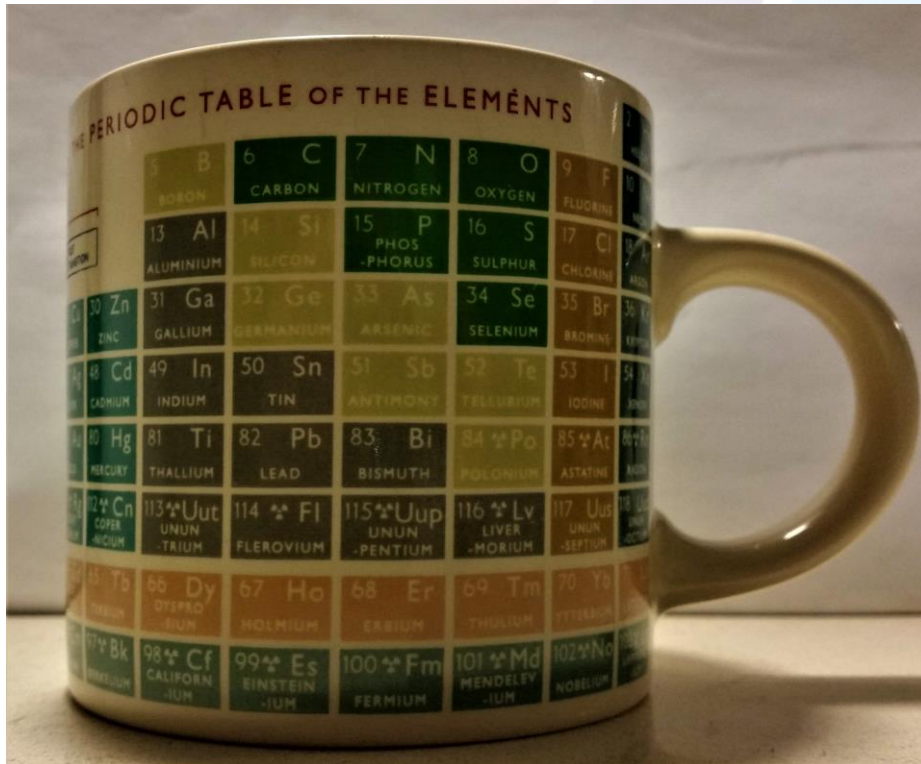




What I Have Learned About Lead - Part 1 Plumbophobia

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Is there lead in this?



Introduction

Apparently “plumbophobia” is not etymologically correct being a mix of Greek and Latin roots, but will serve well enough in English, except that, “phobia” means an irrational fear. I would say that it is not irrational to fear lead. What do you think?

My lead story starts, about six years ago, when we moved into a house built in the 1920s. The house has lots of lead – on the woodwork, on the windows, on the roof, on the walls (inside and out). About five years ago I found out about lead. I found out that the DIY renovation and decorating that I had been doing was really dangerous. I had known that burning old lead paint was not safe, but I was not aware about the risks of sanding and scraping. The resulting shock would commonly be described as a nervous breakdown including medication, counselling - and reading, reading, reading; testing, testing, testing; cleaning, cleaning, cleaning.

My counsellor challenged my anxiety by saying “If you believe lead is so dangerous, then why are you not telling others”. She was trying to lead me down a path of thinking it is not so bad, but my response was to reach out to others – initially on Facebook, then The LEAD Group and also Public Health England (PHE). I am now a member of the steering committee of the Lead Exposure In Children Surveillance System ([LEICSS](#)). However, this work is currently suspended because the PHE staff involved are re-deployed to work on the coronavirus crisis.

Fear of Fighting Lead

I will call this “plumboanthropophobia”. That is, fear of people who use lead.

It looked like campaigning for lead poisoning prevention (LPP) was not a one way street. It appeared that some users of lead, business or individuals, feel threatened. It is understandable when it seems that they may be sued or their business significantly curtailed. It was reported that these parties were engaged in harassment and persecution of LPP campaigners resulting in considerable anxiety and financial loss. The most notable case is that of Tamara Rubin who, as the result of an anonymous accusation made shortly after appearing on a stage with Bernie Sanders to talk about the Flint crisis, was arrested and charged with benefit fraud. She has since been acquitted of the charges and is now taking the county to court for recompense. She continues to campaign fearlessly for LPP as do others who have reported harassment.

I use the ‘Justone Lead-Soldier’ alias (justone.leadsoldier@gmail.com) some of the time for public domain campaigning and avoid using my full name where I can. I am prepared, perhaps naively, to let government agencies know who I am.

I do not want to be a martyr to this cause. So, if you are a lead user and do not like what I am doing for LPP then just let me know and I will stop. I do not believe it is helpful to seek to blame, or hold responsible, any individual or organisation for lead exposure. Everyone has benefited from the use of lead so there should be collective responsibility for resolving the consequential health issues. This is best addressed through government agencies.

I like this quote:

“Let us not seek to fix the blame for the past. Let us accept our own responsibility for the future” John F Kennedy



Fighting the Fear of Lead

It is said that, at an atomic level, everything is everywhere. Apparently, every child in the UK has plutonium in their teeth ([The Guardian, 2003](#)). The same goes for lead. It is often said that there is no safe level of lead exposure ([CDC, 2019](#)). I think, more accurately, there is no known safe threshold. There can, however, be a nebulous level where the damage caused by lead is no worse than some other risks and a level where the risk is considered acceptable. This is inevitably subjective, but is approximately the level at which possible mitigations to prevent lead exposure, or treat the results, are less acceptable than the risk from lead itself. For some people, this level is lower than for others. For example, the woman who would not bathe her baby because she believed there was too much lead in the water. We can be fairly certain that there was lead in the water, because everything is everywhere, but many would say that the risk from it is not worth keeping a baby unwashed.

The fear of lead can even have worse psychological consequences than the physical damage caused by lead itself. There is a private group on Facebook called 'Support For OCD (contaminants and toxins)' where this is played out, in pain.

These are some examples:

Microfibre Towels

Who would have thought that microfiber towels could contain lead. An online retailer selling [Knuckle Buster bar towels](#) includes a Prop 65 warning in its listing. (Proposition 65 requires businesses to provide warnings to Californians about significant exposures to chemicals that cause cancer, birth defects or other reproductive harm.)

Attention CA Residents ×

 **WARNING:** This product can expose you to chemicals including lead, which are known to the State of California to cause cancer, birth defects, or other reproductive harm. For more information, go to www.p65warnings.ca.gov.

[Print this Message](#)

The person who posted this said that finding this sent them into a panic. The towels probably do not contain lead, and it is just a legal protection for the seller, but it is enough to cause considerable anxiety.



Lead Dust

Another contributor was concerned that the old paint on this building near them could be distributing lead dust in their direction.

They said they were freaking out whenever they encountered lead paint. Could that old building really cause a health problem at that distance? Why not?

Overpainted Lead Paint

Someone else was worried that previous owners had painted over flaky lead paint. This sent them back into OCD after having started to manage it.



The Effects of Plumbophobia

The point being that, as lead poisoning prevention advocates, we have to realise that simply warning people about lead is not good enough. We have to assess whether there really is a risk to physical health before we tell people there is lead in something and therefore imply it is dangerous. It is not whether lead is in something that matters, but whether it comes out or comes off the surface. Lead that stays where it is, is safe. For example, the battery in your car.

I call it the whisper and scream. To get some people to listen you have to scream at them, but others would hear the whisper and be terrified by the scream. There is a risk that we cause more harm from the resultant anxiety than from the lead exposure itself.

An article in Medical News Today, [Leonard, 2018](#), summarises the effects of anxiety on the body. These include respiratory, cardiovascular, immune, digestive, urinary and psychological problems – some of which can also be attributed to lead toxicity.

This diagram from [Jaime Butler, 2018](#), illustrates the effects of anxiety:



HOW **STRESS** & **ANXIETY** AFFECTS YOUR BODY

BRAIN

Difficulty concentrating, anxiety, depression, irritability, mood, mind fog

CARDIOVASCULAR

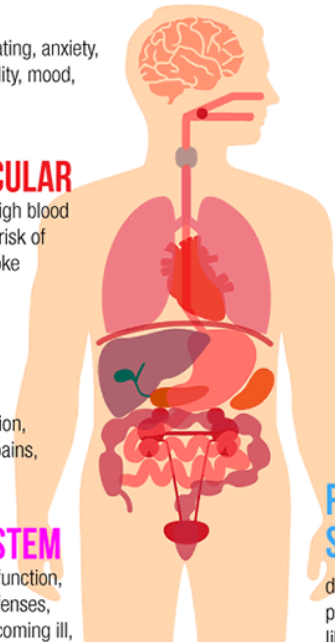
higher cholesterol, high blood pressure, increased risk of heart attack and stroke

JOINTS AND MUSCLES

increased inflammation, tension, aches and pains, muscle tightness

IMMUNE SYSTEM

decreased immune function, lowered immune defenses, increased risk of becoming ill, increase in recovery time



SKIN

hair loss, dull/brittle hair, brittle nails, dry skin, acne, delayed tissue repair

GUT

nutrient absorption, diarrhea, constipation, indigestion, bloating, pain and discomfort

REPRODUCTIVE SYSTEM

decreased hormone production, decrease in libido, increase in PMS symptoms

It is crazy to anthropomorphise an element, but it sometimes seems like lead has ways to get at us even when it is not actually present in our environment at dangerous levels.



Lead v. COVID-19

The world has reacted like never before in response to the COVID-19 pandemic including restricting civil liberties and sending economies crashing. The toll on lives is, of course, terrible, but how does this compare to the impacts of lead and why don't people and governments react with the same fear? I remain more fearful of lead than coronavirus.

Here is a comparison:

Factor	Lead	COVID-19	Comment
Can multiply	No	Yes	Coronavirus spreads by turning our cells into virus factories and make us cough to distribute them. (Discover Magazine, 2020)
Keeps coming back	Yes	Maybe	Lead can keep coming back in dangerous amounts from the same source. (WebMD, 2020) The WHO currently say that there is no evidence of post-infection immunity (WHO, 2020), but that is normally the case, for a while, with coronaviruses (NPR, 2020).
Is it infectious	No	Yes	Lead can be carried on clothing (Rinsky et al, 2016), but does not have a method of biological transmission from one person to another.
Indestructible	Yes	No	Some lead compounds are less bioavailable (Scheckel et al, 2013), but the lead does not go back in the mine. Coronaviruses cannot survive long outside the body (Live Science, 2020).
Persists in the environment	Yes	No	Lead in soil never goes away (University of Maryland, 2018). Coronaviruses dry out and lose function (Live Science, 2020).
Commonplace	Yes	No	At least in the UK, lead is constantly visible in the built environment. Around 1 in 400 people in the UK currently have the COVID-19 infection (BBC 2020).
Age most impacted	Young	Old	Lead toxicity can occur in utero and last a whole life time. (Wu et al, 2017)
Health level most impacted	Anyone	Existing health conditions	Risk factors for lead toxicity do not include health level (Mayo Clinic) COVID-19 is most dangerous to those already living with some other diseases (BMJ, 2020).
Years impacted*	17,000m	840m	Lead – over-exposed = 240m ; life expectancy = 71 COVID-19 – Life years lost = 12 ; mortality rate = 1%



* It is perhaps invalid to compare deaths with diminished lives except to say that a child poisoned by lead impacts the lives of those around them and so multiplying the effect. However, lead also kills, consider these numbers from the [WHO, 2019](#).

- 10.3% of the global burden of hypertensive heart disease,
- 5.6% of the global burden of ischaemic heart disease
- 6.2% of the global burden of stroke

By these measures, lead toxicity is more threatening than COVID-19, but receives a tiny fraction of the attention. I think it is because COVID-19 deaths are easier to measure and governments, like everyone, focus on what they will be measured by.



Living With Lead

Having lived in close proximity to a lot of lead over several years, I have come to accept some risks and continue to fear some others. This is just me. I am not saying that I have this right, or anyone else should follow it, but here is how I live with lead.

Fear v. Tolerance

I have come to tolerate some sources of lead, but continue to fear some others as shown in these lists. I would welcome suggestions to amend, qualify or extend.

Things with lead that I fear – unless shown to be safe

- Flaking old paint and varnish
- Dry sanding paint and varnish
- Wood, e.g. doors, dipped to remove old paint
- Soil near old houses
- Water from lead pipes
- Lead crystal decanters
- Painted ceramics used for acidic food
- Pewter
- Wine bottles with lead capsules
- Coal
- Accessible lead metal
 - Lead lines (comes) on windows
 - Gate post cappings – see picture
- Electronic components
- Solder – lead solder is still being sold in the UK
- New brass taps and fittings
- Garden hoses left in the sun
- Turmeric
- Folk remedies
- Old painted furniture
- Yellow road markings
- Light aircraft
- Shooting ranges
- Notre Dame de Paris





Things with lead that I tolerate – unless shown to be dangerous

- Keys #*
- Brass #*
 - Door handles, plumbing, screws
- Galvanised steel *
- PVC and uPVC #*
 - Cables, hoses, windows frames; guttering[↗]
- Chocolate #
- Coffee #
- Cookware painted on the outside #*
- Lead crystal glasses used briefly *
- Vegetables, if any soil is washed off #
- Leather #
- Old lacquered furniture *
- Lead flashing high on buildings* [↗]
- Wheel weights [↗]

The symbols indicate the logic I use in tolerating lead exposure.

A common place item. If this contains lead then many more people, in the USA, would be found to have elevated blood lead concentrations. BLCs are have not been surveyed in the UK for 25 years so there is no data to compare.

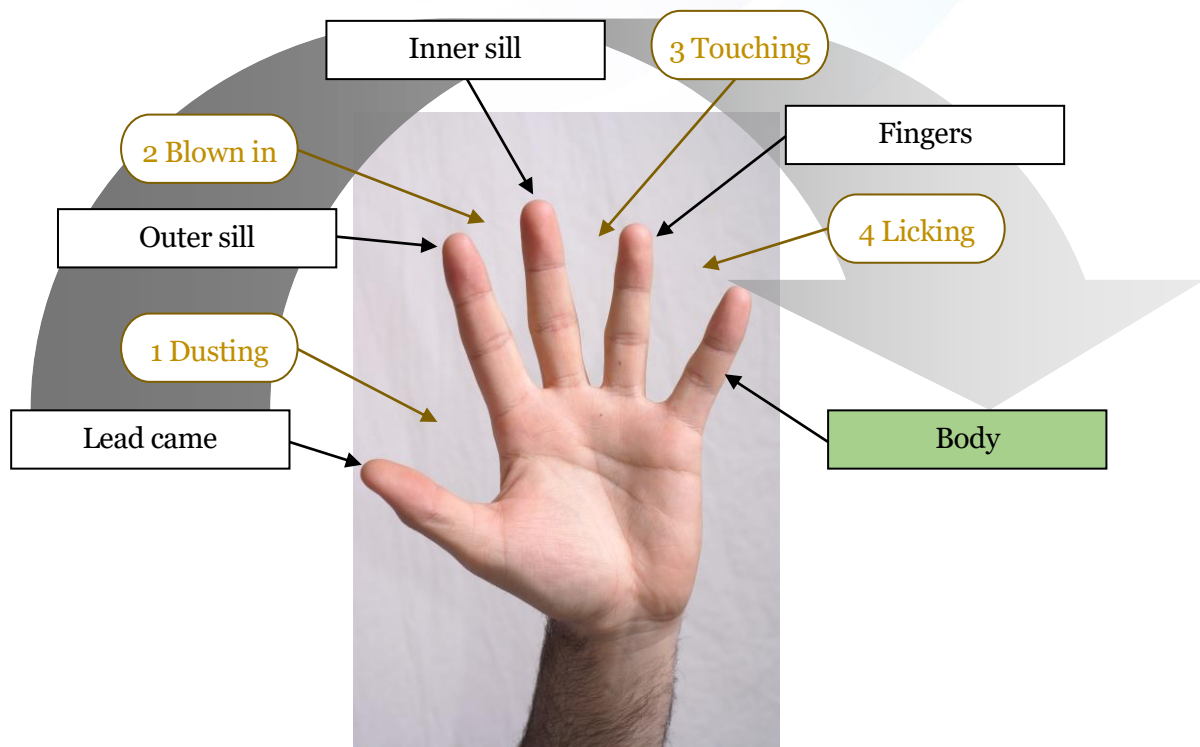
* Releases lead slowly and/or in very small amounts that the body can excrete if exposed.

[↗] Unlikely to cause exposure

Rule of Thumb to Little Finger

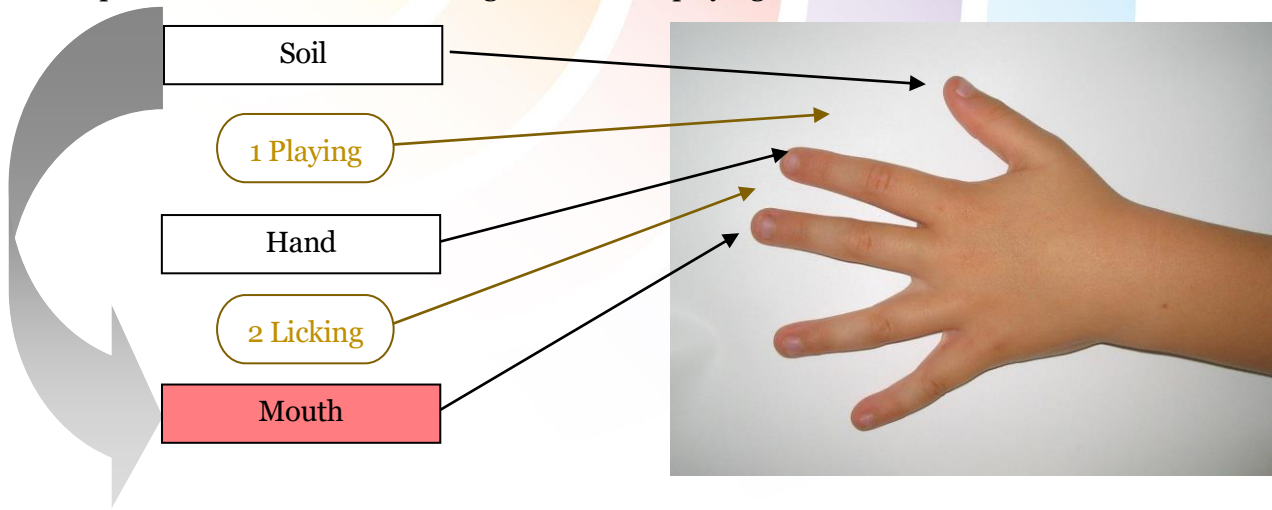
One totally unscientific way that I use to consider lead risks is to count the number of steps from source to sink on one hand. If they fit, less than five steps, then I think the contamination must be sufficiently diluted. The logic, if there is any, is to say each step will achieve about a 10 times dilution so over four steps the dilution will be 10,000 times. As always, it of course depends on how much, how long and how often.

An example – where I think the outcome is OK (But still wash my hands before eating) – Dust coming in from external lead comes when the window is left open.





An example - where the outcome is not good – A child playing in lead contaminated soil.



We Do Have Weapons

I also remind myself that the body is not without defence against lead toxicity.

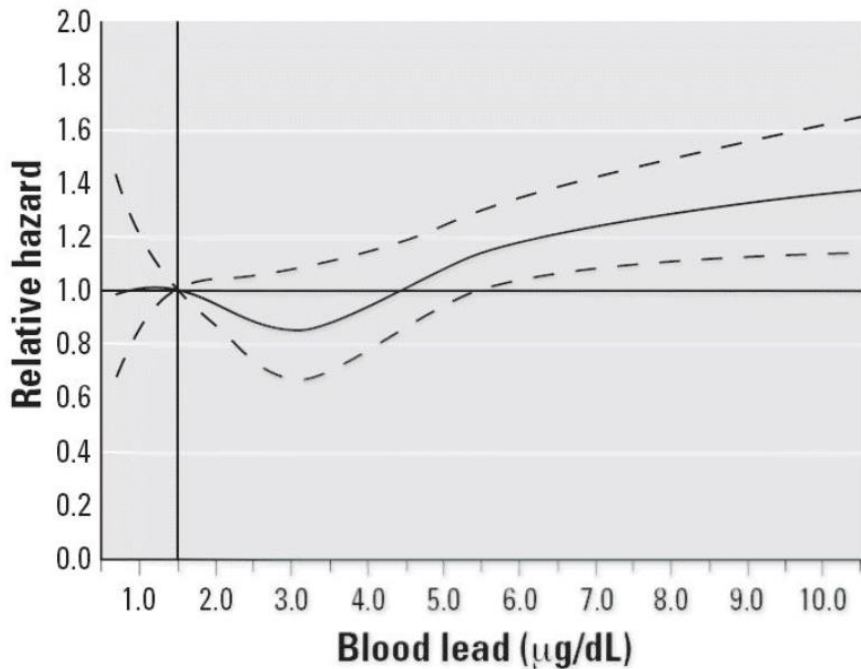
The amount of lead that is considered safe in food by the FDA is described as the Interim Reference Level (IRL). This is the amount that would result in a blood lead concentration of 5 µg Pb/dL, but with a 10 times margin of safety. For adults this is 12.5 µg Pb/day and for children 3 µg Pb/day ([FDA, 2020](#)). For adults, before the safety margin, that is 125 µg Pb/day. Perhaps not much, but it also not nothing and means we can tolerate a little lead in our environment – if we think the FDA are correct.

Another thing to consider is excretion. [Winecker et al, 2002](#) reported that adults can excrete 500 µg/day. Therefore, if I eat 18g of chocolate at 380ppb I could ingest 6.8 µg and easily excrete it. This is based on the worst case in an analysis of lead chocolate ([Abt et al, 2017](#)). No need to stop eating chocolate!



Better Than Nothing?

I particularly like the findings of a study reported by [Schrober et al, 2006](#), that suggested, in terms of overall mortality, the risk was lowest at 3 $\mu\text{g Pb/dL}$ and lower than at 0 $\mu\text{g Pb/dL}$. I have not seen this repeated in other studies, but this analysis was from a large sample size ($n= 9,757$) so has some credibility.



Relative risk of all cause mortality for different blood lead levels compared with referent level of 1.5 $\mu\text{g/dL}$ (12.5th percentile). The solid line shows the fitted five-knot spline relationship; the dashed lines are the point-wise upper and lower 95% CIs.

It gives me some solace that it looks like, from this study, we will live longer if we have a little lead in us, rather than none at all!



Acceptance

I have had three blood lead concentration (BLC) tests. The results were, in time order, 5.4, 1.0 and 1.035 $\mu\text{g Pb/dL}$. The higher level was a month after doing some risky DIY. As the metabolic half-life of lead in the blood is 30 days, this could have been up to double at the time of exposure. Some may say that 1 $\mu\text{g Pb/dL}$ is still too high, but I have not seen evidence of harm at that level so I am happy to live with it. It is also close to the average BLC in the USA at 0.84 $\mu\text{g Pb/dL}$ ([Tsoi et al, 2016](#)).

Beyond that, there is the simple logic that, I will have to accept that lead exposure, plus all the other toxins we encounter, may diminish our lives in either quality or longevity. On balance, the benefits of the industrial age outweigh the problems, but that does not mean we should not continue to make things better by driving down the prevalence of environmental toxins. In particular, we should try to avoid peaks in exposure by taking appropriate precautions.

Where it becomes harder, is concern for other people. Should I invite people into my house knowing that it contains a lot of lead - although largely abated and, all but one, dust lead levels are below American ([EPA and HUD, 2019](#)) requirements? The other was only 17 $\mu\text{g Pb/sq ft}$. Should I warn people when I become aware that they could be exposing themselves to lead? When is the risk of causing, or not preventing, lead exposure more important than seeming to be a miserable obsessive who is spreading fear and loathing?

There are no black and white answers. Everything about lead is grey.