting lead content in household paint to a maximum of **90 ppm**, which remains a key regulatory foundation for lead paint control in Bangladesh.

From 2026, ESDO continued implementing the project **"Strengthening Enforcement and Supporting Market Transition to Lead-Free Paint in Bangladesh"** in collaboration with **Instiglio**, with technical support linked to **LEEP**. The project focuses on two major areas: strengthening enforcement capacity through engagement with the **Bangladesh Standards and Testing Institution (BSTI)**, and supporting non-compliant paint manufacturers to transition toward lead-free production and compliance with the national **90 ppm** standard.

Under this initiative, ESDO is working to support both the regulatory side and the industry side of lead paint elimination. The BSTI-focused workstream aims to strengthen enforcement systems, assess operational challenges, identify institutional support needs, and develop a practical enforcement strengthening plan. The manufacturer-focused workstream aims to engage non-compliant manufacturers, understand their reformulation challenges, provide technical guidance, and support their transition toward safer production.

As part of the manufacturer engagement process, ESDO held a meeting with representatives of the

Bangladesh Paint Manufacturers Association (BPMA) where the discussion focused on practical challenges faced by manufacturers in maintaining the 90 ppm standard, particularly the higher cost of lead-free raw materials and reformulation. A second major event took place when ESDO and Instiglio held a formal coordination meeting with the newly appointed **Director General of BSTI** and relevant BSTI officials. The meeting focused on lead paint regulation and compliance in Bangladesh, including regulatory enforcement, market surveillance, laboratory testing capacity, inspection systems, and implementation of the mandatory 90 ppm standard. The discussion also explored opportunities for technical support, institutional cooperation, and capacity-building initiatives to strengthen lead paint control.

In addition to the lead paint enforcement and market transition work, ESDO is also actively contributing to the development of the **National Strategy and Multilayer Action Plan for a Lead-Free Bangladesh** through the national working group led by the Ministry of Environment, Forest and Climate Change. This process is an important step toward addressing lead exposure through a broader national framework, beyond paint alone, and aims to bring together relevant ministries, technical agencies, civil society, development partners, and public health stakeholders under a coordinated long-term strategy.

Together, these activities demonstrate Bangladesh's continued progress from awareness and evidence generation toward enforcement, industry engagement, and national strategic planning. ESDO believes that eliminating lead exposure requires coordinated action across government, industry, civil society, researchers, and international partners. While Bangladesh has made important regulatory progress, continued enforcement, laboratory strengthening, market surveillance, manufacturer support, and public awareness are essential to ensure that lead-safe standards are fully implemented in practice.

We also appreciate the use of AI-assisted writing in the May 2026 issue of **LEAD Action News**. AI tools can support communication by summarizing evidence and making technical information more accessible. However, for public health and policy-related content, expert review, source verification, and human judgment should remain essential to ensure accuracy, balance, and credibility.

We thank The LEAD Group for inviting updates and reflections from partner organizations and for continuing to strengthen global knowledge-sharing on lead safety. ESDO remains committed to working with national and international partners to advance a lead-free Bangladesh and protect children and communities from preventable lead exposure.

For more information, please check https://esdo.org/lead-in-paint/

Sincerely,
Siddika Sultana

Executive Director
Environment and Social Development Organization – ESDO

2 June 2026

Partner of .....

House # 8/1, Level # 5, 6, Block # C, Lalmatia, Dhaka-1207, Bangladesh; Phone: +880-2-55008178, info@esdo.org, www.esdo.org

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