

Lead Exposure Still Kills Nearly 1 in 5

Analysis by [Dr. Joseph Mercola](#)

✓ Fact Checked

December 14, 2022

STORY AT-A-GLANCE

- › Lead is one of three toxins shown to have the greatest negative impact on your life span. By competing with calcium at the cellular level, lead can disrupt several bodily systems, including your cardiovascular and neurological systems
- › Research published in 2018 found lead levels in adults are strongly correlated with a higher risk of death, especially from cardiovascular complications
- › Nearly 1 in 5 (18%) of all deaths and more than 1 in 4 (28.7%) of all cardiovascular deaths are related to lead toxicity
- › Previous research suggests lead exposure can cause multigenerational DNA changes
- › Aside from cardiovascular problems, lead exposure has been linked to an increased risk of reproductive problems in both men and women, miscarriage, premature birth or low birth weight, headaches, seizures, hearing and vision impairment, high blood pressure, nerve disorders, muscle and joint pain, brain damage, reduced IQ and learning difficulties

Lead is one of [three toxins shown to have the greatest negative impact on your life span](#).¹ One of the reasons for this is because lead is chemically similar to calcium. By competing with calcium at the cellular level, lead can disrupt several bodily systems,² including your cardiovascular and neurological systems.

Lead Is a Greater Risk Factor for Heart Disease Than Smoking

Research^{3,4,5} published in The Lancet Public Health in 2018 – which sought to quantify the contribution of environmental lead exposure to all-cause mortality and mortality from cardiovascular and ischemic heart disease specifically – concluded lead levels in adults are strongly correlated with a higher risk of death, especially from cardiovascular complications. As reported by the authors:⁶

"We included 14,289 adults in our study. The geometric mean concentration of lead in blood was 2.71 $\mu\text{g}/\text{dL}$. 3,632 (20%) participants had a concentration of lead in blood of at least 5 $\mu\text{g}/\text{dL}$. During median follow-up of 19.3 years, 4,422 people died, 1,801 (38%) from cardiovascular disease and 988 (22%) from ischemic heart disease.

An increase in the concentration of lead in blood from 1.0 $\mu\text{g}/\text{dL}$ to 6.7 $\mu\text{g}/\text{dL}$, which represents the tenth to 90th percentiles, was associated with all-cause mortality (hazard ratio 1.37), cardiovascular disease mortality (1.70), and ischemic heart disease mortality (2.08).

The population attributable fraction of the concentration of lead in blood for all-cause mortality was 18.0%, which is equivalent to 412,000 deaths annually.

Respective fractions were 28.7% for cardiovascular disease mortality and 37.4% for ischemic heart disease mortality, which correspond to 256,000 deaths a year from cardiovascular disease and 185,000 deaths a year from ischemic heart disease."

Lead Has Multigenerational Impacts

When nearly 1 in 5 (18%) of all deaths and more than 1 in 4 (28.7%) of all cardiovascular deaths are related to lead toxicity, it would certainly make sense for doctors to check patients' lead levels. Yet, that almost never happens.

“ Failure to address lead not only risks the patient's life, but also that of their children and grandchildren,

especially if it's a female patient.”

Instead, patients with symptoms of heart disease are simply given a statin, which does absolutely nothing to address this toxic underlying cause. This is an egregious error, considering lead exposure has multigenerational impacts. This means failure to address lead not only risks the patient's life, but also that of their children and grandchildren, especially if it's a female patient. As reported by The Allegheny Front in 2016:⁷

"[Research⁸] out of Wayne State University suggests lead exposure can ... cause changes to DNA that might affect several generations. 'When a mother drinks leaded water ... she's exposing her fetus, so that's going to directly affect brain development of her baby,' says Doug Ruden, co-author of the study and Director of Epigenomics at Wayne State's Institute of Environmental Health Sciences.

'What most people don't realize is that you're also expressing the germ line cells, and that can affect the grandchildren, and even potentially beyond that.'

Ruden's study looked at blood lead levels in 35 mothers and their babies in Detroit. They observed a correlation between elevated blood lead levels in the mothers and changes in DNA.

'If the mothers had high blood lead levels when they were born, then their grandchildren have changes in their DNA,' he says. 'And the changes in the DNA we were looking at weren't permanent changes. They're what we call epigenetic mutations' ...

'The way you think about it is – if a mother is pregnant with a baby, she's also carrying the baby's children too ... Because it's like a Russian doll. All of the eggs that a person has in life are actually developed in the fetus, during the fetal period, and all the sperm progenitor cells in the boy babies, the boy fetuses, are also present in the fetus,' he says."

Health Risks Associated With Lead Exposure

There is no known safe exposure to lead, and exposure — aside from heart disease — has been linked to an increased risk of reproductive problems in both men and women, miscarriage, premature birth or low birth weight, headaches, seizures, hearing and vision impairment, high blood pressure,^{9,10} nerve disorders, muscle and joint pain, brain damage, reduced IQ and learning difficulties.

Symptoms of chronic exposure or lead poisoning usually don't appear until years later, but sudden high exposure to lead has been known to induce insanity rather rapidly.

All of these neurological impacts can be explained by the fact that, in your brain, lead disrupts neurons that use calcium to transmit information.¹¹ The presence of lead will cause some neurons to fire more and decrease the signals in others. Other research has demonstrated that lead:^{12,13}

Generates superoxide and hydrogen peroxide, which in turn reacts with nitric oxide and produces peroxynitrites	Stimulates vascular smooth muscle cell proliferation and phenotypic transformation
Disturbs vascular smooth muscle calcium signaling	Modifies vascular response to vasoactive antagonists
Raises plasminogen activator inhibitor-1 production	Suppresses proteoglycan production
Causes endothelial injury	Impedes endothelial repair
Inhibits angiogenesis	Promotes inflammation

Corruption Has Allowed Environmental Lead to Proliferate

Leaded gasoline was for decades a primary source of lead exposure in the general population. The U.S. introduced leaded gas in 1923, to make the fuel more efficient and reduce engine knocking. This was done despite the well-recognized hazards of lead

exposure, and despite the fact that 10% alcohol had been found to achieve the same goals, all while having the added benefit of clean combustion, which eliminated soot emissions.

The only reason lead was selected was because manufacturing the lead additive, tetraethyl lead, would allow them to make greater profits. As explained in the video above, by adding a percentage of alcohol to the gasoline, the oil industry stood to lose up to 20% of its petroleum sales, depending on how much alcohol was added. On the other hand, by adding lead to gasoline, the oil industry had a product it could control in its entirety, and that was their aim.

The auto and chemical industries used the same techniques back then as they do now; promoting, defending, manipulating government officials, and molding public opinion to profit from a toxic product, all while knowing exactly the kind of harm it causes.

Manipulated science, industry propaganda and political corruption allowed lead to remain in gasoline for 80 years, until Clair Patterson, Ph.D., was finally successful in getting it removed. Patterson is an unsung public health hero of the 20th century that most people have never heard of. The featured video is a 30-minute summary of the evolution of leaded gas and, ultimately, its removal.

Patterson first began his health crusade to eliminate environmental lead in 1965, with the publication of his book, "Contaminated and Natural Lead Environments of Man." It would be 11 years before he finally succeeded, after fighting against the massive lobbying power of the oil and auto industries.

Then, as now, these industries used their influence to launch a massive discrediting campaign against him and his research. In 1971, he was excluded from a National Research Council (NRC) panel on atmospheric lead contamination, even though he was the world expert on the subject at that time.

Despite these massive discrediting efforts, he doggedly pursued the elimination of lead from gasoline, which finally occurred in 1986. Thanks to Patterson's persistence, blood lead levels in Americans dropped by 80% by the late 1990s.

How to Get Lead Out of Your Body

Eliminating lead can be a long and arduous journey that needs to be done very carefully to avoid creating more harm in the process. A scientific review¹⁴ published in 2016 highlighted the benefits of chelation therapy using edetate disodium (EDTA).

According to that paper,¹⁵ EDTA chelation effectively lowered the risk for future cardiovascular events, with a number needed to treat (NNT) of 12 to prevent one cardiovascular event over five years. Mainstream health care, however, still maintains that EDTA chelation therapy is a form of quackery that has no discernible benefit.

EDTA does have its risks, however, as it draws out not only lead but also important minerals. (This is part of why chelation must be done with a qualified doctor who can monitor your nutritional status and recommend appropriate supplementation.)

A far safer and more readily available alternative is N-acetyl-cysteine (NAC), a precursor to glutathione, which your body requires for efficient detoxification. A study¹⁶ from 2008 found NAC protected against lead-induced genotoxicity in human liver cancer cells (HepG2 cells). As noted in that paper:¹⁷

"[NAC] has an impressive list of protective effects including: antioxidant activity, decrease of the biologically effective dose of carcinogens, anti-inflammatory activity, immunological effects, inhibition of progression to malignancy and metastasis, and protection from the adverse effects of chemopreventive and chemotherapeutic agents ...

[We] hypothesized that the antioxidant, n-acetyl-l-cysteine attenuates oxidative stress and genotoxicity, and thereby provides cellular protection against lead toxicity ...

[The] addition of NAC in vitro showed a significant reduction ($p < 0.05$) in the comet tail length, percentage of DNA cleavage, comet tail moment, as well as comet tail arm respectively in cells co-treated with NAC and lead nitrate.

Findings from these studies demonstrated that NAC inhibits malondialdehyde (MDA) production and genotoxicity in lead nitrate-treated HepG2 cells in a dose-dependent manner."

Shortly after it was discovered that **NAC also provides several benefits in the treatment of COVID-19**, the U.S. Food and Drug Administration started cracking down on NAC, claiming it's excluded from the definition of a dietary supplement. As a result of the FDA's bogus crackdown on this supplement, which has been sold as such for 57 years, Amazon quit selling it. Fortunately, it's still available in many other places.

Sauna bathing can also be a useful strategy to remove nearly every toxin from your body including lead. In the U.S. this means either a far or near infrared sauna. My personal preference, as I have previously discussed, is a **near IR sauna** as it will also help with photobiomodulation that far IR sauna cannot do. I personally use it three times a week. Using it every day is not a good strategy. Every other day is ideal.

Common Sources of Lead Exposure

Of course, successfully eliminating lead from your body also requires you to stop putting more in. Today, gasoline exhaust is not a source of lead. Instead, primary sources include:

- Drinking water
- Cigarette smoke
- Lead paint in older homes
- Cheaply made household objects and children's toys and apparel – As just one example, Disney character clothing was recalled in late November 2022 due to high levels of lead in the textile ink. More than 80,000 pieces of clothing were recalled^{18,19}

Strategies to Avoid Lead Poisoning

To protect yourself and your family against lead exposure, consider the following recommendations:

- If your home was built before 1978, get it inspected to determine whether it has any lead paint – Lead paint removal must be done by a certified professional to ensure safety, as the dust is highly toxic. For more information on this, see the U.S. Environmental Protection Agency's "Lead-Based Paint Resources" page.²⁰
- Get your water tested for lead – Millions of older water service lines across the U.S. are made from lead and could be carrying contaminated water into your home on a daily basis. Your safest and most economical choice to get lead out of your water supply is to use a high-quality filter rated for lead removal.
- Be mindful that certain household objects may contain lead – For information about lead-containing products and recalls, see the Consumer Products Safety Commission's website.²¹
- Get your child tested for lead – Ideally, all children should be tested at ages 1 and 2, and again at ages 3 and 4 if you live in an older home. It's also recommended to test your child's level whenever there's concern about exposure. Also get yourself tested for lead, especially if your doctor suspects you have heart disease. A level of 3.5 mcg/dL or higher is considered dangerous.²²
- Use filtered cold water for drinking or cooking. Never cook or mix infant formula using unfiltered hot water from the tap.

Sources and References

- ¹ [The Journals of Gerontology: Series A; December 1, 2019; 74\(Issue supplement\): S52-S60](#)
- ² [Environmental Protection Agency, Learn About Lead](#)
- ^{3, 6} [The Lancet Public Health April 2018; 3\(4\): e177-e184](#)
- ⁴ [Vox March 30, 2018](#)
- ⁵ [Twitter PD Mangan Health & Freedom Maximalist December 2, 2022](#)
- ⁷ [The Allegheny Front January 29, 2016](#)
- ⁸ [Scientific Reports 2015; 5 Article Number 14466](#)
- ⁹ [International Journal of Health Sciences, 2011;5\(1\):17](#)
- ¹⁰ [Environmental Research August 2016; 149: 157-163](#)

- ¹¹ FitDay, Why Calcium is Essential for Healthy Brain Function
- ¹² American Journal of Physiology August 1, 2008; 295(2): H454-H165
- ¹³ Kidney International December 2004; 68(6):2329
- ^{14, 15} Journal of the American College of Cardiology May 24, 2016; 67(20): 2411-2418
- ^{16, 17} Met Ions Biol Med 2008; 10: 419-424
- ¹⁸ The Crazy Coupon Lady November 25, 2022
- ¹⁹ USA Today December 2, 2022
- ²⁰ Environmental Protection Agency, Lead-Based Paint Activities Professionals
- ²¹ U.S. Consumer Product Safety Commission, Total Lead Content
- ²² CDC Lead Surveillance Data as of 2021