

# LEAD Action NEWS

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The newsletter of The LEAD (Lead Education and Abatement Design) Group Inc.

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## Lead in Consumer Issues and How a Lead-Safe World Could Be Achieved



# LEAD-SAFE



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## Editorial

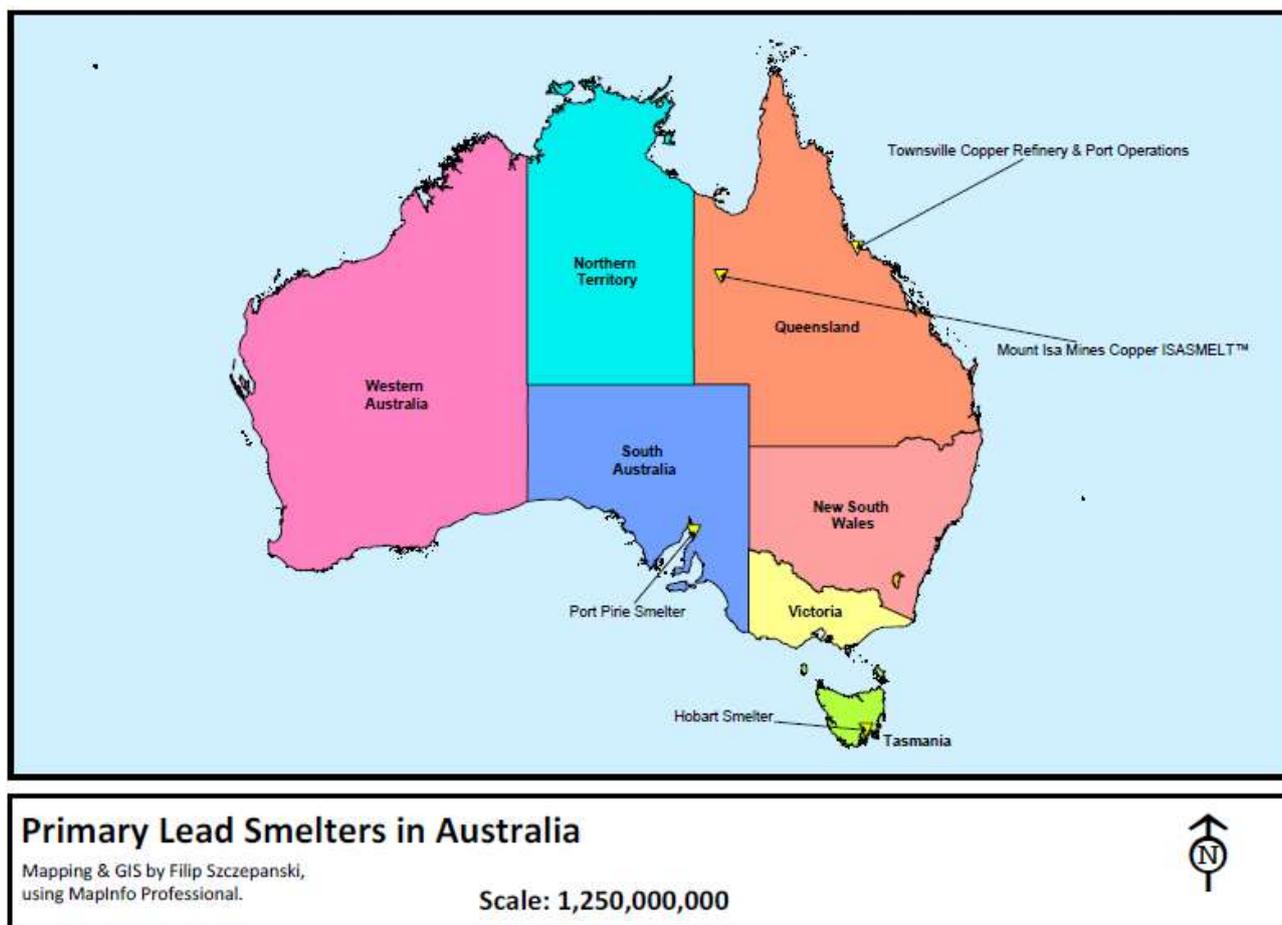
In the previous LAN we discussed the more stringent standards for blood lead levels in the US. In this LAN we put forward similar proposals for Australia, in the hope that the NHMRMC will act to develop a robust policy which requires health departments and other regulatory bodies to act to prevent lead poisoning, through education, blood lead testing, and licensing of lead abatement contractors, such as ceiling dust removalists. We recommend a national lead policy along the lines of ACTU proposals on asbestos.

The World Health Organisation (WHO) accepts that every dollar spent on lead poisoning prevention has a benefit of between US \$17 and \$220.

Doctor education on lead poisoning in Australia is totally neglected, with no attempt by NHMRC to actively educate doctors since 1994. 'Lead poisoning doesn't happen anymore' was the response of the doctor in the Queenslander Renovation Case Study. This is because doctors in Australia don't know enough to figure out which of their patients should be blood lead tested. NHMRC should require that labs forward all blood lead results to the federal health department for collation, analysis and reporting back to health professionals.

This edition also contains an update on The LEAD Group's actions to eliminate leaded petrol globally, and a warning to those who drink rainwater or bore water to have the water tested for lead.

## Map of Australian Primary Lead Smelters



### Australian Primary Lead Smelters

Researched by Filip Szczepanski, LEAD Group mapping volunteer, and Elizabeth O'Brien Manager, Global Lead Advice and Support Service (GLASS), Sydney, Australia. Mapped by Filip Szczepanski.

**Operation:** Mount Isa Mines Copper ISASMELT™

**1. Company:** Xstrata IsaSmelt

**Suburb/Town:** Mt Isa

**State/Territory:** QLD

**Website:** <http://www.isasmelt.com/EN/Pages/default.aspx>;

<http://www.isasmelt.com/EN/Installations/Pages/MountIsaMinesCopperSmelter.aspx>

**2. Operation:** North Queensland Zinc\*

**Company:** North Queensland Zinc

**Suburb/Town:** Kelso

**State/Territory:** QLD

**Website:** <http://www.yellowpages.com.au/search/listings?clue=zinc&locationClue=Kelso%2C+qld&selectedViewMode=&emsLocationId=>

*\*Queensland Department of Environment and heritage Protection could not confirm in time for our publication deadline whether this smelter is operational and we could not locate its site address online so it was not mapped*

**3. Operation:** Townsville Copper Refinery & Port Operations

**Company:** Xstrata

**Suburb/Town:** Stuart

**State/Territory:** QLD

**Website:**

<http://www.xstratacopper.com/EN/Operations/Pages/TownsvilleCopperRefinery.aspx>;

<http://www.whitepages.com.au/cp/xstrata-copper-townsville-operations-452787816q06w.html?channel=WP>;

**4. Operation:** Hobart Smelter

**Company:** Nyrstar

**Suburb/Town:** Lutana

**State/Territory:** TAS

**Website:**

<http://www.nyrstar.com/operations/Documents/NYR1288%20HOBART%20290911.pdf>

**5. Operation:** Port Pirie Smelter

**Company:** Nyrstar

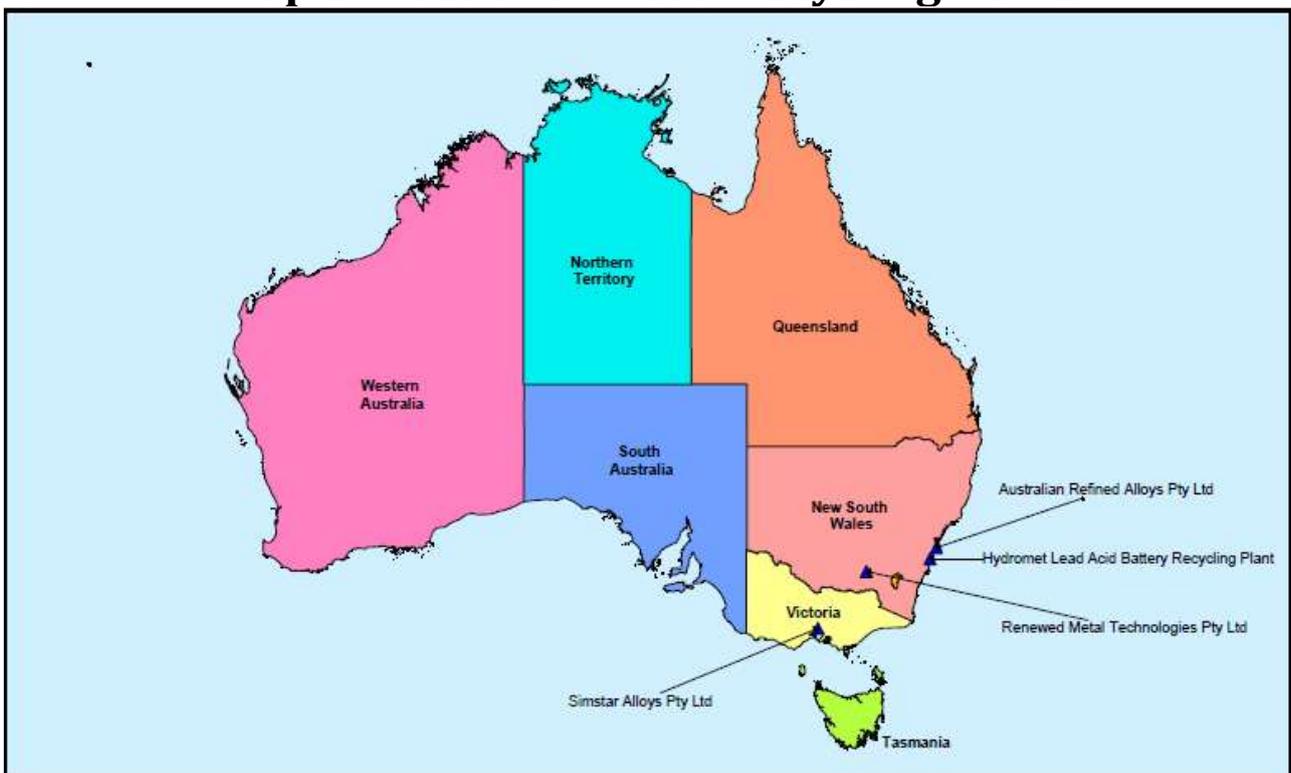
**Suburb/Town:** Port Pirie

**State/Territory:** SA

**Website:**

<http://www.nyrstar.com/operations/Documents/NYR1288%20PORT%20PIRIE%20290911.pdf>

## Map of Australian Lead Recycling Plants



### Lead Recycling Plants in Australia

Mapping & GIS by Filip Szczepanski,  
using MapInfo Professional.

Scale: 1,250,000,000



## Australian Lead Recycling Plants

Researched by Filip Szczepanski, LEAD Group mapping volunteer, and Elizabeth O'Brien, Manager, Global Lead Advice and Support Service (GLASS), Sydney, Australia. Mapped by Filip Szczepanski

Company: Australian Refined Alloys Pty Ltd  
Suburb/Town: Alexandria  
State/Territory: NSW  
Website: <http://www.enirgi.com/projects/emg-ara.aspx>

Company: Simstar Alloys Pty Ltd, Australia (Previously called Australian Refined Alloys Pty Ltd)  
Suburb/Town: Laverton North  
State/Territory: VIC  
Website: <http://www.nyrstar.com/operations/Pages/otheroperations.aspx>

Company: Hydromet Lead Acid Battery Recycling Plant  
Suburb/Town: Unanderra  
State/Territory: NSW  
Website: <http://www.hydromet.com.au/>

Company: Renewed Metal Technologies Pty Ltd  
Suburb/Town: Bomen  
State/Territory: NSW  
Website: <http://www.enirgi.com/projects/emg-rmt.aspx>

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## 'A Little Lead is Still Too Much' Forum Presentations Now Online!

*by Zac Gethin-Damon, Campaigner for the End of Australian Lead in Petrol,  
The LEAD Group Inc., NSW, Australia*

Three members of The LEAD Group's Technical Advisory Board (TAB) presented at the Australian Blood Lead Forum held at Macquarie University on 5 June 2012. The head of our TAB, Professor Brian Gulson, chaired one of the sessions. You can see the agenda for the forum at: <http://www.lead.org.au/lanv12n3/lanv12n3-21.html>

The three presentations should soon be available online at <http://www.mq.edu.au/public-health-research-network>, but we wanted *LEAD Action News* readers to get the scoop!

The following article is Elizabeth O'Brien's presentation. Please find the accompanying slide show at [http://www.lead.org.au/lanv12n4/Consumer\\_Products\\_and\\_Lead\\_Exposures.htm](http://www.lead.org.au/lanv12n4/Consumer_Products_and_Lead_Exposures.htm)

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# Consumer Products and Lead Exposures: Vision for a Lead-Safe World

Incorporating the presentation given by Michelle Calvert at 'Eliminating Childhood Lead Toxicity in Australia - A Little is Still Too Much'

*by Elizabeth O'Brien Manager, Global Lead Advice and Support Service (GLASS), Sydney, Australia.*

NB: The following numbers at the start of each paragraph relate to the slide numbers in the Elizabeth O'Brien PowerPoint presentation

[http://www.lead.org.au/lanv12n4/Consumer\\_Products\\_and\\_Lead\\_Exposures.ppt](http://www.lead.org.au/lanv12n4/Consumer_Products_and_Lead_Exposures.ppt)

**1. Incorporating the presentation given by Michelle Calvert at “Eliminating Childhood Lead Toxicity in Australia – A Little is Still Too Much” Forum at Macquarie University on 5<sup>th</sup> June 2012.**

**2.** My vision (Elizabeth’s vision) is for a lead-safe world, and I intend to work towards achieving this before I hit 85, which is 29 years from yesterday, and the clock is running.

A compatible vision – that lead be only used to make lead acid batteries, which themselves will be recycled to make more batteries, safely – is bound to be out there somewhere in the lead industry, and I plan to engage with the lead industry and government until that dream is manifested.

**3.** All the evidence I’ve read suggests that a ‘little lead’ is still too much for adults, as well as for children. Blood lead levels above 2 ug/dL reduce IQ, and change children’s learning behaviour; in adults, the major problem is the increased risk of early death. US research by Lustberg and Silbergeld, 2002, predicts that some 30 million Americans are at risk from early death from lead due to having exceeded a blood lead level of 20 µg/dL at least once in their adulthood.

And from The Los Angeles Times, 2 Oct 2006, I read:

“A study published in the American Heart Association Journal “Circulation” tracked 13,946 adults for 12 years, comparing lead levels and cause of death. It found that those with a level between 3.6 µg/dL and 10 µg/dL were two and a half times more likely to die of a heart attack than those with very low levels [under 1.9 µg/dL], 89% more likely to die of stroke, and 55% more likely to die of cardiovascular disease.”

**4.** To me, it is logical that if you want to achieve lower blood lead levels (in public and occupational health), then standards for lead in consumer products, in food and drinking water and ‘environmental media’, will also need to be made more stringent.

‘Environmental media’ are soil, dust, sediment, recreational waters, waste waters, sludge, solid waste, sewage for application to agricultural land, air, marine waters, groundwater, and bore water.

Because I believe that 2 (as in 2 ug/dL) should be the new 10, I propose that regulators work on a ‘rule of thumb’ that any current standard for lead in food, water, and environmental media be set at one fifth the current standard.

**5.** If the blood lead action levels for both children and adults are made more stringent, then the lead levels permitted in all products and the action levels for lead abatement have to become

more stringent. This shouldn't just apply to consumer products intended for *children*, such as toys, and clothing. Other issues handled by consumer agencies need to have more stringent action levels: for example, property sale and rental, control and licensing of building and demolition contractors and the paint lead level, which, if exceeded, triggers lead-safe paint removal or management methods.

**6.** Consumer products containing lead generally affect people of all ages; what is different is the *pathway* of exposure: in children, it is generally hand-to-mouth activity, in adults it is generally inhalation. Skin absorption is generally a minor pathway for all ages.

**7.** Since reading Professor Winder's 'History of Lead,' and Gilfillan's book, 'Rome's Ruin by Lead Poison', I've been fascinated by the history of lead and consumer products, and especially the fact that so many of them are still out there or even still in trade, where people can come in contact with the lead they contain, today.

**8.** The Sumerians used leaded lipstick and eye makeup.

**9.** Well-to-do Romans added lead to wine, to bread and to water via leaded pipes, as well as using leaded pewter plates, cups and utensils - not knowing it would make the wealthiest among them, the leaders, insane and barren – thus bringing about their downfall.

**10.** Beethoven's chronic illness was from lead poisoning, which probably also contributed to his death at age 57 in 1827. His life-long lead exposure likely came from a range of sources including his favourite food - fish from the Danube,

**11.** and he used his saliva-wetted finger to make beautiful noises on the mechanically-spinning different sized lead crystal bowl rims of a musical instrument he loved to play called the armonica. Beethoven loved to drink, and many wealthy people at the time used lead-based sugar compounds to sweeten their wine. The pencils Beethoven used would have been true lead pencils (not graphite). As his hearing worsened he would hold one end of a pencil in his mouth and rest the other end on the piano to "hear" the music being played.

**12.** In 1828, Goya also likely died of lead poisoning, after going deaf and deranged. He heated and mixed lead pigments to make his own oil paints. This later painting of his "dark period" is 'Saturn devouring one of his Children' - which is especially interesting considering that **Saturnine** is a medical term meaning: "Of or affected by lead-poisoning."

**13.** One of Professor Winder's rather macabre examples of death by lead is that of prostitutes in England and perhaps France in the nineteenth century, eating lead as an abortifacient, for career-destroying pregnancies, all-the-while thinking that the foetus took all the lead, but actually lead poisoning themselves too - which had the side "benefit" that they gave themselves anaemia – for white skin, considered desirable by the clients.

Have we learned from history? Not enough. **The** mistake of the twentieth century, according to Professor Carl Shy, was adding lead to petrol.

**14.** Lead in consumer products are typically a greater hazard to workers (including waste and recycling workers) than to consumers, and as Professor Winder drums in to his Occupational Safety students, primary prevention is based on the Hierarchy of Controls. Primary prevention, of course, is preventing lead poisoning occurring in the first place.

The 'Hierarchy of Controls' concept dictates that the best measure to take for any lead hazard, is to "substitute the lead hazard with another of lower risk." If only they'd instituted the 'Hierarchy

of Controls' in 1921 when workers began to hallucinate, believe they could fly and then commit suicide, in what became known as the 'House of Butterflies' – the Ethyl plant where the lead additive for petrol was first made.

**15** Replacing lead in petrol at that time with a safer alternative, would have saved society an estimated US\$2.4 trillion **per annum**, according to a United Nations study.

“A comprehensive study has confirmed that the phase out of leaded petrol contributes US\$2.4 trillion (4% global GDP) to the global economy; this monetary saving is calculated by measuring social benefits such as heightened IQ levels and reduced criminality, as well as health savings from afflictions such as cardiovascular disease. This global effort to end the use of leaded petrol also translates to 1.2 million fewer deaths per year.” [Reference: <http://www.unep.org/transport/PCFV/news/hatfield.asp> ] ]

**16** Primary prevention policies such as substituting non-lead alternatives in consumer products, is the thinking behind the Perth Declaration's. Let's take a quick look at how that's going.

**17 Lead as a colorant or to add weight** to food, folk medicines, herbal remedies, illicit drugs and cosmetics: these uses of lead are probably banned in most jurisdictions, yet examples abound because poverty has not been eradicated and lead is the cheapest pigment or weight that can be added, as it is so easily retrieved

**18.** from discarded used lead acid batteries, etc – even a child can do it.

## **19. Lead in paint**

The US was the first country, in 1978, to limit lead in house paint to such a low level as 600 parts per million (ppm). Australian residential paint was limited to 1000 ppm in 1997 and remains with that limit today. However, in 2010, Australia set a global precedent by banning the addition of lead compounds to paints of all kinds except artists' paints (automotive, industrial, residential, road-marking, etc) and no country has yet matched that ban. No country has banned lead or other heavy metals in artists' paints.

Sadly, 2.5 billion people still live in countries where there is no limit on the amount of lead in any kind of paint, which is equivalent to Australia's residential paint standard prior to 1970 and our industrial paint standard prior to 2010. In 1962 a Sydney boy died from eating house paint that was later tested as containing 84% lead.

Such astronomical amounts of lead in unregulated paint is the reason the Global Alliance to Eliminate Lead in Paint was set up by the WHO and the UN Environment Programme, in 2009.

The US EPA's residential lead paint management policies, are world's best practice, and point the way to an eventual global ban on lead in all paints, and in the management of historical lead paint. Measures include blood lead testing for all children under Medicaid between the ages of 1 year and 6 years, a new 90 ppm lead limit for new house paint, 5000 ppm lead trigger level for paint abatement, lead certification of contractors and inspectors, and mandatory disclosure of lead hazards in housing for rent or purchase.

## **20. Pesticides**

Lead arsenate pesticide, according to the internet, is still manufactured in China, and has probably not been banned outside of Western countries.

Again, the US leads the way in notifying people purchasing or living on land previously sprayed or contaminated with lead arsenate. A recent double murder trial in Kentucky was delayed in order to investigate whether the defendant was poisoned by lead, arsenic or other pesticides manufactured near where he lived as a child.

## **21. Petrol**

Without a doubt, eliminating leaded petrol is the most important way to lower a population's blood lead level, as seen in this US graph, as lead in gasoline dropped, blood leads plummeted.

**22.** A global ban on leaded petrol was the motivation for the first leaded consumer product action taken by the United Nations. In 2002 Rio+10 Summit agreed to setting up the Partnership for Clean Fuels and Vehicles (PCFV) which has as its primary goal the elimination of leaded petrol.

As of June 2011, there remained 6 countries still selling leaded petrol but as one of the Partners, The LEAD Group, has gained the cooperation of one Australian lead mining company this year, such that their Australian lead is no longer being used to make leaded petrol.

Leaded petrol vehicle emissions fallout lives on in our soils, building dusts (house dust etc) and in building cavities (cavity dust or ceiling dust), and in our waterways as contaminated sediments – both ceiling dusts and harbour sediments have been found to contain “mineable” levels of lead – i.e., sufficient lead, more than 1.5% to justify recycling building cavity / ceiling dust or sediment for the lead content. This petrol lead, if not first safely removed, is released back in to the environment each time a building is demolished or into the water and aquatic biota when a waterway is dredged. Petrol lead is the most widespread cause of lead-contaminated soil and lead is the most common contaminant found in soil.

## **23. Soldered Food Cans**

Lead-soldered food cans are not banned in Australia and are probably not banned in most non-Western countries, although their use has declined with new canning technologies.

## **24-28. Control of lead in children's consumer products**

**24** Australia and most other countries have banned lead toys for children, although lead toys are still on sale in India and no doubt other countries.

**25** In recognition of the fact that children are exposed to lead in more than just toys and children's clothing, the US has legislated a lead limit for children's products. Because of their high product lead testing rates, more leaded children's products have been recalled in the US than in any other country.

**26** Leaded jewellery has a long history and a recent US child fatality caused the largest product recall (highest number of items sold and then recalled) in history – 150 million leaded heart charms.

**27.** Hopefully, with the new blood lead reference level the US leaded ceramics standard will be made more stringent. It is only after other jurisdictions make changes to their standards that Australia changes our standards.

## **28. Other consumer products and waste and recycling**

Most leaded ammunition is never recycled, as it disintegrates during flight and is so hard to retrieve.

**29.** For flat non-vegetated terrain such as outdoor shooting ranges, an Australian invention is available for bullet retrieval and lead recycling – the Green Machine.

**30.** European legislation is leading the push for lead-free electronics and electrical appliances, and the changeover to flatscreens is slowly ending the era of leaded cathode ray tube (CRT) TVs and computer monitors. Their recycling is usually done lead-safely in Western countries, but causes mass lead and other heavy metal poisoning in poorer countries, where most Western CRTs are recycled.

The basic problem with leaded products is that putting them into an environment is easy, collecting them is not.

The larger the item, the more collectable and recyclable it is. It is, in this sense, easier to deal with. The items are visible – some are highly visible, like lead flashing or radiation shielding – and can be more easily isolated from human contact, although in poorer countries, the black market is dominant in lead recycling activities.

**31. Cigarettes,** It will surprise some people to learn that cigarettes contain lead, although the lead is not purposefully added. When leaded petrol is finally banned, I predict that cigarettes will move up to first place as the most effective disseminator of lead to humans.

Lead workers who smoke typically have twice the blood lead level of non-smoking colleagues that they work beside. Children of people who smoke in cars and homes always have a higher blood lead level than children of non-smokers.

Warning labels on cigarette packets should suggest that smokers get blood lead testing whenever they're having their blood pressure checked.

It is a delusion that if you smoke outside, you're not doing any harm. You are contributing to lead in the environment.

Lead in a product should legally require a health warning, especially if it is *Intentional addition of lead*, as with California's Proposition 95, which requires health warnings for even low levels of lead, whether accessible or not, such as the lead in PVC cabling and mirror backings.

A specific warning on, for instance, leaded electronics solder, should stop it being used as plumbing solder, whereas currently leaded solder is not sold with any warning in Australia.

**32.** Such warning regulations are also essential for some non-leaded products which can be used to create lead hazards e.g., paint sanders, heat guns, angle grinders, sandpaper and blowtorches.

### **What needs to be done?**

First, national blood lead level surveys for all ages.

When I look at the USA, I see that their motivation to regulate and manage lead, derives from their practice of periodically testing for blood lead levels in their population.

Carrying out national blood lead level surveys of all ages is the essential first step in lead management. *If you don't know what you've got, you won't know what to do about it.* Or, as Professor Mark Taylor says: "to government, no data equals no problem."

**33.** Second, returning to the theme of all the lead in the world eventually being used *only* for the production of lead acid batteries, watch the battery use in these three slides of global lead use in:

1970,

**34.** 1990

**35.** Lead use 1990s

We need to stop the sale of lead for use in products where the lead is highly dispersible and difficult to retrieve.

**36.** The first of these products is, of course, leaded petrol, followed by lead in paint. Next would come PVC, chemicals, folk medicines, cosmetics, explosives, brake pads, lubricants, solder, leaded putty, ammunition, sinkers, jewellery, wire, wheel weights, curtain weights, bottle tops, wine bottle lead foils, etc.

**37.** A new on-line Substitution Portal, 'Subsport' is a database of substitutes for various chemicals, including 451 lead-based chemicals.

One case study on the site lists substitutes for lead in sugar refining. Can all of you here add as many lead substitute case studies as you can, so that the site becomes really useful?

**38.** A further step would be to assist lead-importing countries to introduce lead recycling initiatives and to ensure that the only leaded products that are manufactured are those for which there are programs in place to collect and recycle the products.

Australia currently does not permit the export of used lead acid batteries for recycling, because with the opening of the Renewed Metals Technology (RMT) plant at Wagga Wagga, there is now sufficient capacity that we no longer need to recycle some of our batteries in New Zealand, has closed. Why can't Australia exercise more control over lead exports where it is needed more?

### **Controlling the use of Australian lead which is exported**

I would like Australian lead ore or concentrate to **not** be permitted to be exported to any country where the lead will be used for the most dispersive uses of lead, i.e., petrol and paint/ink; but we also should be able to license lead exports such that our lead cannot be used for uses that are not permitted in Australia: e.g. lead arsenate, leaded cosmetics, leaded foodstuffs and folk medicines.

A further step would be to assist lead-importing countries to introduce lead recycling initiatives and to ensure that the only leaded products that are manufactured are those for which there are programs in place to collect and recycle the products.

Thirdly, we need regulation of consumer products and lead abatement activities. Regulation is essential, no matter how much you tell yourself, "She'll be right, mate." When State Governments began to license asbestos removal contractors, in public perception, asbestos was elevated to a hazard that could not be ignored.

**39.** In the US, Federal lead paint removal and inspector licensing has put lead on a par with asbestos. Every country needs this licensing, and for countries like Australia where buildings were built for ventilation and have thus accumulated fine respirable air pollution fallout, ceiling dust removal contractor licensing is also essential.

Lead batteries are not the only use of lead in vehicles. Vehicles contain up to 17 lead products and sometimes even the battery is not removed prior to recycling the vehicle.

**40.** While most people believe that the most polluting period of a vehicle's life occurs while it is being driven, this is far from the truth.

**41.** When you consider that fossil fuels are a finite resource and we're on the downside of the peak oil graph and

**42** a car causes more pollution before it's ever driven than in its entire lifetime of driving, then you can't help but realize that we need to switch to the manufacture of vehicles powered by renewable energy, with an emphasis on mass transit and we need to stop making vehicles which run on petroleum fuels.

As well as the focus in the transition economy being on mass transit vehicles and renewable energy, reduced air travel and vehicle kilometres travelled (VKT) per person and reduced consumerism generally (growing your own organic food or buying locally grown food) will be the order of the day. This is an intergenerational equity and an environmental justice issue: on one hand about using up finite resources by making more motor vehicles until there's no more oil to run the extractive and manufacturing industries, or the vehicles; and on the other, by leaving a planet for future generations which is littered with lead pollution and dead motor vehicles.

**43** Instead, if like me you really like coffee, then start growing your own, (that's coffee on the left) as well as herbs, and

**44** replace the lead flashing on your roof with non-lead flashing, clear all other lead sources from the roof rain collection area and plumbing, and install a rainwater tank; and obtain non-lead contaminated soil and plant all your favourite vegetables and

**45** especially plant fruit trees – because they take so long to fruit, and

**46** learn to tend them without lead arsenate or petroleum pesticides or fertilizers,

**47** but with a little forward planning.

**48** And ride your bike more and don't buy a new car ever again!

If all the used lead in the world were gathered up, and lead battery technology improved, there would be sufficient lead to make batteries for mass transit vehicles powered by renewable energy and for other lead acid battery-powered engines and devices - for ever.

**49.** This is the future of road transport.

**50.** This is the future of air travel.

**51.** And so as not to waste all the old aircraft when the fuel to fly them runs out, here's a plan to use the carcasses for mass transit.

**52.** And here's another solar mass transit option: a solar roadway – we'd just have to divert all the oil we have left to making the solar panels!!

**53.** These are not all just pipedreams: here's a partially solar-powered gondola lift.

**54.** By the time the aliens fly by, rather than this: pear-shaped Earth], let's show them

**55**this: a well-informed, well-regulated, lead-knowledgable World - a Lead-Safe World.

**56** As a first step The LEAD Group has embarked on developing a new set of partnerships – for our Lead-Safe World Project – to be sponsored by organisations who are making a difference – selling non-lead products or providing lead-safe services or training.

Check [www.lead safeworld.com](http://www.lead safeworld.com) regularly for updates.

Today we have two founding partners,

**57-58.** The National Painting and Decorating Institute (NPD)

**59.** and ADRA. Next month - how many lead-safe product and service providers will have joined us?

We'll begin with business partners in our region and expand out in future steps, to provide invaluable links and straightforward actionable information for people on every continent, until we've covered the planet.

**60.** Of course the site will feature one consumer product that every home should have - a LEAD Group DIY-sampling lab analysis lead kit for testing consumer products and all environmental media for lead!

**61.** Acknowledgements

### **References and Suggested Reading/Videos:**

*Cradle to the Grave*, Umweltund Prognose-Institut Heidelberg, 1993. [Slides re: "The Environmental Cost of One Car"]

<http://leest1.wordpress.com/2011/05/17/peak-oil-2/> [Slide peak oil graph]

Video of the danger of lead from Painters.edu.au (NPD website), there are 5 videos available:

<http://www.painters.edu.au/Training-Resources/Lead-Paint.htm>

Green Machine in action:

<http://www.lead.org.au/lanv7n1/L71-10.html>

E waste Report:

[http://www.lead.org.au/Green\\_lead/E\\_waste\\_Report.wmv](http://www.lead.org.au/Green_lead/E_waste_Report.wmv)

# Eliminating Childhood Lead Toxicity in Australia: A Little is Still Too Much. Macquarie University Lead Forum 5<sup>th</sup> July 2012.

Chris Winder, PhD, Professor of OHSE Management, Faculty of Business, Australian Catholic University, North Sydney NSW 2060

Keywords: Lead, toxicity of lead, lead exposure, pediatric lead effects, adult lead effects, environmental lead, lead risk, level of concern

## Background

The experience of people in the modern world with lead is one of poorly considered impacts, extensive and poorly controlled exposures, and poorly characterised environmental and human impacts.<sup>i,ii,iii</sup>

Over one hundred years ago, in 1904, the Scottish born Australian physician J Lockhart Gibson was among the first English-language authors to directly link lead-based paint to childhood lead poisoning, specifically noting the dangers to children from painted walls and verandas of houses in Queensland.<sup>iv</sup>

In 1909, another physician working in Australia, Dr Alfred Jefferis Turner, was the first to suggest that preventive approaches that identify, and then remove exposures to lead offered the most effective way to protect children from the effects of lead.<sup>v</sup>

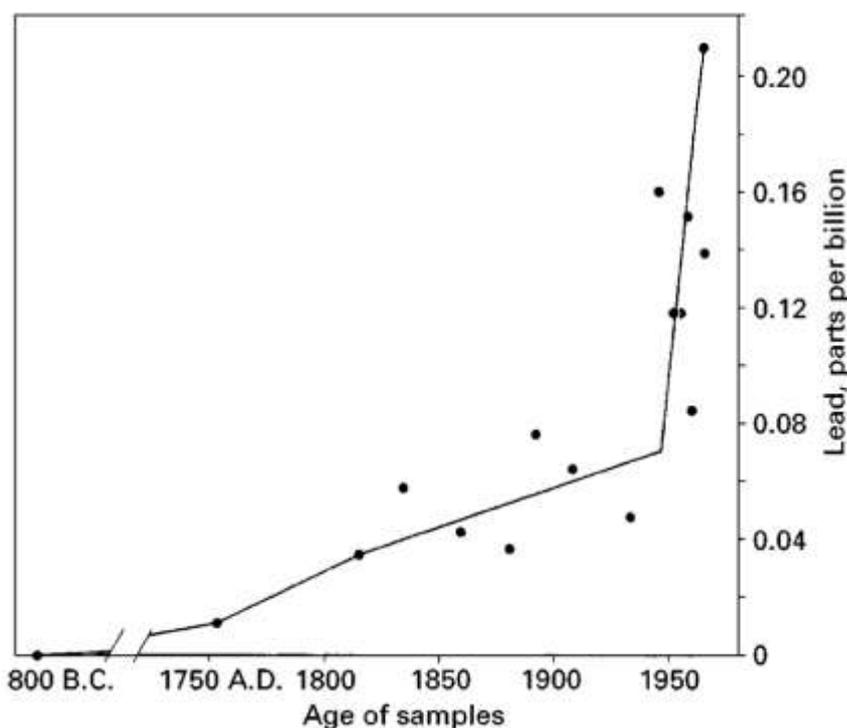
## Environmental Accumulation of Lead

Throughout the twentieth Century, exposures increased, but the views of public health and environmental professionals (including Gibson and Turner) that lead was damaging the health of adults, but more particularly children, were largely ignored.

In 1969, work by Clare Patterson and colleagues suggested that environmental lead levels had increased since Roman times, increasing gradually from the start of the industrial revolution, and increasing exponentially since the introduction of lead in petrol (until at least the 1970s). Figure 1 shows data from analysis of snow cores from Greenland.

Figure 1: Lead Contamination of Greenland Snow Cores

Reproduced from: Murozumi et al, 1969<sup>vi</sup>

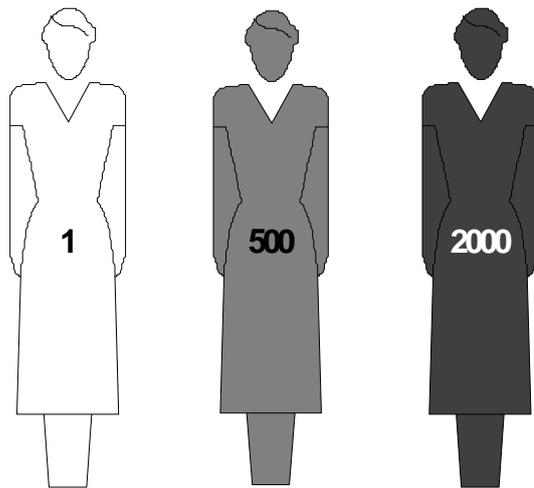


From this, Patterson suggested current lead loads in humans, while not necessarily dangerous, were in fact orders of magnitude higher than our prehistoric ancestors.<sup>vi</sup>

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Figure 2, presents the view that modern day human lead burdens were already sufficiently high to suggest the margin of safety from “normal” to toxic levels was very small.

**Figure 2: Comparison of Relative Amounts of Lead in People**



The amount of lead found in prehistoric Peruvians is shown in the first figure, represented as 1.

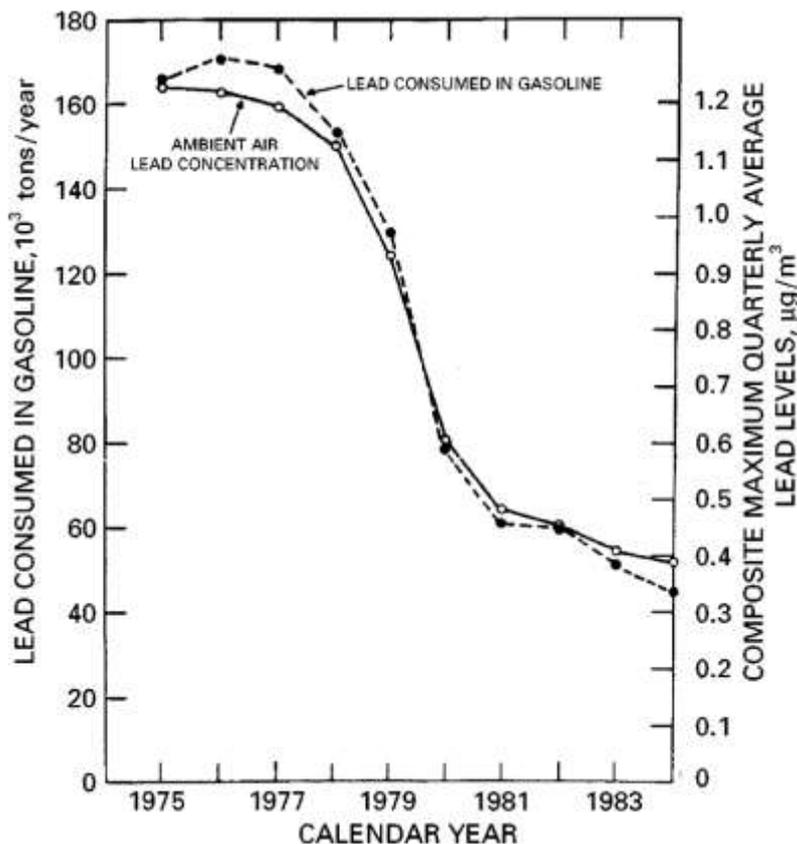
The amount of lead found in Americans at the end of the twentieth century is shown in the second figure, represented as 500.

The amount of lead that represents the minimum amount of lead that will cause classical lead poisoning in a significant amount is a group of people is shown in the third figure, represented as 2000.

The margin of safety between the second and the third figure is not large, in conventional toxicological terms.

Modern humans had body lead loads hundreds of times higher than their forebears, perhaps showing subclinical toxic effects across an entire population. The USA moved to remove lead from petrol in 1972. Lead levels in air fell from 1.2  $\mu\text{g}/\text{m}^3$  in 1975 to 0.4  $\mu\text{g}/\text{m}^3$  in 1984, following closely the fall in consumption of lead in petrol (see Figure 3 below).

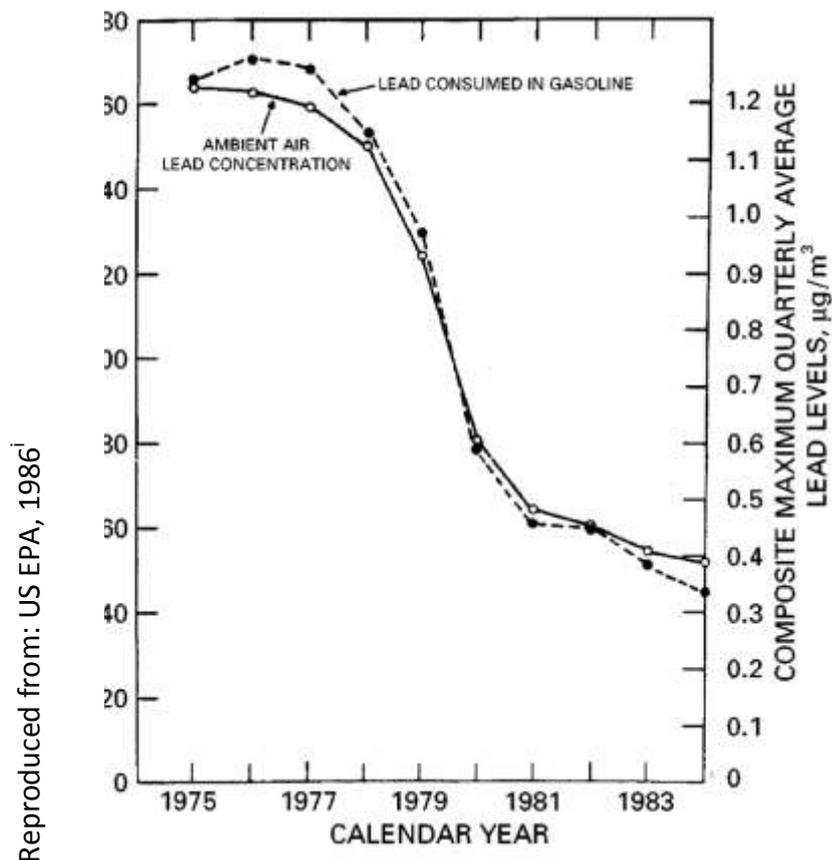
**Figure 3: Relationship between Lead in Petrol Consumption and Lead in Air**



Reproduced from: US EPA, 1986<sup>i</sup>

Further, the decrease was mirrored by a decline in population blood leads from about 16  $\mu\text{g}/\text{dL}$  in 1976, to below 10  $\mu\text{g}/\text{dL}$  in 1980 (see Figure 4 below).

**Figure 4: Relationship between Lead in Petrol Consumption and Lead in Blood**



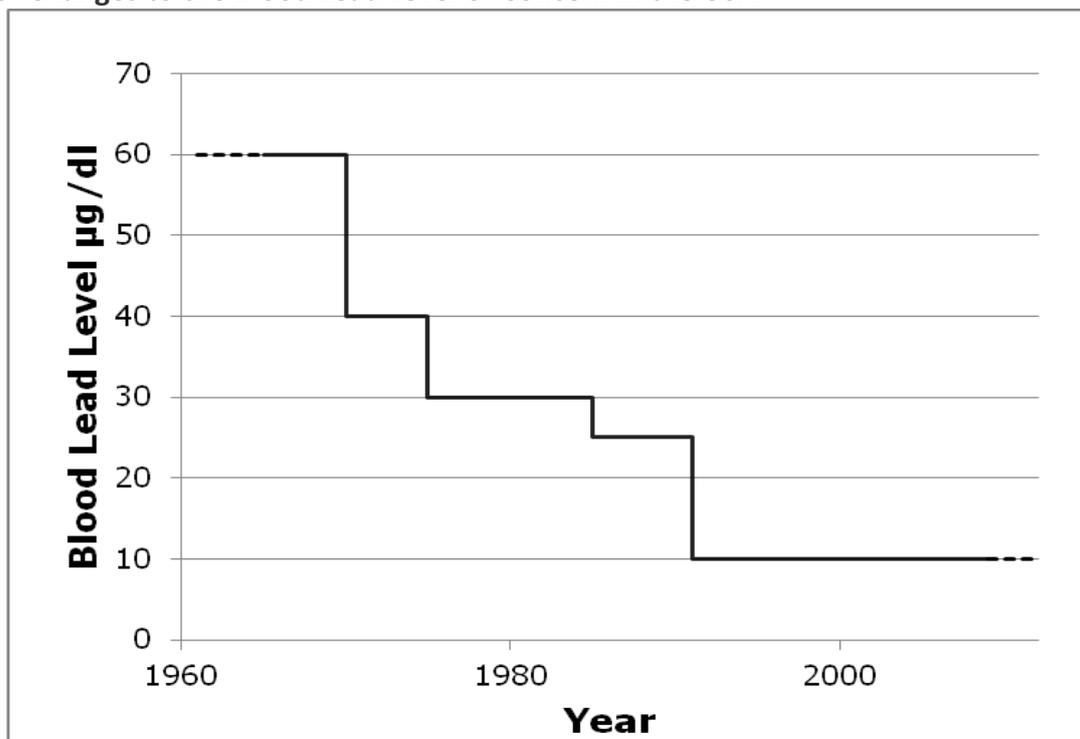
Population blood levels continued to fall in the USA. By 1990, median US population blood levels were down to 2.8  $\mu\text{g}/\text{dL}$ .<sup>viii</sup>

Leaded petrol marketed by the Commonwealth Oil Refineries was being sold in Australia from at least August 1932.<sup>ix</sup> In 1985, changes to Australian Design Rules for catalytic converters to be included in motor vehicles were introduced. Lead free petrol was available from then, but the availability of leaded petrol continued to 2002.

### Development of the Pediatric “Level of Concern”

As evidence increased from multiple studies showing loss of mental capacity in children, even when no pathology was observed, the concept of a “level of concern” for lead exposure in poisoned children emerged. This level was one that pediatricians could use for establishing priorities and interventions for the lead poisoned child. In about 1960, Health agencies in Europe and the USA set, and then lowered, this level of concern from 60  $\mu\text{g}/\text{dL}$ , to 40  $\mu\text{g}/\text{dL}$  (in 1971), to 30  $\mu\text{g}/\text{dL}$  in 1985, and lastly, to 10  $\mu\text{g}/\text{dL}$  in 1991 (see Figure 5).<sup>x,xi,xii</sup>

Figure 5: Changes to the Blood Lead Level of Concern in the USA



In 1979, a breakthrough study by Herb Needleman and colleagues related lead in children’s teeth to diminished mental capacity.<sup>xiii</sup> Epidemiological evidence demonstrating adverse effects of lead on children’s neurodevelopment, including reduced IQ scores and learning difficulties, at lower and lower exposures accumulated throughout the 1970s, 1980s and 1990s.

In 1992, at an International Conference held in Melbourne, discussions around the nature of the level of concern and its move from a blood lead number that related to a pediatric emergency, to considerations emerged that a means of managing a public health risk was needed.<sup>xiv</sup> At the time, one of the reasons that 10 µg/dL was retained as a criterion for lead exposure, was not because it was a safe level, or even because it was the upper limit of normal, but because it was recognised that the psychological tools available at the time were too crude to measure functional neuropsychological deficits in young children with any degree of accuracy.

Notwithstanding these difficulties, agencies such as the US CDC<sup>xv</sup> and the NHMRC<sup>xvi</sup> continued to issue guidance to health professionals about what should be done when confronted with a child with elevated lead exposure. These agencies suggested that a blood level of 10 µg/dL should be used as a level above which levels are regarded as elevated, and that investigation or intervention is recommended.

### What should now be done?

That was over twenty years ago. Since then, more and more studies have shown that blood lead levels below 10 µg/dL harm children.<sup>xvii</sup> Furthermore, these affects are not just seen in intelligence, but also cardiovascular, immunological and endocrine effects. Additionally, at least some of these impacts are irreversible. It also appears that such effects do not appear to be confined to children of lower socioeconomic status.

What perhaps is less well known is that evidence is also emerging to indicate that lead may also be affecting the cardiovascular, renal, reproductive health and cognitive function of adults at levels lower than previously considered, and in some cases below 10 µg/dl.<sup>xviii</sup> Some of these findings support the possible persistence of lead induced effects in childhood into adulthood.<sup>xix,xx</sup> So, the idea of a “level of concern” is becoming obsolete, except for action in clinical cases.

In 2010, the German Federal Environment Agency moved to the term “reference value” and set its value based on the 95<sup>th</sup> percentile of blood lead levels from national blood lead surveys as their new trigger levels for action,<sup>xxi</sup> arriving at:

- 3.5 µg/dL for children;
- 7 µg/dL for women;
- 9 µg/dL for men.

In the US, in November 2011, the National Toxicology Program published a draft monograph on Health Effects of Low Level Lead,<sup>xxii</sup> which reported that “there is sufficient evidence for adverse health effects in children and adults at blood Pb [lead] levels below 10 µg/dL [micrograms per deciliter] and below 5 µg/dL as well.” These health effects included adverse associations for cardiovascular, renal and immune health outcomes.

In January 2012, a report of the CDC Advisory Committee on Childhood Lead Poisoning Prevention (ACCLPP), made a recommendation (subsequently accepted by the US CDC), that the term “level of concern” be eliminated.<sup>xvii</sup> The ACCLPP also recommended that a reference value of 5 µg/dL be used to identify children who have an elevated blood lead level, based on the 97.5 percentile for children aged 1-5.<sup>xviii</sup> This level should trigger lead education, parental advice on nutrition, environmental investigations, and if warranted, additional health surveillance. In Australia, the NHMRC are investigating this issue.

The focus now should be on identifying sources, assessing risks and eliminating exposures, with the fundamental aim of primary prevention as now noted by such agencies as the World Health Organisation (WHO) and US CDC.<sup>xvii,xxiii</sup>

The history of advances in the understanding of the toxic effects of lead over the past thirty years is an outstanding example of how knowledge learned from research can impact in public health. Measures that have had the greatest impact on reducing exposure to lead have been reduction of lead from petrol, elimination of lead solder from canned food, removal of lead from paint, and abatement of housing containing degrading lead-based paint.<sup>xxiv,xxv</sup> Those countries where these initiatives have been implemented have seen exposures and body burdens of lead decrease.<sup>i</sup>

In order to continue to sustain national and international efforts to manage the health risks of lead to children, a lead risk management approach should be taken to:

### **Consult and communicate**

1. Community groups where lead risks exist should be informed and engaged so that they are part of the risk management solution, otherwise lead risk management is unlikely to be successfully implemented.
2. Wherever possible, such lead risk reduction activities should be part of an international coordinated effort that fosters networks for information exchange and development of consistent, harmonised policies and programs that will continue the effort to alleviate the effects of lead in childhood and throughout life.

### **Identify the lead risk**

3. The usefulness of a level of concern for lead risk management is obsolete, and it should be phased out as a measure of lead risk, except for action in clinical cases of lead intoxication.
4. Government health agencies should:
  - review new data that shows health problems in children occurring at lower blood leads than before;

- consider assessing lead levels in children through a national survey that will provide representative data that will better establish the blood lead distribution in Australia;
  - use such a review and survey to develop a new reference level or blood lead index for action in lead risk management.
5. Government environment agencies should review new data on environmental impacts with a view to reducing standards and protocol for measuring lead in the environment.
  6. Government occupational health agencies should review new data that shows health problems in adults occurring at lower blood leads than before, with a view to a revision of lead exposure limits in the workplace.
  7. Evidence based models for lead reduction, coupled to economic modelling to determine the costs/benefits of intervention, should be conducted, so that any benefits of lead measurement activities can be contextualised. Otherwise improvements to standards may be difficult to implement. This should be conducted in Australia under Australian conditions of costs, structures and so on.

#### **Assess the lead risk**

8. Where existing sources of lead pollution exist:
  - Governments need to fill any void created by re-location or loss of industry where necessary;
  - The usefulness of interventions, such as information dissemination, education programs on lead abatement, nutrition and so forth, should be properly evaluated.
9. Where new potential sources of lead pollution are proposed there needs to be sufficient geographic separation, unlike the co-location of many existing mining and smelting industries and communities in the past.
10. Where existing mines or industries using lead exist:
  - standards for control of lead exposure or for lead emissions should be reviewed;
  - better technology improvements at source are required.

#### **Control the lead risk**

11. Wherever possible, all industrial and commercial uses of lead should be eliminated.
12. Where elimination of lead risks is not possible, these uses and the exposures they generate, must be controlled to a level as low as reasonably practicable.
13. The term “level of concern” should be eliminated or restricted for use in emergency cases of lead poisoning.
14. A need still exists for a reference level or blood lead index for action.
15. A reference value of 5 µg/dL should be adopted within Australia to identify children and adults who have an elevated blood lead level or who have a lead risk.
16. This level should trigger medical, paediatric, public health, environmental, and other agencies to better manage the lead risk through a national blood lead survey of all ages, lead education and awareness-raising on lead risks and lead abatement, parental advice on nutrition, environmental investigations, and additional health surveillance.

17. Doctors and allied health professionals should be educated about the effects of lower levels lead exposure on children.
18. Where they are reviewed and revised, all relevant standards should be consistent with each other in such a way that efforts to reduce lead exposure are consistent.

It remains generally acknowledged that there is no safe level of exposure to lead. Therefore, the lower the level, the better it will be for everyone.

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## **Eliminating Childhood Lead Toxicity in Australia – A Little is Still Too Much**

### ***A consensus for a way forward to eliminate lead toxicity in Australian children***

*by Professor Mark P. Taylor, Environmental Scientist, Macquarie University, Professor Chris Winder, Professor of Occupational Health, Safety and Environmental Management, Faculty of Business, Australian Catholic University, and Professor Bruce P. Lanphear, Professor of Children's Environmental Health, Simon Fraser University, Canada.*

A one-day public forum was convened at Macquarie University on June 5th 2012 to examine the evidence for low levels of lead toxicity and its implications for Australian children and communities. More than 60 national and international medical, public health, environmental and

toxicology experts from universities, industry, government and health departments attended the public forum.

The forum was called following recent international reductions to reference blood lead values in children along with new research that reinforced the view that there is no safe level of lead.

In 2009 the German Human Biomonitoring Commission lowered the reference value for blood lead levels for children aged 3-14 years to 3.5 micrograms per deciliter ( $\mu\text{g}/\text{dL}$ ). In 2012, the United States (US) Centers for Disease Control and Prevention (CDC) decided to eliminate the 1991 level of concern of 10  $\mu\text{g}/\text{dL}$ . The CDC also established a reference value based on the 97.5<sup>th</sup> percentile of the blood lead distribution among children 1–5 years old in the US (currently 5  $\mu\text{g}/\text{dL}$ ) as a trigger level to identify sources of exposure and intervene for individual children.

There was consensus at the Macquarie University lead forum that the current NHMRC position, which is currently set at 10  $\mu\text{g}/\text{dL}$  was too high and that this 'goal' should be lowered.

In accepting the conference proposal: '*A little is still too much*' the attendees examined the issues that need to be addressed to achieve the objective of '*Eliminating Childhood Lead Toxicity in Australia*'. To reach this goal, it was considered necessary to improve the means of identifying sources of lead exposure, assess lead risks and eliminate or control lead hazards. Thus, all relevant legislation and standards that relate to health and environmental measures of lead exposure should be revised downward to achieve blood lead values below 1  $\mu\text{g}/\text{dL}$ .

The approach required to achieve this new goal is summarised below:

### **1. Identification and assessment**

- The usefulness of a level of concern is obsolete because there is no safe level of lead in blood; it should be eliminated.
- A need still exists for a reference level or blood lead value for intervention.
- Government public health agencies should:
  - Review new evidence and revise existing standards, recognising that there is no apparent threshold for lead-associated health problems amongst children.
  - Examine the findings from two major recent human health and lead exposure reviews conducted in the US: the National Toxicology Program's Draft Monograph on *Health Effects of Low-Level Lead* and the CDC's report from the Advisory Committee on Childhood Lead Poisoning Prevention entitled *Low Level Lead Exposure Harms Children: A Renewed Call for Primary Prevention*.
  - Support targeted research into the critical issue of low-level lead toxicity, including how other exposures like low SES, tobacco, illegal drug use or exposure to other toxicants may modify the effect of lead in children.
  - Consider conducting a national, representative survey of lead exposure in children to provide estimates of the blood lead distribution in Australia.
  - Use the results of a national survey to identify children and communities who are at risk of having an elevated blood lead concentration and develop a new reference level or blood lead value for intervention.
  - Develop a national database for all Australian blood lead assays to provide an ongoing picture of population-wide exposures.
  - Review new data that shows adverse health problems in adults occurring at blood lead levels lower than previously considered safe.
  - Develop evidence-based Australian models for lead reduction, coupled to economic evaluations to determine the cost-benefit of interventions. In the absence of such

models the forum considered improvements to environmental standards would be difficult to implement successfully.

## **2. Elimination and Control**

- All non-essential industrial and commercial uses of lead should be eliminated.
- Where elimination is not possible, uses must be controlled to a level as low as reasonably practicable.
- Where existing sources of lead pollution exist:
  - The usefulness of interventions, such as information dissemination, education programs on lead abatement, nutrition and so forth, should be evaluated.
  - Government support for communities and industry may be required in the event that industry needs to be relocated or closed to attain blood lead values < 1 µg/dL in children.
- Where existing mines or industries using lead exist:
- Standards for control of lead exposure along with lead emissions should be reviewed and revised downward to protect children.
- A review of the effectiveness of existing lead processing technologies is required to ensure the world's best practice is being employed. In particular, there should be a focus on the replacement or upgrade of facilities that are deemed ineffective with respect to a new goal of eliminating blood lead exposures in children.
- Where new potential sources of lead pollution are proposed:
  - There needs to be sufficient geographic separation, unlike the co-location of many existing mining and smelting industries and communities. Tightly controlled clean-in clean-out procedures must be promulgated at industrial sites to ensure lead is not transferred to the outside community.

## **3. Implementation**

- Where environmental standards are reviewed and revised, these should be consistent and harmonized so that efforts to eliminate exposure correspond to new blood lead values.
- Communities must be involved and consulted as part of the implementation process, so that they own change and future directions in their locality. Without such involvement, it is unlikely that changes will be implemented successfully.
- Medical practitioners and allied health professionals (such as occupational therapists, nutritionists, psychologists, speech pathologists) should receive up to date information and training about the effects of low-level lead exposure in children. These could be delivered as part of professional training and accredited by the NHMRC.
- Wherever possible, all initiatives focusing on eliminating childhood lead exposure should be part of an international coordinated effort that fosters information exchange, the development of consistent and effective policies and programs.

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## Letter Re: Rotterdam Convention website info about Tetraethyl lead

by Elizabeth O'Brien Manager, Global Lead Advice and Support Service  
(GLASS), Sydney, Australia.



**From:** The LEAD Group  
**Sent:** dimanche, 12. février 2012 09:10  
**To:** Leslie Angeles  
**Subject:** Rotterdam Convention website: DGD for Tetraethyl lead (TEL) and Tetramethyl lead (TML)

Dear Leslie /The Secretariat of the Rotterdam Convention,

The DGD for [Tetraethyl lead](#) (TEL) and [Tetramethyl lead](#) (TML) at [http://www.pic.int/Portals/5/DGDs/DGD\\_TEL-TML\\_EN.pdf](http://www.pic.int/Portals/5/DGDs/DGD_TEL-TML_EN.pdf) is undated (can you please send me the publication date?) but looks to be around 10 years old and includes some references going back to the nineteen seventies, for which there are very likely more up-to-date references to choose from if the document was replaced.

Significantly, Canada no longer manufactures TEL or TML but China claims a capability, even though Innospec in the UK, still claims on its website: "Our Octane Additives business is the world's only manufacturer of tetra ethyl lead (TEL)." URL: <http://www.innospecinc.com/octane-additives.html> Accessed 10 Feb 2012. Please see the attached: <Chinese Possible Suppliers of TEL Contact Details 20120209.doc>

With nearly all the country/region-specific information in the DGD being from Canada (even though the EC was also a notifying party), I request that you ask the current governments which seem to be allowing the export of TEL – United Kingdom and China – to submit material for a new DGD.

It also seems far more relevant for the socio-economic impacts of the Annex III chemical in the IMPORTING countries to be analysed, rather than just the EXPORTING countries. And wouldn't it be a good idea for the DGD to be web-published by you in the languages of the importing countries, not just English, French and Spanish? Couldn't you at least ask the manufacturing country governments to pay for the translation? And then web-publish the DGDs in other languages, if they are provided to you?

By leaving this incredibly out-dated and largely irrelevant (i.e. the info about Canada) information in only three languages on your website, it is easy to see why a handful of governments have not followed every OECD country and most parties to the Rotterdam Convention in eliminating leaded gasoline in their countries.

Are you able to assist the Partnership for Clean Fuels and Vehicles (PCFV) of UNEP in its primary goal of global elimination of leaded petrol by replacing this DGD with more convincing information as to the excellent reasons why nearly every other country has already gone leaded petrol-free?

Yours Sincerely

Elizabeth O'Brien

Winner of the United Nations Assoc'n of Australia (UNAA) World Environment Day (WED) Award for Outstanding Service to the Environment,

Partner, Partnership for Clean Fuels and Vehicles of UNEP.

Manager, Global Lead Advice & Support Service (GLASS) run by The LEAD Group Inc.

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We lead the way | We educate | We advocate | We'll work until the world's lead-safe

If you would like to help us eliminate leaded petrol globally (our top priority), please read our appeal for your support at [www.lead.org.au](http://www.lead.org.au) and please donate to the Lead Education and Abatement Fund via <http://www.leadworld.com/donations>

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## Complaints to the OECD about the continued sale of the additive to make leaded petrol

*By Elizabeth O'Brien, BSc, Grad Dip in Educational Studies (Health Educ'n), Manager, Global Lead Advice & Support Service (GLASS) run by The LEAD Group Inc. Australia*

From the links at <http://www.bis.gov.uk/policies/business-sectors/green-economy/sustainable-development/corporate-responsibility/uk-ncp-oecd-guidelines/cases/initial-assessments> LEAD Action News readers can access two OECD United Kingdom National Contact Point (NCP) Assessments of our two complaints about the continued sale of the leaded petrol additive manufactured by two companies in the UK.

Firstly, if you download:

["June 2012: UK NCP Initial Assessment - Complaint from A against B"](#)

from the above link, you can read about The LEAD Group's complaint against TetraBOOST – <http://tetraboost.com/> - for distributing the lead additive in various European countries.

Although the UK NCP for the OECD rejected our complaint, we have had a minor victory in that TetraBOOST has removed from their website, the following demonstrably inaccurate Q&A:

"Am I polluting the environment? Tetraethyl lead waste leaves the exhaust system as tetraethyl lead salts which dissolve harmlessly in the rain."

Secondly, if you search for Xstrata on the BIS URL above, you should soon find an assessment that states that the case has been concluded, as we have struck an agreement with Xstrata and withdrawn our complaint. You can download the Initial Assessment of our complaint against Xstrata from the BIS website. It is called:

[December 2011: UK NCP Initial Assessment - Complaint from LEAD GROUP against Xstrata \(UK\)](#)

Unfortunately, I still have not received a single response (not even an acknowledgement of receipt of my email) to my inquiry to the OECD NCP's of Belgium, Denmark, France, Ireland, The Netherlands and Sweden (countries where TetraBOOST is distributed), re: TetraBOOST Distributors are not complying with OECD MNE (Multi-National Enterprise) Environmental Guidelines.

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## **ACTU National Strategies for an Asbestos free Australia: A Framework for Future Lead Policy**

*by Zac Gethin-Damon, Campaigner for the End of Australian Lead in Petrol,  
The LEAD Group Inc., NSW, Australia*

A group made up of union representatives, an asbestos victim and her lawyer travelled to Canberra this week to urge action to halt the spread of asbestos related diseases. The timing of their visit is in light of the Government's Asbestos Management Review Committee which is due to hand in its findings by the week ending June 29, 2012. The delegates hope the review's findings will back the plan proposed by the ACTU's (Australian Council of Trade Unions) 2010 *National Declaration for a Safe Asbestos Free Australia* and accompanying *National Strategies for an Asbestos free Australia*.

The LEAD Group believes the objectives set out by the ACTU's *National Declaration for a Safe Asbestos Free Australia* and those strategies to achieve the outcomes as explained within the *National Strategies for an Asbestos free Australia* provide an appropriate framework for future Australian government lead policy.

The *National Declaration for a Safe Asbestos Free Australia* states:

"To eliminate deadly asbestos related disease in Australia we must decrease and eventually eliminate all exposures to asbestos.

To achieve that, governments and the community generally must adopt programs to safely and systematically remove Asbestos Containing Materials (ACMs) from the built environment.

Internationally, the Australian government must also take a leadership role through trade and other forums to work towards an international ban on the mining, use, and sale of asbestos."

The Declaration follows on, to call for "the establishment of a National Asbestos Authority (NAA) for a Safe Asbestos Free Environment by 2030." As the Declaration states: "A National Asbestos Authority (NAA) should initially be established as an independent authority with the appropriate powers to coordinate and enforce all of the aspects contained in the range of tasks and matters listed in this Declaration."

The *National Strategies for an Asbestos free Australia* is an accompanying document which suggests how the objectives as set out by the *National Declaration for a Safe Asbestos Free Australia* may be achieved. These guidelines suggest that useful strategies to pursue these objectives include:

- Increase the awareness on where ACMs are located, in environmental, industrial, commercial and domestic settings.

- General public education must include advice to homeowners on the identification and safe handling of ACMs in existing domestic housing stock.
- For local governments and environment protection agencies to train and license contractors for safe asbestos waste disposal and for the provision of adequate dedicated secure and permanent waste disposal sites.
- A consistent national scheme of notifications of known asbestos exposure to contact a specific and appropriately resourced government entity which would have the responsibility to provide referral and education (e.g. akin to the existing notification system for infectious diseases).
- Ensure that national OHS regulations provide protection from industrial exposures to asbestos containing materials.
- Waste Disposal laws for ACMs must provide for dedicated asbestos waste areas, assist residents for safe removal and disposal and compliment other OHS, building and planning laws.
- Building and planning and waste disposal laws must compliment national OHS based Asbestos Regulations, using such mechanisms as:
  - Audit of public buildings particularly in the health and education sectors, with asbestos registers and a target of prioritised removal by 2030;
  - In the commercial and industrial sectors; asbestos registers that include the program of prioritised removal by 2030 and a requirement for vendors and landlords and/or their agents to notify buyers and tenants of the asbestos register i.e. asbestos safety certificates;
  - For domestic housing stock, a requirement for the disclosure of ACMs, at the point of sale, with the purpose of the eventual removal of asbestos from of housing stock;
  - Landlords (including governments) and vendors and/or their agents in the residential dwelling sector being obliged to notify buyers and tenants of the presence of ACMs i.e. asbestos safety certificates.
- National system of accreditation for asbestos assessors and auditors.
- Review performance of asbestos removalists.
- Additionally, governments must make arrangements for the allocation of funds in a coordinated approach for medical research.”

### **A National Strategy for a Safe Lead-Free Environment**

Each point of the ACTU’s *National Strategies* is clearly a strategy remedy to a current asbestos exposure issue in order to achieve their goal of a ‘Safe Asbestos Free Environment by 2030’. Both the remedies and the exposure issues which they highlight clearly show the similarities between the asbestos and lead problems.

The similarity between the asbestos and lead issues and associated remedies is something which has not been discussed enough.

The LEAD Group suggests that every point of the ACTU’s *National Strategies for an Asbestos free Australia* is applicable and would be beneficial to Australian lead policy.

The extent of similarity between the two issues is shown by a comparison of the *National Strategy* with The LEAD Group’s ‘*Model National Public Health Policy on the Prevention of Lead Poisoning*’:

[http://www.lead.org.au/Model\\_Australian\\_Public\\_Health\\_Policy\\_20101203.pdf](http://www.lead.org.au/Model_Australian_Public_Health_Policy_20101203.pdf) and 'The Model Work Health and Safety Regulations and Codes of Practice Public Comment Response Form submitted by Elizabeth O'Brien'

[http://www.lead.org.au/O'Brien\\_submission\\_Model\\_Work\\_Health\\_and\\_Safety\\_Regulations\\_&\\_COPs\\_20110404.pdf](http://www.lead.org.au/O'Brien_submission_Model_Work_Health_and_Safety_Regulations_&_COPs_20110404.pdf).

It would be true to say that a *National Strategy for a Lead free Australia* would look very similar to the ACTU's list.

An example of an exposure issue of both asbestos and lead which demonstrates their similarity is that of rogue asbestos or ceiling dust removalists or demolition contractors. Rogue asbestos removalists/demolition contractors avoid testing for asbestos so that they don't have to use asbestos safe practice which makes for a more time consuming and costly job due to equipment, training and waste disposal costs.

Building contractors quoting for roof replacement or renovation involving ceilings or breaking into the ceiling cavity have rarely been known to identify ceiling dust (which can contain asbestos fibres, but which always contains lead dust) as a hazard, or to write a Hazard Management Plan (required under OH&S Regulations) which takes the hazard of cavity dust into account by, for instance, requiring its removal by an Australian Dust Removalists Association (ADRA) member, prior to the building or demolition work starting.

The same is true for paint contractors testing for lead prior to doing a paint removal job, who avoid lead testing so that they don't have to use lead safe practice which is similarly more time and resource costly.

The rogue removalists/demolition contractor problem is clearly identified in the ACTU's *National Strategies* suggestion to review performance of asbestos removalists.

It is not only this suggestion which is applicable to the lead situation; each and every point of the *National Strategies* is directly compatible with an effective Australian lead policy.

In order to see the extent to which the *National Declaration* is incorporated into government policy we will have to wait for the review handed down by the Government's Asbestos Management Review Committee. The review is due by the 30<sup>th</sup> June 2012.

Let's hope that, as an outcome, the Government produces an asbestos policy and, similarly, a lead policy, or better still, a lead and asbestos policy, that will guide us towards an asbestos-free and lead-safe Australia.

To read the *National Declaration for a Safe Asbestos Free* in full, see:

[http://www.actu.org.au/Images/Dynamic/attachments/6654/national\\_declaration\\_for\\_a\\_safe\\_asbestos\\_free\\_australia.pdf](http://www.actu.org.au/Images/Dynamic/attachments/6654/national_declaration_for_a_safe_asbestos_free_australia.pdf)

And the *National Strategies for an Asbestos free Australia* at:

[http://www.actu.org.au/Images/Dynamic/attachments/6654/national\\_strategies\\_for\\_asbestos\\_free\\_australia.pdf](http://www.actu.org.au/Images/Dynamic/attachments/6654/national_strategies_for_asbestos_free_australia.pdf)

# Queenslander Renovation Case Study: My story of lead poisoning

*By Stefania Fischer, DIY Renovator, 28th June 2012*

*Editor's Note: Stef initially submitted a potted version of her experience as a DIY renovator, after the ABC broadcast their Background Briefing radio documentary on 16<sup>th</sup> May 2012, [online at <http://www.abc.net.au/radionational/programs/backgroundbriefing/2012-05-06/3983094> ]. When she phoned the Global Lead Advice and Support Service for the first time on 27<sup>th</sup> June, 2012, she kindly agreed to submit the following article in time for this June newsletter. Thanks Stef!*

In early 2010, my partner David and I bought our first home. It was a gorgeous, slightly run-down architect-designed Queenslander that had been built 100 years earlier. The house had so much character, reminiscent of the classic Queenslanders that we all know and love. I fell in love. We had moved to Warwick, a small regional town 2 hours west of Brisbane, for a tree-change from our busy lives in Brisbane.

It was a chance for us to have a fresh start, with what we hoped would eventually become a beautiful home for us. Since I was a child, I had always wanted to renovate an old Queenslander. Growing up in the older suburbs of inner Brisbane probably shaped this passion of mine and when we got the keys to our grand old girl I was filled with excitement about the coming years and how we were going to transform her from a shabby old-maid to a spectacular version of her true self.

Although I was busy trying to complete my Masters studies, I was keen to get started on the renovations immediately. I was aware of the fact that there would certainly be lead paint in the house, given its age and so, I purchased a couple of lead test kits from Bunnings (at \$30 each) and started researching options for lead paint removal and how we might be able to remove it safely ourselves. I came across a number of products that were designed to decontaminate the lead from paint when removing it from surfaces. I was keen to use this kind of product on our home but their availability in Queensland was very limited, and their cost is exorbitant. A few litres of paint stripper costs over \$100 and with a house the size of ours, it was not going to be financially possible.

While I was conducting my research into lead paint removal, I was struck by the seemingly obvious lack of information about lead paint removal and lead poisoning in the Queensland setting. I began to think that if the issue of lead was such a risk, there would be a) more products available for its safe removal; and b) more information in hardware stores about the risks of lead paint and how to effectively and safely remove it. I then began to look further abroad at information from the US and realized that there was far more information available to US residents about lead paint and its safe removal than we were given here in Australia. I also assumed, that because there wasn't the same huge protective campaign being conducted here, we must not have the same risk of lead poisoning as those people living in the US. Wrong assumption!

As it stands, I read all I could about how to remove the lead paint from our house safely. I used a biodegradable wet paint stripper, drop sheets to collect the paint, and gloves to protect my hands. I was meticulous and methodical with the process and made sure that the areas I worked in were thoroughly cleaned after stripping. I only worked on small areas at a time and only disturbed paint that really needed to be removed. I thought I was doing the right thing.

Around 2 weeks after finishing stripping and repainting our beautiful front doors, I fell seriously ill. It was the 1<sup>st</sup> June 2011, 6 months after we began our renovations. I had trouble getting out of bed

because I felt extremely dizzy. I had a headache which lasted almost a week and the dizziness and lack of balance remained for about a week also. I went up to the local hospital, and the attending doctor told me that I probably had 'benign vertigo' and that it would go away. A pat on the back and I was off back home.

One week after the dizziness began; I started having a lot of trouble walking. I developed tremors all throughout my body and I completely lost my balance. I had a tight feeling around my forehead and I was basically bed ridden. I was deeply concerned about what was happening to me and I went to see my local GP.

He took one look at me and started to worry. He conducted a neurological examination and immediately called a neurologist, fearing a brain tumor or MS. I asked him if it was possible that I had been poisoned by lead. His words to me were '***It's not possible. You'd have to eat a tonne of lead paint to get as sick as you are right now***'.

This was the most fundamental and pivotal moment of the entire duration of my illness. The advice of one doctor took me on a wild goose chase, following completely wrong leads and getting sicker by the day. One simple blood test could have revealed the source of my illness. Instead, I had around 30 blood tests for every god-forsaken illness on the planet, 4 MRIs (that all returned normal results), multiple visits with 4 neurologists and one ambulance ride. David and I spent thousands of dollars, got our wills sorted out and I even planned my funeral. We were sure that this was something I would never recover from. I was bedridden for about 2 months and spent the next 9 months slowly, very slowly regaining *some* faculties. I had to give up my studies and work and became completely housebound.

The following list represents all of the symptoms I experienced in the last 12 month period. Some of these have gone, some still remain strong.

*Dizziness; headaches; extreme weakness and fatigue; difficulty finding words; forgetfulness and memory loss; high blood pressure; loss of balance and the ability to walk; tremors and twitches in hands and feet; numbness; digestive problems such as cramps, pain and constipation; insomnia and restless sleeping; joint pain in the fingers and hands; irregular menstrual periods.*

Each and every one of these symptoms is a symptom of lead poisoning in adults. It took 12 months, and a random visit to a new GP 4 weeks ago, to even suggest the idea of having a blood test to measure my lead levels. My lead levels after 12 months when I was unable to renovate were 'quoted' to me as being in the 'normal' range of exposure. Therefore, my doctor concluded that although I had previously been lead poisoned, I had a normal reading now and that was that, case closed.

This was not right. I am still sick. My doctor told me nothing of the process for how lead is stored in the bones, how it can leach out, how it's important to continue to test yourself for lead exposure if you are in an environment that contains lead and that there are therapies available to remove the lead from a person's body. I had to find this out ON MY OWN FRUITION using the internet as my guide.

So needless to say, my nickname these days is 'Dr Google'. I have a mountain of papers on my desk at home about lead poisoning including scientific journal articles on symptoms and treatments; public health papers from the US as well as the UK and I've spent countless hours in front of my computer scouring; reading; investigating and educating myself about lead. Not one of

the doctors I have seen, either GP or specialist has demonstrated to me, any knowledge of lead and lead poisoning, much less up-to-date knowledge of the effects of low blood lead levels as revealed by the mainly US research of the past decade. This is too much of a gap in understanding for me to rest easy with. I am greatly disturbed by the lack of education in the medical field on the dangers of lead poisoning and the risks involved with exposure. Each doctor I saw knew that I was renovating an old house. This should have rung alarm bells for each and every one of them. It did not. Instead I was shuttled from one specialist to another, ruling out MS, Parkinson's, brain tumours and other neurodegenerative diseases, until the final neurologist told me that I was probably suffering from a 'psychosomatic disorder' resulting from the 'stresses' of my life. The ONLY stress in my life was the ILLNESS. It has been a dumbfounding experience to say the least.

Even now, after having been tested for lead and diagnosed with 'lead poisoning' I am still faced with the ignorance of a medical system that is supposedly based on the premise of 'do no harm'. Doing nothing in the case of lead poisoning IS doing harm. I have to fight to get my blood lead levels checked; my kidney function checked, even my blood pressure checked. Doctors just don't know enough about lead poisoning to a) consider it as a viable cause of illness b) be able to understand what a patient is experiencing; c) have any idea of what tests to conduct for a patient with lead poisoning; and most importantly d) have a clue about how to give appropriate nutritional or clean-up advice, and treatments for the patient.

The anguish of having a long-term, undiagnosed illness is one thing. Having to endure it, after diagnosis, without any indication of how it can be treated because of a doctor's ignorance is completely inexcusable. Lead poisoning is a serious public health issue. It IS a real and apparent illness that presents in the community and it is VITAL that front line health workers are educated in its identification, management and treatment.

I believe there is also more that can be done in the education of the DIY community about the dangers of lead. Anyone who is living in or renovating an old house should have their blood lead levels tested at regular intervals to avoid unnecessary illness. I think it's of particular importance to those of us living in Queensland to have access to lead abatement services at reasonable prices, given the recent flooding in 2011 and the number of damaged homes that need refurbishment. I take complete responsibility for the actions and for my exposure to lead in my home. I do not wish to shift the blame onto anyone else or onto an institution for putting me at risk. It's a risk I knew existed. But there is no excuse for a lack of awareness about post-exposure treatment for people and no excuse for not having clearer and more obvious public health measures out there for people to access. We are all aware of the dangers of asbestos. Why should the dangers of lead be treated with any less caution? I for one believe in the seriousness of the issue and it has come to me at a high price. I only hope that the more we educate ourselves and the community, the fewer cases like mine will exist. It can do no harm!

# Dust hazard lessons from Twin Towers disaster

By Anne Roberts

By the time you read this, the 10<sup>th</sup> anniversary of the destruction of the World Trade Center in New York will have come and gone. The legacy, for those who escaped with their lives, those who risked theirs, and anyone near the Twin Towers as they burned and collapsed, continues. This includes the health effects of having inhaled toxic smoke, being blanketed in toxic dust. If you had access to a TV or a newspaper on that, or the following days, you will have seen the images, and not forgotten them.



New Yorkers were told that the smoke and dust presented no danger, that they should clean up the dust in their own premises, and that there was no need to wear a safety mask.

*In the days after September 11 the EPA and OSHA took air samples and reported that they found no excessive levels of asbestos, lead, or volatile organic compounds in the air, except in or around Ground Zero. Contrary to these reports, [dust samples](#) taken from surfaces near Ground Zero did show very high levels of asbestos. Significant quantities of [asbestos](#) had remained in the Twin Towers despite asbestos abatement programs...*

*In August of 2003, it was revealed that the EPA had been muzzled by the Bush administration. EPA Inspector General Nikki Tinsley issued a report on August 21, 2003, admitting that the reassurances were unfounded, and that the public statements of the agency were being influenced by the National Security Council, under the direction of the White House. The EPA, according to the report, had been influenced to "add reassuring statements and delete cautionary ones." (9-11 Research, 2011)*

Two extracts from the 2004 Sierra Club report, *Air Pollution and Deception at Ground Zero*, reproduced in the 9-11 article referred to above:

- *The federal government failed to change its safety assurances even after it became clear that people were getting ill, and even after a survey of federal employees of a sister agency in the same building as EPA at 290 Broadway revealed that they were suffering health impacts - a survey that, this report finds, the federal government did not release to the public at the time. It was quietly published in a journal in 2002.*
- *Many Ground Zero workers did not have proper protection, especially in early weeks. This report explains that federal assurances of safety gave workers conflicting messages about the need for respirator masks, which are difficult and exhausting to wear.*

Edelman et al, in their study *Biomonitoring of Chemical Exposure among New York City Firefighters: Responding to the World Trade Center Fire and Collapse* (2003), biomonitored exposure to 110 chemicals, including lead, in firefighters at the scene. Lead in blood and urine of those present when the buildings collapsed, were greater than those who attended 1 to 2 days after the collapse.

A major study of responders (Edelman et al 2003) dismissed the risk from lead exposure as the highest blood lead level was 12.7 µg/dL, well below the US occupational limit of 40 µg/dL, though it noted that "exposed firefighters showed elevations that were statistically significant compared with control firefighters, the increase was small, far below clinically significant levels". This refers

to the fact that observable symptoms of acute lead poisoning normally occurs above 70 µg/dL but as numerous studies have shown long term health impacts, including increased risk of heart attacks which can begin at blood lead levels as low as 2.0 µg/dL (Menke et al 2006).

These and other results relating to health risks of blood lead levels between 2-10 µg/dL for both adults and children have been summarised on a pair fact sheets available on The LEAD Group's website (Taylor, 2010 a & b). As with asbestos, the health effects can manifest themselves many years later.

Though asbestos was present in 'significant quantities', at the site of the collapse of the Twin Towers ("Ground Zero") - see 9-11 Research, above - it was not possible for the asbestos to be biomonitoring:

*...current technology does not allow for biomonitoring of asbestos, fiberglass, silicates, and other inorganic particulates. Thus, this study cannot provide any information about exposure to or potential health effects from these materials. (Edelman et al, 2003)*

The safest attitude to both lead and asbestos is that no exposure is safe, and that precautions have to be taken when their presence is suspected or known to exist, as it would have been in the smoke, dust, and debris of the Twin Towers.

**Why authorities suppress facts as to the attendant dangers at the time of a disaster, whether man-made – such as the terrorist attack on the World Trade Center - or natural, is not under discussion here. One could speculate that they are afraid of mass panic, or of being blamed.**

The lesson, if one can call it that, is not that we should be without trust in authorities, or in anyone else. The world works on trust, at every level of human interaction. (See Onora O'Neill: "A Question of Trust": BBC Reith Lectures 2002.) Cynicism is paralysing and destructive.

On the other hand, experience, caution and common sense are useful, just in case the authorities have got it wrong, or are trying to pull the wool over our eyes.

The lesson is that safety gear - such as respirators or masks in the case of smoke or dust - should always be worn by anyone working where they are likely to be exposed to *known* or *suspected* hazards.

This is something that tradespeople and emergency workers, through their trade unions, should demand, and which should be mandatory.

A caller to Global Lead Advice and Support Service (GLASS) reported recently that firefighters attending a grass fire at the former lead smelter at Boolaroo, NSW, were not wearing respiratory protective gear.

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9-11 Research: Ground Zero Hazards

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Limitations of the Edelman study:

*Second, although the control group was composed of FDNY firefighters, comparability may be limited because most had been assigned office duty because of orthopedic injury and therefore may have lacked recent fire-related exposures. Last, current technology does not allow for biomonitoring of asbestos, fiberglass, silicates, and other inorganic particulates. Thus, this study cannot provide any information about exposure to or potential health effects from these materials.* (Edelman et al, 2003)

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## Water lead results near proposed mine site spark Australia-wide tankwater quality warning

*By Elizabeth O'Brien, BSc, Grad Dip in Educational Studies (Health Educ'n), Manager, Global Lead Advice & Support Service (GLASS) run by The LEAD Group Inc. Australia*

Elevated lead and arsenic results in water samples from rainwater tanks, and bores / springs / groundwater near the proposed Bowdens Silver Mine Project at Lue, NSW, have led to a general warning for all Australians drinking tank water, especially from a concrete tank, to test their drinking water for lead. [Lue, in the Central Tablelands, is just south of east of Mudgee, and almost north of Lithgow. The mine will be located less than 3km from Lue.]

Prof Mark Taylor, an environmental scientist from Macquarie University (and a member of The LEAD Group's Technical Advisory Board), confirmed community concerns about the increased lead exposure likely from the proposed open-cut silver zinc lead mine. (For the full interview on Orange Breakfast radio, broadcast June 25, or a printed summary, see:



<http://www.abc.net.au/rural/nsw/content/2012/06/s3534616.htm>)

Groundwater from springs or bores in mineralised areas, should never be added to drinking water tanks unless first tested for lead, arsenic and other toxic metals known to occur in the local rocks. It is most important to sample the water after a dry period when these metals are likely to become more concentrated.

On 27<sup>th</sup> June, ABC Orange Breakfast radio news reported lead and arsenic exceeding the Australian Drinking Water Guidelines (ADWG) in samples of filtered water from tanks or ground or surface water sources in the region of Lue.

On 28<sup>th</sup> June, Gavin Thomas, Managing Director of Kingsgate Bowdens / Kingsgate Consolidated, was interviewed on ABC's NSW Country Hour by Leone Knight, who asked how dust would be suppressed in an open-cut mine situation, when the mine plans to produce 177 tonnes of lead over the life of the mine.

Mr Thomas said the lead will be treated and put into a concentrate and the concentrate will possibly be taken to Port Pirie, and dust suppression techniques will be used. He said "We put mats down to minimise dust during blasting, and regularly water the roads... We've done extensive testing of surface and groundwater as well as neighbourhood drinking water to collect baseline data. Its been known for well over a decade that there samples which exceed the Australian Drinking Water Guidelines... We believe we can monitor moving forward, and be of modest impact to the community... We've found two people in the area have lead in their rainwater tanks that exceed Australian Drinking Water standards."

I spoke to Simon McDonald, Manager, New Projects, Kingsgate Bowdens, on 28<sup>th</sup> June. Mr McDonald made the following points:

- Kingsgate's May newsletter at <http://www.kingsgate.com.au/australia/bowden-newsletters/may-2012.pdf> mentions the start of the company's baseline monitoring.
- We're using JBS Environmental consultants to review groundwater, rainwater tank water, surface water, and they will review the tank sludge results soon.
- Surface water collected in April and May 2012 from the mineralised gully near the proposed mine site had a lead result of 0.024 milligrams per litre (mg/L) in April and 0.022 mg/L in May. The Australian Drinking Water Guidelines (ADWG) sets 0.010 mg/L as the maximum acceptable level of lead in drinking water. All other samples were below the ADWG.
- Lead was reported in one sample at over the Australian and New Zealand Environment Conservation Council (ANZECC) *Australian and New Zealand guidelines for fresh and marine water quality* for aquatic ecosystems' acceptable level of 0.0034 mg/L and it was probably the same gully sample as mentioned above. The pH at this location was lower than for other surface water samples.
- One sample of groundwater had a lead level marginally over ADWG from that same gully, which has been renamed as Bowdens Gift by the previous Canadian owners, Silver Standard. One other sample in the next gully to the East was over 0.0034 - both are used by cattle. The Australian Livestock Guideline sets 0.1 mg/L for lead and 0.5 mg/L for arsenic because cattle can tolerate well above the drinking water or aquatic ecosystem level.
- When Silver Standard bought the property 10 yrs ago they tested for arsenic and found high levels in some water samples.
- A person bought a property in the area last year and they were not advised of a potential mining operation in the area.
- Kingsgate are offering free clean-out of sludge from the first rain water tank which receives water off the roof of any buildings in our test area (within 2 km radius of the proposed mine site). That way we can be sure that if the metal levels rise in these tanks over our monitoring period, we will need to look to the mining activity as a possible source.



- Where the roof has been painted with a leaded paint or where lead flashing or solder has been used in a collection system, it is possible for some lead ion to enter the collected water.
- One of the rainwater tanks in the district was found to have a nickel level above the ADWG and the lead was just over the acceptable level. However at retesting, the lead had dropped below the guideline. Stainless steel is a possible source of nickel in tankwater.
- When Kingsgate sample rainwater tanks, we do not get up on the roof rain water collection area because unless you test the flashing you won't know if it is lead. Zinc flashing looks pretty much the same as lead, once it is weathered, and flashing can be painted, thus concealing whether it's made of lead, zinc, aluminium or bitumen.
- One rainwater tank made of PVC was found to contain 0.015 lead, marginally over the ADWG and that water was collected from a galvanised iron roof, and the highest result of 0.037 mg/L lead was found in a concrete tank, but fortunately this tank is not used for drinking water.
- Roof space dust will be tested as well as house dust metal levels before the mine opens and again during mining operations.
- What wasn't mentioned on the ABC is that most of the damage done at Broken Hill in the early days and at Port Pirie and Mt Isa was due to smelting, not so much mining.
- Kingsgate has not determined where we'll send the galena concentrate for smelting or refining. At Bowdens there is combined 0.7% Pb+Zn (lead plus zinc content in the ore) whereas Broken Hill ore is up to 30% Pb+Zn, but Bowdens has very high silver which is linked to the Pb+Zn. It will be separated on site by flotation, then the concentrate will be sent off-site - possibly to Port Pirie or overseas.

Mr McDonald went on to provide information about significant new uses of silver. In my opinion, these are important enough to make it essential that the community of Lue be protected from possible lead contamination during the mining operations.

### **Some of the new uses of silver**

(Information provided by Mr McDonald from The Silver Institute website in the USA.)

#### **Silver as an Anti-Bacterial**

<http://www.silverinstitute.org/site/silver-in-technology/silver-in-medicine/bandages/> ]

This is the biggest new use of silver. Wound dressings containing silver have been an important aspect of healthcare for more than a century; soldiers in World War I relied heavily upon such dressings. Today, consumer healthcare companies like Johnson & Johnson and others offer their own lines of bandages and ointments that use silver as an active ingredient. Silver has actually been proven to promote the growth of new cells, thereby increasing the rate at which wounds can heal. And, unlike other metals with antimicrobial properties, it is not toxic to humans.

#### **Silver in Green Technologies**

[URL: <http://www.silverinstitute.org/site/silver-in-technology/silver-in-green/> ]

...The use of silver in nanotechnology is a growing area of interest. The idea is simple: when silver is added to fabrics, appliances, carpets and air purifiers, it acts as a sterilizer, killing harmful bacteria that otherwise would have had to be treated with harsh chemicals. By reducing our reliance on potentially toxic substances, silver in nanotechnology is a major victory for green technology.

## **Solar Energy**

[URL: <http://www.silverinstitute.org/site/silver-in-technology/silver-in-green/solar-energy/> ]

...Silver paste is used in 90 % of all crystalline silicon photovoltaic cells, which are the most common type of solar cell... Over 100 million ounces of silver are projected to be used in this application by 2015.

## **Silver in Water Purification**

[URL: <http://www.silverinstitute.org/site/silver-in-technology/silver-in-green/water-purification-anti-bacterial/> ]

Another key use for silver is in the millions of water purifiers that are sold each year. Silver prevents bacteria and algae from building up in their filters so that they can do their job to rid drinking water of bacteria, chlorine, trihalomethanes, lead, particulates and odour.

## **My conclusions:**

I'm particularly interested in the use of silver in solar panels because solar energy is so often stored in lead acid batteries, which are practically the only use of lead that today comes close to being safely manufactured, used and recycled in those advanced countries where environmental and occupational regulations are adhered to. If silver is not mined lead-safely, then all its environmental benefits are overwhelmed by loss in property values and the costs of managing increased heavy metal contamination.

## **Making rainwater from a tank, or borewater, safe for drinking:**

- Test a first flush and then a flushed water sample from the tap (usually the kitchen tap).
- Introduce regulations which require heavy metal testing of tank water used as drinking water, before a property is sold, and notification of the results to prospective buyers of the property.
- Revise the Australian Building Code to require that lead flashing, lead paint and any other potential sources of lead in drinking water in the rainwater collection area, be replaced with non-lead flashing, non-lead paint etc, prior to the addition of a rainwater tank to the property.

## **Testing for lead and other heavy metals in drinking water:**

JBS Environmental have donated to The LEAD Group, the concept, interpretation template and instructions for our DIY-sampling lab analysis kits. You can purchase one of these very useful kits from us, and be confident in the analysis which is done at a NATA-accredited lab, and in the interpretation, which I write! Phone 1800 626 086 to order a 2-sample Water Kit today. Have your credit card details ready. Cost is:

- \$100 if you only want to test for lead – discounted to \$85 if you join The LEAD Group for \$5 annual membership;
- Add \$10 to the base cost per sample per other metal eg \$120 for lead and arsenic, or
- \$140 for lead, arsenic and nickel analysis of both samples.

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*DISCLAIMER: The views expressed herein are not necessarily the views of the Australian Government, and the Australian Government does not accept responsibility for any information or advice contained herein.*

### **Footnotes for: Eliminating Childhood Lead Toxicity in Australia: A Little is Still Too Much. Macquarie University Lead Forum 5th July 2012.**

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