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

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Leaded Petrol, Lead Poisoning and Violent Crime

Was The Lead Additive in Petrol / Gasoline the Worst Criminal of the 20th Century

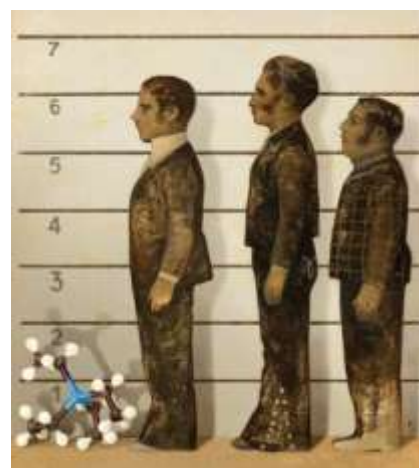
Illustration: Tetra Ethyl Lead TEL – the additive in leaded fuel – in a criminal line-up.

By [Gérard DuBois](#)

Source: **America's Real Criminal Element: Lead**
By Kevin Drum

Mother Jones January/February 2013 Issue

<http://www.motherjones.com/environment/2013/01/lead-crime-link-gasoline>



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Editorial

At the end of 2011 we published the UN estimate that the [global benefits from the phaseout of leaded petrol](#) / gasoline amounted to US\$2.45 trillion/year in improved health / fewer early deaths from lead poisoning,

increased IQ in children (and therefore lifetime earnings) and decreased violent crime. In other words, the use of leaded petrol has cost the world an estimated 4.27% of GDP annually, and continues to disbenefit millions of people in the 6 or 7 countries where it is still sold.



Graphic copyright of [Journal of Environmental Health, December 2011](#), (Volume 74, Number 5, pp. 8-14), a publication of the National Environmental Health Association, US. Reprinted with permission. **Global Benefits From the Phaseout of Leaded Fuel** by Peter L. Tsai, MBA and Thomas H. Hatfield, Dr PH, REHS. Available at http://www.unep.org/transport/pcfv/PDF/Hatfield_Global_Benefits_Unleaded.pdf

At the beginning of 2013 Kevin Drum wrote a stunning and historically important article linking leaded petrol to violent crime in the US, which inspired the question in our newsletter's subtitle: *Was the lead additive in petrol / gasoline, the worst criminal of the 20th century?*

Kevin Drum wrote: "Gasoline lead may explain as much as 90 percent of the rise and fall of violent crime over the past half century" and the cost benefit of lead abatement? Invest US\$20bn annually in lead abatement and the return is US\$210bn annually [in the USA].

The Drum article also is the basis of the first two articles reprinted in this newsletter, by Kevin Drum and George Monbiot, as well as Elizabeth O'Brien's comments on George Monbiot's articles in The Guardian and in the Sydney Morning Herald ("Australia's part in the rise and fall in violent crime globally: questions arising").

And for those of you with an interest in lead that is closer to home, we have a new video link, and have continued the process of publishing our Info Packs, with this edition of the newsletter including info on lead poisoning in pets and poultry, as well as info for shooters.

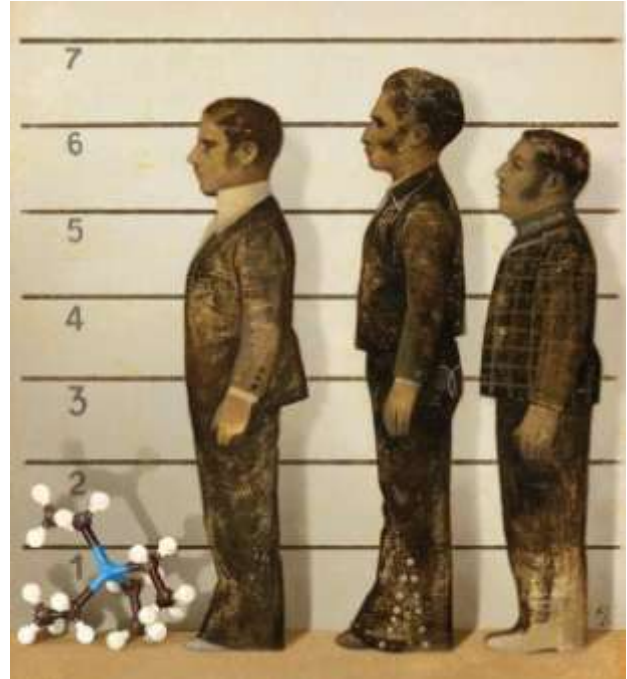
After we finalise the end of leaded petrol globally, and while we continue to assist other countries to ban the addition of lead to all paints and inks (as happened in Australia in 2010, with the exception of artists materials), it has become clear that the next thing we should call on the world to do is eliminate lead primers in ammunition. Keep an eye on that prize in future editions of *LEAD Action News*.

Lead and Crime: A Linkfest

—By Kevin Drum, Mother Jones

[Editors' note: The following series of article links, was originally published at <http://www.motherjones.com/kevin-drum/2013/01/lead-and-crime-linkfest> on Tue Jan. 15, 2013 11:56 AM PST and is reprinted here with kind permission of Mother Jones. If you only follow one of the links in the Linkfest, make sure it's the first one – "[America's Real Criminal Element: Lead. New research finds Pb is the hidden villain behind rampant crime, lower IQs, and even the ADHD epidemic. And fixing the problem is a lot cheaper than doing nothing.](#)"

Illustration: tetra ethyl lead (TEL) $\text{Pb}(\text{CH}_2\text{CH}_3)_4$ - the additive in leaded petrol / leaded gasoline - in a criminal line-up. Reprinted with permission of [Gérard DuBois](#).]



For the past couple of weeks I've been writing updates of various kinds to my article about the link between gasoline lead and violent crime. A reader suggested that I should collect everything in one place for ease of reference, and I thought that sounded like a good idea. So here it is.

[Criminal Element](#). This is the original piece spelling out the detailed evidence that the rise and fall of gasoline lead in the post-World War II era was responsible for the rise of violent crime starting in the 60s and its subsequent decline starting in the 90s.

[The story in a nutshell](#) Provides a brief version of the lead-crime story as an introduction to the full article.

[It's not just lead](#). Emphasizes that lead is a major part of the crime story, but not the only part. Also: audio of my appearance on the Leonard Lopate show explaining the lead-crime connection.

[The prison population is dropping](#). Declining exposure to lead starting in the mid-70s reduced the rate of violent crime 20 years later. Twenty years after that, as members of Generation Lead are being released from prison and aren't being replaced, the prison population has started to drop too.

[Lead and murder](#). We have fairly good data on murder rates going back for a century, and it turns out the United States has had two epidemics of murder, the first in the 20s and 30s and the

second in the 70s and 80s. When you account for both lead paint and gasoline lead, it turns out that lead can explain them both.

[Crime in Chicago.](#) Violent crime is up in certain parts of Chicago. Is lead responsible?

[A response to Deborah Blum.](#) A small correction, and another post emphasizing that although lead is an important part of the crime story, it's not the whole story.

[International crime trends.](#) Violent crime began to drop in the United States in the early 90s, about 20 years after we began reducing the lead content of gasoline. But how about other countries? Where can we expect to see crime drops in the future?

[The Melissa Harris-Perry show.](#) Video of me talking about lead and crime with Melissa Harris-Perry. Howard Mielke, a longtime lead researcher from Tulane University, is also on the show.

[How did lead get into our gasoline in the first place?](#) The whole fascinating story is right here, along with lessons for the future.

[George Monbiot and Scott Firestone.](#) Monbiot endorses the lead-crime theory and Firestone criticizes it. I respond, along with a brief summary of the multiple threads of research that support the lead-crime hypothesis. Followup here.

[Baselines vs. crime waves.](#) Lots of things contribute to baseline levels of crime. But lead is uniquely able to explain why there was such a huge rise of crime *above* the baseline during the 60s, 70s, and 80s, followed by an equally huge reduction back to the baseline in the 90s and aughts.

[Big cities vs. small cities.](#) Surprisingly, it turns out that once you reduce exposure to gasoline lead, big cities aren't really all that much more dangerous than small ones after all.

[A response to Jim Manzi.](#) This is a wonky post responding to Manzi's generic critique of econometric analysis of complex social issues.

[Crime and race.](#) In the postwar era, black children were exposed to much more lead than white children. This explains some of the racial differences in both crime rates and incarceration rates.

The Grime Behind the Crime

January 7, 2013

Could an astonishing explanation for the rise and fall of violent crime be correct?



By George Monbiot, published in the Guardian 8th January 2013.

[Editors' note. Original title: "Violent crime, lead poisoning - British export. Yes, lead poisoning could really be a cause of violent crime: It seems crazy, but the evidence about lead is stacking up. Behind crimes that have destroyed so many lives, is there a much greater crime?" Original URL: <http://www.monbiot.com/2013/01/07/the-grime-behind-the-crime/> - reprinted here with permission. A version of this article, without references, was published as "Violent crime, lead poisoning - British export. Yes, lead poisoning could really be a cause of violent crime: It seems crazy, but the evidence about lead is stacking up. Behind crimes that have destroyed so many lives, is there a much greater crime?" at <http://www.guardian.co.uk/commentisfree/2013/jan/07/violent-crime-lead-poisoning-british-export> and as "Lead poisoning linked to waves of violent crime" at <http://www.smh.com.au/opinion/society-and-culture/lead-poisoning-linked-to-waves-of-violent-crime-20130111-2cl9w.html>]

It seemed, at first, preposterous. The hypothesis was so exotic that I laughed. The rise and fall of violent crime during the second half of the 20th century and first years of the 21st were caused, it proposed, not by changes in policing or imprisonment, single parenthood, recession, crack cocaine or the legalisation of abortion, but mainly by ... lead.

I don't mean bullets. The crime waves that afflicted many parts of the world and then, against all predictions, collapsed, were ascribed, in an article published by Mother Jones last week, to the rise and fall in the use of lead-based paint and leaded petrol([1](#)).

It's ridiculous – until you see the evidence. Studies between cities, states and nations show that the rise and fall in crime follows, with a roughly 20-year lag, the rise and fall in the exposure of infants to trace quantities of lead([2,3,4](#)). But all that gives us is correlation: an association that could be coincidental. The Mother Jones article, based on several scientific papers, claimed causation.

I began by reading the papers. Do they say what the article claims? They do. Then I looked up the citations: the discussion of those papers in the scientific literature. The three whose citations I checked have been mentioned, between them, 301 times([5](#)). I went through all these papers (except the handful in foreign languages), as well as dozens of others. To my astonishment, I could find just one study attacking the thesis([6](#)), and this was sponsored by the Ethyl Corporation, which happens to have been a major manufacturer of the petrol additive tetraethyl lead. I found many

more supporting it. Crazy as this seems, it really does look as if lead poisoning could be the major cause of the rise and fall of violent crime.

The curve is much the same in all the countries these papers have studied. Lead was withdrawn first from paint and then from petrol at different times in different places (beginning in the 1970s in the US in the case of petrol and the 1990s in many parts of Europe), yet, despite these different times and different circumstances, the pattern is the same: violent crime peaks around 20 years after lead pollution peaks(7,8,9). The crime rates in big and small cities in the US, once wildly different, have now converged, also some 20 years after the phase-out(10).



([US Bureau of Justice](#))

Nothing else seems to explain these trends. The researchers have taken great pains to correct for the obvious complicating variables: social, economic and legal factors. One paper found, after 15 variables had been taken into account, a four-fold increase in homicides in US counties with the highest lead pollution(11). Another discovered that lead levels appeared to explain 90% of the difference in rates of aggravated assault between US cities(12).

A study in Cincinnati finds that young people prosecuted for delinquency are four times more likely than the general population to have high levels of lead in their bones(13). A meta-analysis (a study of studies) of 19 papers found no evidence that other factors could explain the correlation between exposure to lead and conduct problems among young people(14).

Is it really so surprising that a highly potent nerve toxin causes behavioural change? The devastating and permanent impacts of even very low levels of lead on IQ have been known for many decades. Behavioural effects were first documented in 1943: infants who had tragically chewed the leaded paint off the railings of their cots were found, years after they had recovered from acute poisoning, to be highly disposed to aggression and violence(15).

Lead poisoning in infancy, even at very low levels, impairs the development of those parts of the brain (the anterior cingulate cortex and prefrontal cortex) which regulate behaviour and mood(16). The effect is stronger in boys than in girls. Lead poisoning is associated with attention deficit disorder(17,18), impulsiveness, aggression and, according to one paper, psychopathy(19). Lead is so toxic that it is unsafe at any level(21,22).

Because they were more likely to live in inner cities, in unrenovated housing whose lead paint was peeling and beside busy roads, African Americans have been subjected to higher average levels of lead poisoning than white Americans. One study, published in 1986, found that 18% of white children but 52% of black children in the US had over 20 milligrammes per decilitre of lead in their blood(23); another that, between 1976 and 1980, black infants were eight times more likely to be carrying the horrendous load of 40mg/dl(24). This, two papers propose, could explain much of the difference in crime rates between black and white Americans(25), and the supposed difference in IQ trumpeted by the book *The Bell Curve*(26).

There is only one remaining manufacturer of tetraethyl lead on earth. It's based in Ellesmere Port in Britain, and it's called Innospec. The product has long been banned from general sale in the UK, but the company admits on its website that it's still selling this poison to other countries(27). Innospec refuses to talk to me, but other reports claim that tetraethyl lead is being exported to Afghanistan, Algeria, Burma, Iraq, North Korea, Sierra Leone and Yemen(28,29), countries afflicted either by chaos or by governments who don't give a damn about their people.

In 2010 the company admitted that, under the name Associated Octel, it had paid millions of dollars in bribes to officials in Iraq and Indonesia to be allowed to continue, at immense profit, selling tetraethyl lead(30). Through an agreement with the British and US courts, Innospec was let off so lightly that Lord Justice Thomas complained that "no such arrangement should be made again."(31) God knows how many lives this firm has ruined.

The UK government tells me that because tetraethyl lead is not on the European list of controlled exports, there is nothing to prevent Innospec from selling to whoever it wants(32). There's a term for this: environmental racism.

If it is true that lead pollution, whose wider impacts have been recognised for decades, has driven the rise and fall of violence, then there lies, behind the crimes that have destroyed so many lives and filled so many prisons, a much greater crime.

www.monbiot.com

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30. <http://www.guardian.co.uk/uk/2010/mar/18/firm-bribes-banned-chemical-tetraethyl>
31. <http://www.guardian.co.uk/business/2010/jun/30/octel-petrol-iraq-lead>
32. I was passed by Defra to the Department for Transport, then by the DfT to the Department for Business, which told me it was all down to the European list. It was clear that none of them were remotely interested in the issue, or had considered it before.
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Comments on “Violent crime, lead poisoning - British export”

by Elizabeth O'Brien, BSc (Sydney), Grad Dip Health Education

re: George Monbiot's article "Violent crime, lead poisoning - British export. Yes, lead poisoning could really be a cause of violent crime: It seems crazy, but the evidence about lead is stacking up. Behind crimes that have destroyed so many lives, is there a much greater crime?" at <http://www.guardian.co.uk/commentisfree/2013/jan/07/violent-crime-lead-poisoning-british-export> - which is itself a commentary on the Kevin Drum article "America's Real Criminal Element: Lead. New research finds Pb is the hidden villain behind rampant crime, lower IQs, and even the ADHD epidemic. And fixing the problem is a lot cheaper than doing nothing." at <http://www.pdfmagazines.org/magazines/other/38569-mother-jones-january-february-2013.html>

[NB: this comment was the 642nd comment on this article, on page 5 of the comments at <http://www.guardian.co.uk/commentisfree/2013/jan/07/violent-crime-lead-poisoning-british-export#start-of-comments>]

Great article George and I do apologise for my fellow-uninformed earthlings for their illogical disparaging comments. As if the rise and rise of colour TV could ever explain the rise and fall of violent crime... Sheesh!

It would be nice if "Lead was withdrawn first from paint and then from petrol at different times in different places" but in fact that is only true in, generally, OECD countries, and only in relation to residential paint, not industrial, marine, auto, etc paint. Two and a half billion people still live in

countries (mainly in Asia, Africa and South America) where lead in paint, even residential paint, is still completely uncontrolled today. Thus, the majority of non-OECD countries have withdrawn lead from petrol but not yet from paint. Indeed, only one country, Australia, has banned the addition of lead to all types of paints and inks (in 2010). According to the latest report of the United Nations, there are still 6 countries where leaded petrol is probably used and if you can believe the US-incorporated UK-manufacturer, Innospec Inc - they do not supply 3 of those countries.

Which begs the question, how can Innospec continue to believe and state online that they are the world's only manufacturer of the petrol lead additive, when they have also declared that they have not sold TEL (the lead additive for petrol) to Afghanistan, North Korea or Burma? [Ref: <http://www.state.gov/e/eb/oecd/usncp/links/rls/183059.htm>] Which supposedly non-existent other TEL-maker HAS supplied those three countries?

Regarding: "Because they were more likely to live in inner cities, in unrenovated housing whose lead paint was peeling and beside busy roads, African Americans have been subjected to higher average levels of lead poisoning than white Americans" - there is a possible fourth reason that black Americans have higher blood lead levels: due to the way they absorb calcium more efficiently than white Americans, they may absorb more of the lead that they ingest or inhale.

Re: "The product has long been banned from general sale in the UK" – although, the "Directive 98/70/EC of the European Parliament and of the Council of 13 October 1998" permits 0.5 % of total vehicle fuel sales to be leaded, as long as it is "distributed through special interest groups". One distributor of the lead additive for fuel, that we've identified, is TetraBoost, a UK company which, according to the Innospec website, could NOT be being supplied TEL by Innospec. Innospec's site states:

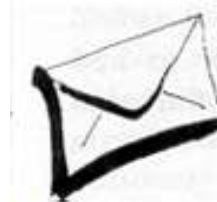
"Innospec do not supply tetra ethyl lead products to the general public or to third parties involved in the production of after-treatment additives for sale to the general public. Furthermore, we do not condone the use of tetra ethyl or lead-based additives for such purposes and explicitly advise against any such use."

Yet any member of the general public can order the TEL additive direct from the TetraBOOST website (the order form does not state you MUST be a member of a car club). So where does TetraBOOST get its TEL from? And why does the government allow TetraBOOST to sell direct to the general public, in violation of the European Directive?

I look forward to your next article on leaded petrol being the declaration of the global elimination of leaded petrol in the next few months. To my knowledge, that would be the first ever complete global elimination of any toxic product – and in my opinion – the most deserving toxic product!

Australia's part in the rise and fall in violent crime globally: questions arising

Unpublished letter to the editor of the Sydney Morning Herald from Elizabeth O'Brien re: "Lead poisoning linked to waves of violent crime"



Elizabeth O'Brien, President, The LEAD Group Inc (charity)

Sir,

Excellent article by George Monbiot. Fully-referenced version on his website, cites a Mother Jones article by Kevin Drum plus an article I co-wrote.

Kevin Drum wrote: "Gasoline lead may explain as much as 90 percent of the rise and fall of violent crime over the past half century" and the cost benefit? Invest US\$20bn annually in lead abatement and the return is US\$210bn annually.

It's a fair bet that most of the lead used in leaded petrol/gasoline globally, at least in the past, was mined in Australia. Australians deserve to know whether we continue to contribute to the crime in 6 or 7 countries of adding lead to petrol.

Questions raised: Could Julia Gillard personally undertake to ensure that Australian lead is not being made into leaded petrol anymore? Will Tanya Plibersek ensure Australia has a functioning XRF bone machine to assess whole-of-life body burden of lead? Will Jason Clare organise blood lead and bone lead research in violent criminals? When will Australian governments start funding lead clean up as an investment in crime prevention?

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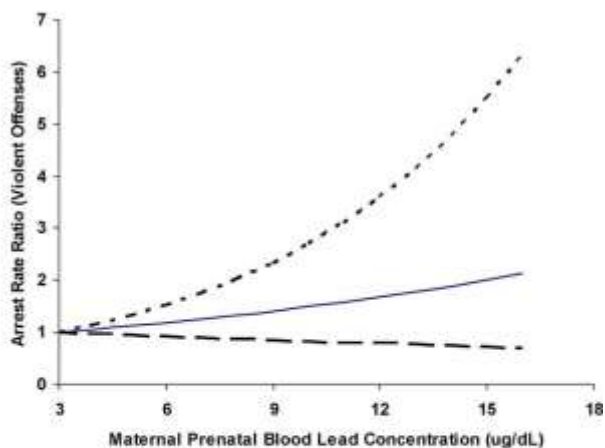
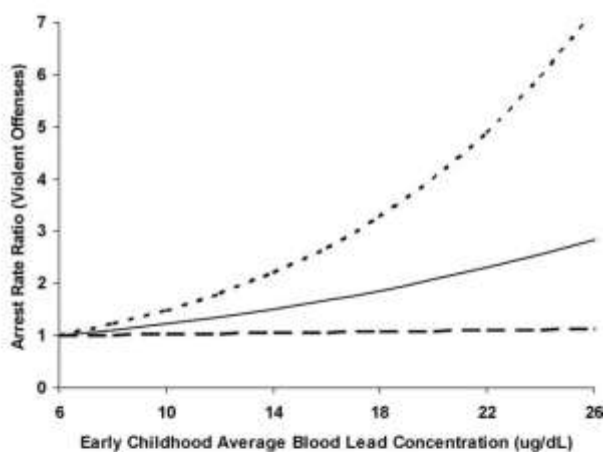
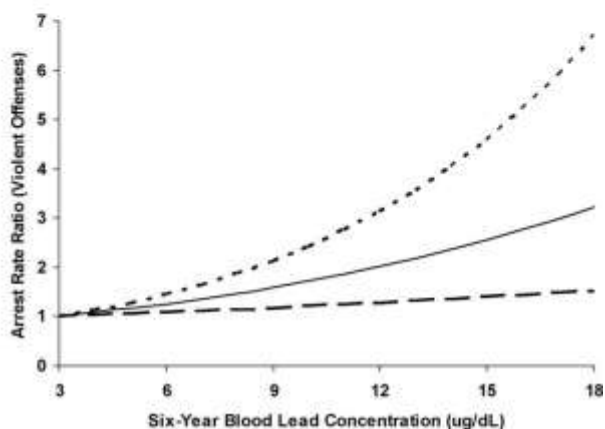
Summer Hill NSW

Lead and violence –strong linkages found prior to 2009

By Robert Taylor, Researcher for The LEAD Group Inc, Edited by Zac Gethin-Damon.

Since Herbert L. Needleman's research on bone lead levels in adjudicated delinquents in 2002 there have been ongoing studies on lead and violent behaviour. Studies have compared lead levels with rates of violence between countries (Nevin 2007) and groups (Stretesky & Lynch 2001, Stretesky & Lynch 2004, Reyes 2007) and established correlations. But the most important studies are of violence within a group, since these are less vulnerable to confounding factors.

In 2008 a team led by John Paul Wright (Wright 2008) studied 250 children from a group with a fairly high arrest rate (66.9% of 125 males and 92.7% of 225 African-Americans) whose blood lead level levels had been tracked from birth to 6.5 years and whose mother's lead levels had been measured during pregnancy. While there was some increase for non-violent crime there was a more significant increase in arrests for violent crimes with rates rising in a predictable manner for every increment above the base with statistical variations apparent at levels above 3µg/dL (less than one third the CDC's level for concern). The results for violence are summarised in the graphs on the following page. There was a stronger correlation with blood lead levels at six years of age (RR (Relative Risk) 1.48 per 5 µg/dl increase) than with average childhood blood lead (RR 1.30 per 5µg/dl increase) and for non violent crime arrests blood lead levels at six years of age were also more important than average childhood blood lead (RR 1.22 to 1.05 per 5 µg/dl increase). Intriguingly the mother's prenatal blood lead level had more impact on the risk of arrest for non-violent crime (RR 1.4 per 5 µg/dl increase) than for violent crime (RR 1.34 per 5 µg/dl increase) and had much stronger links with non-violent crime than the weak, and probably insignificant, correlation with average childhood lead levels (RR 1.05 per 5 µg/dl increase). For violent crime average childhood blood lead also had a higher threshold level (6µg/dl) before effects became apparent than either prenatal or six year old levels (3 µg/dl).

A**B****C**

This appears to indicate that blood lead has significantly different neurological impact at specific stages of development and that aging alone does not reduce this impact. From these results it would appear that blood lead levels of above $3\mu\text{g/dL}$ have significant impacts at key developmental stages on the long term violence related behaviour of exposed children. While these impacts are only part of a larger picture exposure to lead is, to a fair degree, avoidable (Rae 2006 p16, Bellinger 2008). Further research is required to determine the mechanisms involved though the balance of probability lies in lead impact on executive function, specifically its ability to impair inhibitory responses that govern impulse control and reduce the levels of serotonin and dopamine in the brain.

Figure 2. Adjusted Relationship between Blood Lead Concentration and Arrest Rate Ratio For Violent Offenses

Shown are data for maternal prenatal blood lead concentration (A), early childhood average blood lead concentration (B), and 6-year blood lead concentration (C). Rate ratios are plotted as a function of increasing blood lead from the 5th to the 95th percentiles of blood lead relative to participants at the 5th percentile. Dashed lines are 95% confidence intervals.

doi:10.1371/journal.pmed.0050101.g002

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Self-harming behaviours which cause lead poisoning: including swallowing lead pellets or fishing sinkers

By Elizabeth O'Brien, Edited by Zac Gethin-Damon

As the Manager of the Global Lead Advice and Support Service (GLASS), I have learned over the last 22 years that when children (or adults who have pica or a low IQ or self-harming behaviours) handle ammunition, there is a risk that the ammunition will be held in the mouth and / or swallowed.

Since The LEAD Group's information and referral service (call centre and email service) on all aspects of lead poisoning prevention and management began in 1991, several adult male callers and one female from Australia have asked me whether their habit of holding the lead pellets for air rifles in their mouth (usually when they were a child or a teenager), could possibly explain their lifelong or current symptoms of lead poisoning.

One 50 year old NSW man who presumably mis-typed his first name (in his email to me) as "ames", wrote: "when i was 10years of age i was suxing on a mouth full of air rifle lead pellets."

A female caller reported: “7.92 hair lead in air rifle-using man with myelofibrosis (bone marrow disorder) and anaemia.” Did he, like some air rifle users, hold the leaded ammunition in his mouth, ready for re-loading, or because he liked the sweet taste of it? Could he have accidentally or purposefully swallowed a leaded air rifle pellet?

Another male caller reported: “I swallowed an air rifle pellet, plus I renovated, and my sickness remains undiagnosed.”

Another female caller asked: “Does lead cause spina bifida?” She asked because the mother of the child born with spina bifida had sucked air rifle slugs as a teenager. A little while later the same caller emailed a request for information on the treatment of lead poisoning.

The notion that it is not safe to put lead pellets in the mouth for fear of ingesting some of the lead or accidentally swallowing the whole slug is well-known to health professionals, but surprisingly not widely understood, even by professionals in non-medical fields. As an example, an architect who was fully aware of the need to only employ paint contractors with lead paint management training, for paint removal work on heritage buildings, asked me the question: “Is it ok for teenage children to be chewing on lead air rifle pellets?” I answered with an emphatic “No!”

Case study of self-harming behaviours involving lead poisoning

One 22 year old male caller was advised by a doctor from The LEAD Group’s Technical Advisory Board, to contact our telephone advice service in 2003. The caller may well have had a mental illness but he only reported to me that since he was 18 years old, he had blood lead levels which varied between the exceptionally high level of 82 micrograms per decilitre ($\mu\text{g}/\text{dL}$) four years ago, and 75.9 $\mu\text{g}/\text{dL}$ a few months before the call, down to his current level of 28 $\mu\text{g}/\text{dL}$ (the goal in Australia since 1993 for non occupationally exposed individuals is to have a blood lead level below 10 $\mu\text{g}/\text{dL}$). He told me that because he had been aggressive towards hospital staff, he was not permitted to return to one of his local hospitals. That’s why he had contacted the doctor who had advised him to call me. I spent a very long time during the call asking him about every conceivable source of lead to which he might have been exposed. Included in his answers was that he has never put metal objects in his mouth but that he suspected that there's an ongoing source (perhaps the waste treatment plant 3-4 kms away or the fact that he smoked about 10 cigarettes per day) and an intermittent source of lead. He also reported that his cadmium level was slightly elevated and he was told that that was probably due to the smoking.

He said he was put on dexamphetamines as a child for learning difficulties, and that after he went completely whacko, his girlfriend would no longer talk to him. He said his parents were away overseas at the time of the phone call so I immediately sent him an email offering to ask the doctor from The LEAD Group’s Technical Advisory Board to intercede and request that the state health department come to his home to assess where his lead might be coming from. I also asked him to ask his parents when they returned, whether he had had pica as a child, in other words, whether he might have eaten lead contaminated soil among other things. He also described how he goes days and days without eating, then eats a large amount of Hungry Jacks or McDonald’s.

Two months later, after his mother arrived back from overseas, I phoned her and she said that she believes her son “has some form of epilepsy and he tries to lead poison himself - he has periods of up to 9 hours when he doesn't know what he's doing. He has also burnt himself really badly in

other epileptic turns. Apart from the lead stuff he hasn't tried to harm himself for two years." When he got lead poisoned she went through his bedroom and found lead fishing sinkers there and she knows he got some lead fishing sinkers at his last workplace. He will not agree to psychological counselling and most of what she knows about him is second-hand. It could be that he doesn't actually remember that he ingested a fishing sinker if he did. Now that she is home she makes sure that there is nutritious food available for him.

Her daughter said the hospital wanted to run some tests to determine where the lead was coming from and her son chucked a fit and the hospital would not treat him, only because he refused to be tested.

When I was also contacted by his doctor, the doctor expressed his opinion that his patient may have purposefully ingested metallic lead, as a form of self-harming behaviour.

The message to take from this article is that lead's potential as a tool for self-harm needs to be recognised. Recognising that lead can be used to self harm is particularly vital for those who are in a position to become aware of its health and behavioural impacts; i.e. doctors and medical professionals. If blood lead tests were part of the annual health check up for everyone, then these checks would bring to attention cases where lead is used to self-harm, (as well as cases where lead exposure from earlier in life is coming out of the bone stores and raising blood pressure, slowing reaction times and generally causing health problems which are not often correctly diagnosed as being caused by lead poisoning. Incorporating blood-lead tests would also outline the current prevalence of self-harm with lead and therefore allow for properly targeted preventive educational remedies for such behaviour.

Quotable Quote

[Editors' note: Although the following ideas were probably never intended to be applied to the serious detrimental consequences of adding lead to petrol, you'll see why we think the quote is apt for this edition of the newsletter, when you read it.]

"As microbiologist and author Rene Dubos noted in his 1968 Pulitzer Prize-winning book *So Human an animal...* many of the "diseases of civilization" - crime, violence, and stress, to name a few - are the result of responses to environmental factors. Humans **seem** to have adjusted to the modern environment, but, in fact, they are experiencing seriously detrimental consequences."

Ref: *PAIN FREE: A REVOLUTIONARY METHOD FOR STOPPING CHRONIC PAIN*, by Pete Egoscue with Roger Gittines, Bantam Books, page 12, paperback edition, March 2000.

The Hour of Lead

By Deborah Blum

Posted: September 27, 2010

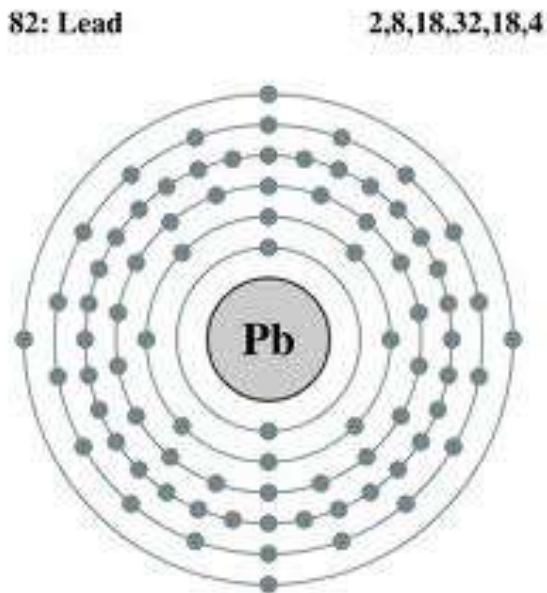
[at: <http://blogs.plos.org/speakeasyscience/2010/09/27/the-hour-of-lead/> - reprinted with kind permission of Deborah Blum, a Pulitzer-prize winning science writer and a professor of journalism at the University of Wisconsin.]



*This is the Hour of Lead-
Remembered, if outlived,
As Freezing persons, recollect the Snow-
First – Chill – then Stupor – then the letting go –*

When 19th century poet Emily Dickinson wrote those lines, she was describing the terrible paralysis of grief. A good century later, analysts for the Environmental Defense Fund, would also note that the last line “aptly describes some of the symptoms of lead intoxication.”

I’ve always suspected that they also just liked the poem and wanted to use it – certainly that’s partly my motive here. But I’ve also been thinking about one phrase in Dickinson’s verse because it seems to me, recently, that as a human society we seemed perpetually caught – by which I mean poisoned – in an endless” hour of lead.”



The chemical symbol for lead is Pb, from the Latin word “plumbum” which referred to a malleable metal. The term plumbing comes from the use of lead pipes by the Romans; a plumber fixes them, a plumb bob refers to a lead weight, a plumb line is pulled straight by such a weight. An old-fashioned term for lead poisoning is plumbism. We are surrounded by references to what is arguably the most important poison in human history.

Many scholars have argued, for instance, that the plumbum-loving Roman empire – enthusiastically using lead pipes, bottles, and wine cups, leaded cosmetics and paint – came to its end partly due to lead-poisoning of its upper classes. One U.S. Environmental Protection Agency paper on the history of lead poisoning,

cites “the conspicuous pattern of mental incompetence that came to be synonymous with the Roman elite” as evidence of lead’s destructive effects.

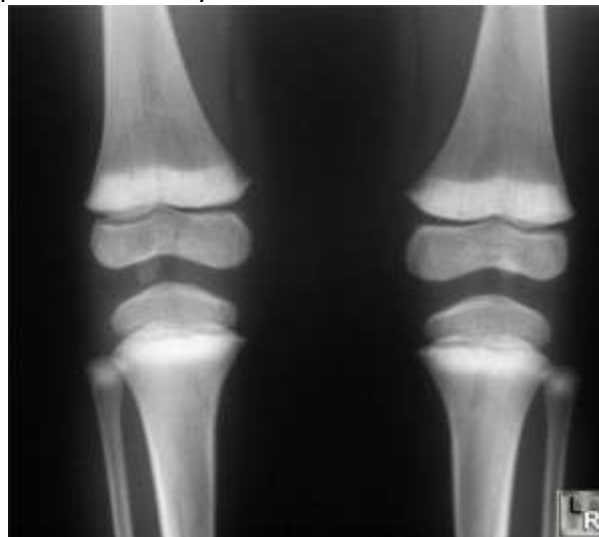
Interestingly, the EPA paper also cites poetry to illustrate the evils of lead poisoning, a scrap of anonymous verse, attributed to a Roman hermit and translated in 1829: *The feeble offspring curse their crazy sires, And, tainted from his birth, the youth expires.*

The key points there being, of course, crazy sires and dead children. “No safe blood lead level has been identified,” notes a U.S. Centers for Disease Control and Prevention (CDC) backgrounder on exposure risks. Lead is a broad spectrum poison - it interferes with enzyme production, especially enzymes needed by red blood cells, and is known to cause lethal anemias. It targets neurons, disrupting the production of neurotransmitters such as glutamate (which plays a key role in learning by enhancing plasticity). It deposits itself into bones and stays there – the half-life of lead in human bones is up to 30 years. Muscle weakness, numbness and tingling, nausea, severe stomach pain, depression, fatigue, sleeplessness, loss of libido – all are symptoms of lead poisoning and all speak to its ability to impact every part of the body.

Lead banding (deposits) in leg bones

The Romans weren't the only major civilization from our past to be affected by lead poisoning. This summer, environmental scientists in Japan reported the results of an investigation into lead exposure in the Edo period, which lasted from 1603 to 1867, a time when the country was dominated by shogun leaders, and laws enforced by an aristocratic class of samurai warriors.

According to Tamiji Nakashima, an anatomist at the University of Occupational and Environmental Health in Kitakyushu, the investigators studied the remains of samurai men, their wives and children, about 70 in total. Earlier tests had found unusually high levels in the women compared to men; the last study looked at the children. The researchers tested for lead in rib bones, x-rayed the childrens' arm and leg bones looking for signs of lead poisoning.



The Japanese scientists had already concluded that the lead levels in women were directly related to the white face paint popular in aristocratic circles, which turned out to be loaded with lead. They wondered if exposure to the same material might have harmed the children and the new results showed them precisely right; they found evidence of lead levels more than 120 times background level as well as bands of lead deposits in the bones.

Nakashima and his colleagues believe that the children were poisoned by touch, as they were fed, hugged, carried by their mothers, the lead-rich paint rubbed off on them. They also speculate that the gradual lead-poisoning – with its inevitable taint of death and disability – helped put an end to the shogunate reign in the late 19th century, setting up the transfer of power to an emperor.

It has only been in the last century, of course, that we've realized just how dangerous lead actually is. That knowledge has resulted from the new ability of scientists to detect it in very tiny amounts and to connect those trace exposures with health problems. In the dawn of lead awareness, governments have banned lead paint and leaded gasoline, moved to replace lead pipes in water systems, squeezed down allowable lead levels in consumer products.

Is this a smart response? Yes, obviously, if we are talking about poison unsafe at all levels. But only if said governments are actively – and honestly – trying to enforcement protective standards. For instance, as reported this spring by *The Washington Post*, when inspections discovered massive lead contamination from pipes in Washington D.C. in 2004, the Bush administration not only issued misleading reassurances but moved to loosen protective measures designed to protect against lead poisoning.

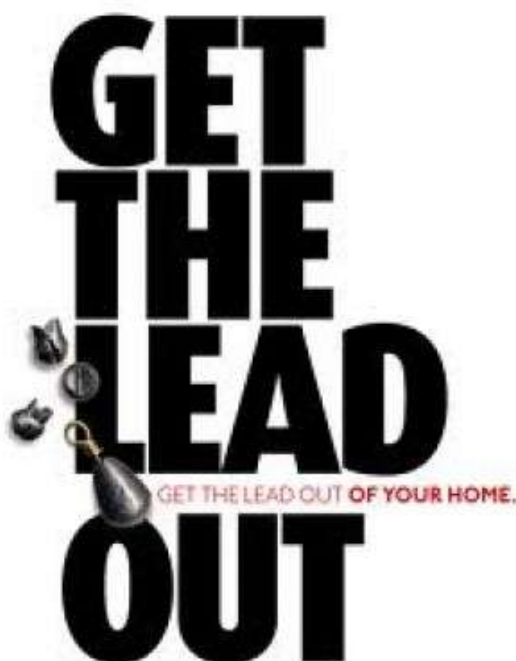


Or consider last year's discovery of lead in popular lipstick brands sold in the United States. Although some of these products showed clear lead contamination in amounts above EPA safety levels – and although women inevitably swallow some lipstick – the U.S. Food and Drug Administration declared that the lipsticks were perfectly safe. And, in fact, they may pose no serious risk. But the FDA has also refused to release the full details of its study and the result has been an exasperated consumer movement, The Campaign for Safe Cosmetics.

Finally, just today a coalition of five environmental groups filed a petition with the EPA, trying to force the agency to regulate the use of lead shot in hunting, which advocates say is now killing more than 10 million birds and animals every year, mostly due to consumption of spent lead pellets. contaminated by lead.

"It's long past time do something about this deadly – and preventable – epidemic of lead poisoning in the wild," said Jeff Miller, conservation advocate for the Center for Biological Diversity. The government does ban the use of lead pellets in shooting waterfowl but conservationists say this barely touches the problem. Still, the EPA has been notably reluctant to take an this issue angrily opposed by hunting groups, who are already describing the petition as an attack on traditional hunting values.

This is not to suggest that lead problems – or even the worst lead problems – are concentrated in the United States. Last year, more than 1,300 children were sickened in China by lead exposure from nearby smelting plants, leading to furious protests from their parents against government cover-ups.



This year, the real lead horror story has come from Nigeria, where health experts now believe that some 18,000 people have been poisoned – and more than 200 children have died – as a result of lead exposure related to gold mining. The Chinese smelters were working with manganese ore, the Nigerians were not seeking to find lead, but many ores, as we know to our cost, are far from pure.

The eternal hour of lead, as I see it, is created by our decisions – we began by using lead before we understood its risks (or really had full ability to) and we've kept it close at hand ever since – accidentally, carelessly, stubbornly. But to misquote Emily Dickson, perhaps we've not yet finished our lead stupor, perhaps eventually we'll reach the point where we can let it go.

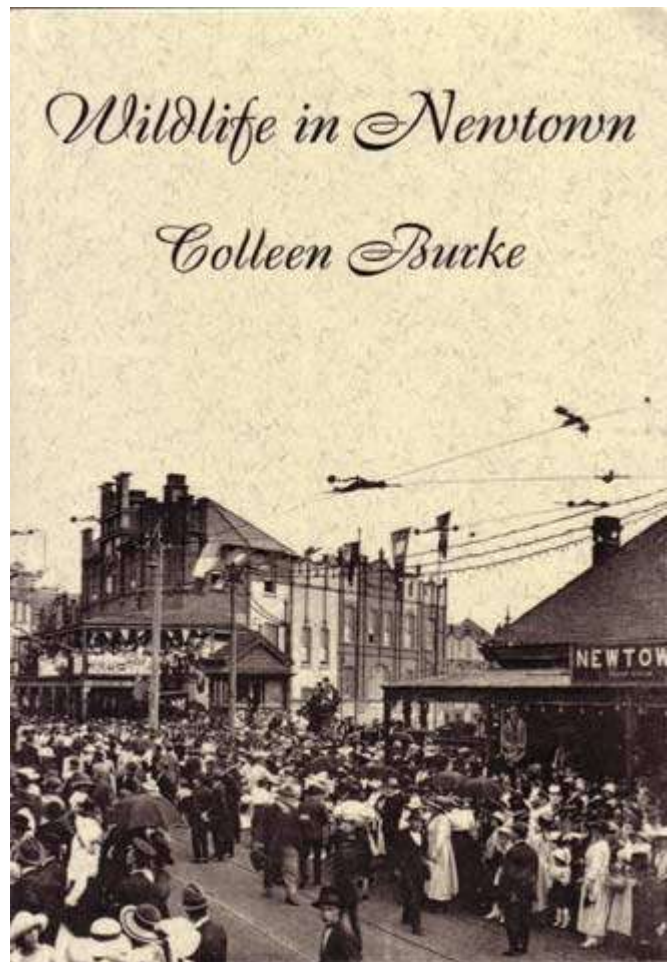
Lead in Literature - Poem: In Newtown



By Colleen Z Burke.

The copyright remains with Colleen Z Burke. Reprinted with kind permission. **In Newtown** was published in Colleen's poetry collection **Wildlife in Newtown** (Feakle Press, 1994). See Colleen's full list of published poems at <http://colleenzburke.blogspot.com.au/> and then click [publications](#) - her books can be purchased at [Better Read Than Dead](#), Newtown and [Gleebooks](#).

In Newtown
there is lead
in the petrol
there is lead
in the air
in Newtown
there is lead
in the air there is
lead everywhere
in Newtown there
is lead in the brain
and blood of my child
in Newtown.



Letter from the ex-President of Switzerland

Confederation Suisse
Confederazione Svizzera
Confederaziun svizra
Swiss Confederation
CH-3003 Bern, EDA, MCR

The President of the Swiss Confederation



A Post

TO:

The LEAD Group Inc.
Mrs Elizabeth O'Brien
PO Box 161, Summer Hill 2130 NSW
Australia
Berne, 25 July 2011

Dear Mrs O'Brien,

Thank you for your letter of 28 June 2011 regarding the Swiss companies Xstrata and Alcor and their activities linked with addition of lead into gasoline. I can assure you that the protection of the environment and of human health on a global scale from the unsound use of dangerous chemicals lies at the very heart of Swiss international environmental policy.

Switzerland is committed to the OECD Guidelines for Multinational Enterprises. Your letter will therefore be forwarded to the Swiss National Contact Point (NCP) for information. The NCP is responsible to raise awareness of the OECD Guidelines, to promote the implementation and be available to advise in case of questions as well as queries. The NCP can also act as informal mediator. In Switzerland, the NCP is located at the State Secretariat for Economic Affairs (SECO) at the International Investment and Multinational Enterprises unit.

Heavy metals cause a problem of global concern for human health and the environment and thus need to be addressed at global level. In this regard, most recently, Switzerland was one of the driving forces to start an intergovernmental negotiations process for a legally binding instrument on mercury, a heavy metal posing severe risks to human health. In addition, Switzerland welcomes the continued activities undertaken by the United Nations Environment Programme regarding other heavy metals, in particular lead and cadmium. Moreover Switzerland also suggests to launch a process through which possible options are developed how to tackle the challenges caused by lead and cadmium at international but as well regional and national level.

Yours sincerely,

Micheline Calmy-Rey

Federal Palace West, CH-3003 Berne

Say Not the Struggle Naught Avaieth

By Arthur Hugh Clough (1819-1861)

[Editors' note: when one of the Editorial Team was despairing of the fact that The LEAD Group has worked strenuously with other Partners of the UNEP Partnership for Cleaner Fuels and Vehicles since 2002, to eliminate leaded petrol globally (by 2008!!) yet in 2013 there are still 6 or 7 countries where leaded petrol is still sold – our past Editor Anne Roberts, recited this poem, which gave some comfort to the Team.]

SAY not the struggle naught avaieth,
The labour and the wounds are vain,
The enemy faints not, nor faileth,
And as things have been they remain.

If hopes were dupes, fears may be liars;
It may be, in yon smoke conceal'd,
Your comrades chase e'en now the fliers,
And, but for you, possess the field.

For while the tired waves, vainly breaking,
Seem here no painful inch to gain,
Far back, through creeks and inlets making,
Comes silent, flooding in, the main.

And not by eastern windows only,
When daylight comes, comes in the light;
In front the sun climbs slow, how slowly!
But westward, look, the land is bright!

Latest Video on Lead Paint from our colleagues at the National Painting and Decorating Institute (NPDI)

Nigel Gorman at Aussie Painters Network has drawn the attention of painters Australia-wide to an important video that's been put together by the National Painting and Decorating Institute, providing a comprehensive overview of the ongoing problem of Lead Poisoning, predominantly from paint in older homes. It features experts in the field – Elizabeth O'Brien and Professor Mark Taylor of The LEAD Group - discussing this entirely preventable, but persisting issue which often devastates the smallest, most vulnerable of our communities; our children.

Aussie Painters Network strives to create awareness of this issue in the community, and would now like to put together a database of painters who specialise in undertaking professional, Lead Abatement procedures. Nigel Gorman hopes that direct access to those providing this service for the consumer will assist in preventing further contamination of our families and our environment. [There are lists of lead trained painters – one of which has been updated recently (the ACT list only) - at http://www.lead.org.au/referral_lists.html]

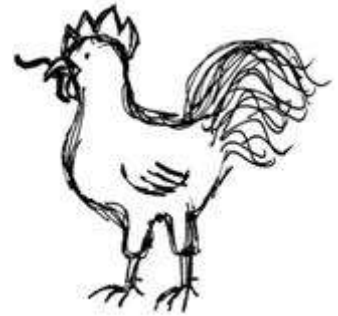
There are three ways to see the video:

http://www.youtube.com/watch?feature=player_embedded&v=DI5FaqiDp7Y - TOP VIDEO AT <http://www.painters.edu.au/Training-Resources/Lead-Paint.htm> ; ALSO ACCESSIBLE FROM <http://www.leadpaintinformation.com/>

Info Pack - Lead Poisoned Pets, Poultry and Your Family

Collated by Elizabeth O'Brien, BSc (Sydney), Grad Dip Health Education.

Chook illustration by Rose Lennon.

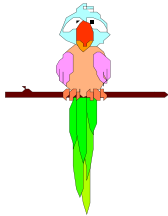


Please check out the following references on lead and pets and poultry:

Tamara Rubin, Portland Tribune 26 March 2009 "Chickens eating lead not so 'sustainable': POST SCRIPT - Urban chicken advocates need to care about what they're consuming" no longer available at http://thevig.portlandtribune.com/opinion/story.php?story_id=123801660877902600;

["High Lead Found in City-Sourced Eggs \[in the USA\]"](#) By JULIE SCELFO The New York Times
Published: October 8, 2012

The LEAD Group fact sheet "["Lead Poisoned Pets And Your Family"](#)" contains some useful tips on keeping cats, dogs and birds safe from lead and states:



"Lead poisoning of birds is common and it is often fatal... Lead poisoning can cause sudden death, or it can cause a slow debilitating death over months or years."

If a pet has already been diagnosed as lead poisoned via a blood lead test, then we recommend blood lead testing for everyone in the family as well as testing their soil and any other possible lead source for the pet, such as paint, galvanized metal eg wire or galvanized corrugated iron, water, bedding materials, compost, soil conditioners, mulches, etc. All these potential lead sources can be tested using a [LEAD Group DIY-Sampling Laboratory Lead Analysis Kit](#) Purchasable only from The LEAD Group and the samples will be analysed for lead at a NATA-accredited laboratory which is included in the kit price, The LEAD Group writes an interpretation of the results, with recommendations on what to do about them! If you are planning to get a young cat or dog or keep chickens for their eggs, we recommend you test every possible lead source they will have access to, before bringing them in to your yard. This should definitely include a lead test on the soil where they will bury bones, or roll in or dust-bathe in (as is their wont).



Young pets often chew on things and chooks need rocks in their crop to digest the grain so pick up any leaded items that might be lying around, for example, lead-painted objects, galvanised objects, dross from melting of lead batteries, fishing sinkers, bullets, lead washers, lead-headed nails (often used on roofs and discarded in the yard if the roof was replaced or repaired at any point), pieces of lead flashing, lead nuggets from the burning of e-waste, vehicles, buildings, etc.

Unfortunately, there are no Australian guidelines for the lead limit in soil to safely keep poultry or pets safe. The Health-based investigation level of 300 mg/kg for lead in soil in the "standard" residential exposure setting clearly relates only to:

“Residential with gardens/accessible soil (home-grown produce contributing <10% fruit and vegetable intake; no poultry), including children’s day-care centres, pre-schools and primary schools or town houses or villas.”

There are no lead limits given for either:

“Residential with substantial vegetable garden (contributing 10% or more of vegetable and fruit intake) and/or poultry providing any egg or poultry intake”; or

“Residential with substantial vegetable garden (contributing 10% or more of vegetable and fruit intake); poultry excluded.”

[Ref: page 7 “Exposure Settings” and page 8 Table 1 of "[Health-based Soil Investigation Levels](#)” (3rd edition) by enHealth, Commonwealth of Australia, 2001.]

The following lead limits have been extracted from “Environmental Guidelines for the Australian Egg Industry” - A report for the Australian Egg Corporation Limited (AECL) - As part of the DAFF EMS Pathways to Sustainable Agriculture Program, June 2008

TABLE 9 - LIMITS FOR CONTAMINANTS IN COMPOST, SOIL CONDITIONERS AND MULCHES FOR UNRESTRICTED USE (MG/KG)

Contaminant: Lead
ARMCANZ – 200
NSW EPA - 150
VIC EPA - 150

References:

ARMCANZ: Australian Guidelines for Sewerage Systems-Biosolids Management (1995)

NSW EPA: Environmental Guidelines for Use and Disposal of Biosolids

VIC EPA: Environmental Guidelines for Composting and Other Organic Facilities

So you’d be wise to ask the supplier of any purchased soil, bedding materials, compost, soil conditioners or mulches for an analysis report including lead analysis.

All the best with your pets and poultry.

Info Pack - Lead contamination and lead exposure at shooting ranges

Collated by Elizabeth O'Brien, BSc (Sydney), Grad Dip Health Education

Our website contains the first three articles in our info pack regarding shooting ranges:

1. "[Editorial - Unsafe Work Practices and Lead](#)";
2. "[Gun Instructors Exposed To Lead](#)"; and
3. "[The Green Machine video](#)"

Other useful articles are:

4. "[A Manageable Hazard - Aiming for Lower Lead Exposure: Shooting and Exposure to Lead](#)"
5. "[Discovery Bay shot with lead? Resident's complaint lures EPA to site of shooting range](#)" By Evan Cael, Peninsula Daily News. Last modified: September 18. 2007 9:00PM
6. "[INDOOR FIRING RANGES INDUSTRIAL HYGIENE TECHNICAL GUIDE: Technical Manual NEHC](#) (US Navy Environmental Health Center) TM6290.99-10 Rev.1 (May 2002)" FROM [This guide has some good ideas eg recommends painting of porous floors in the range for ease of cleaning, but does not sufficiently emphasize the importance of biological monitoring (blood lead testing for lead exposure, urine lead testing for lead styphnate exposure), but wrongly states that lead does not penetrate the skin.]
7. "[NIOSH Alert - Preventing Occupational Exposures to Lead and Noise at Indoor Firing Ranges](#)"

Info Pack - QLD - lead-safety at shooting ranges

Collated by Elizabeth O'Brien, BSc (Sydney), Grad Dip Health Education

According to Australian researchers Gulson et al (2002) ["Changes in blood lead of a recreational shooter" - full article available for purchase for US\$41.95 at <http://www.sciencedirect.com/science/article/pii/S0048969702000037> ; abstract at <http://www.ncbi.nlm.nih.gov/pubmed/12109468>:

"Although more expensive, the use of Cu-jacketed bullets, non-lead primers and well-ventilated indoor firing ranges would lessen the health impacts of recreational shooting."

I searched for "lead free" on the Queensland Gun Exchange website and got quite a few results - http://www.qldgunexchange.com/QGEWeb/product_search.seam?cid=430729 - although my searches for copper-jacket, Cu-jacket and non-lead primer were fruitless, so I hope you will phone them on (07)33930933 and let me know what they supply that is recommended for reducing lead exposure of the shooter.

I couldn't find lead-free, non-lead primer or copper on Cleaver Firearms site <http://www.cleaverfirearms.com/> although the photos of some ammunition look like they might be copper-jacketed, so you would have to phone them too, on (07)38831733, and please let me know what they say.

The dust on the concrete floor and indoor hard surfaces in your firing range can be tested for lead at a lab (whereas the Lead Check kits by 3M available at good hardware stores are only sensitive enough to test for lead in paint - and they're only colour-change kits, so you end up not knowing HOW MUCH lead is in the paint, just a general idea of whether there's SOME lead in the paint).

The LEAD Group charity has set up a DIY-Sampling kit where you collect the samples and post them to a lab for lead analysis - which gives you the exact amount of lead in dust wipes and/or paint (and/or soil or water or jewellery etc) PLUS an interpretation report to tell you what the results mean in terms of lead-safety for your child, as well as recommendations on what to do about the results, tailored to your situation.

You can phone to order a kit or fill in the form on our website, accessible from http://www.lead.org.au/clp/products/Do_It_Yourself_Lead_Safe_Test_Kits_Ad.html

If you test the dust (using the dust wipes which come in the above kit) you'll know for sure whether your shooting range cleaning protocol is adequate, but the general rule is that lead dust should never be accessible to children.

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