



# Policy Priorities

## to End Lead Poisoning



### How We End Lead Poisoning

Universal Testing. Require all 1- and 2-year-old Michigan children be tested for elevated blood lead levels to prevent poisoning in children and identify dangerous homes for remediation.

Better certify contractors. Have the state of Michigan assume responsibility for the federal EPA's Renovation, Repair and Painting Rule (RRP), which requires contractors to have a lead-safe certification to work on pre-1978 homes. Local control ups efficiency and better attunes the program to state-specific issues.

Increase lead inspections. Require an inspection for the presence of lead in a home (via paint, soil, dust and water) before the sale or transfer of single-family homes built before 1978. This will help better identify and remove lead.

### Other Poisoning Prevention Efforts

Train, recruit, identify. Fill Michigan's acute workforce shortage by supporting efforts to identify, train and recruit lead abatement professionals and contractors.

Secure funding. Ensure Michigan has increased and sustainable funding support to our state's lead poisoning prevention and abatement programs.

Local laws. Encourage municipalities and counties to enact rental certification legislation that requires lead hazards to be identified and treated before occupancy.

Landlord accountability. Require landlords (rather than the occupant) to submit documentation that lead hazards have been abated and indexed to CDC guidelines, as per the Landlord Penalty Law.

Relocation. Make the movement of families of children with elevated blood lead levels to safe homes a valid emergency and long-term abatement strategy through policy and pilots.

Support the MCLEEC. Support and align with the Michigan Child Lead Exposure Elimination Commission in its policy development, education and funding efforts.



## Who We Are

**Advocates, experts, parents**



### The Michigan Alliance for Lead Safe Homes

MIALSH is made up of health professionals, environmental experts, contractors and, most crucially, everyday Michigan advocates, some of whom have been impacted by lead. Together, we're making lead poisoning a history lesson, not a heartbreaking reality.

Before MIALSH formed in 2010 and began hosting Lead Education Day, decades passed with no significant state funding for lead cleanup programs. Thanks in part to MIALSH's education, we've helped change minds. We have helped bring the plight of lead poisoning and a lack of resources to the forefront of decision makers' minds largely by creating the space for lead-impacted people and health workers to tell their stories. That, in turn, has lead our government to dedicate millions of dollars of funding to the cause.

### Our Leadership

- CLEARCorps Detroit
- Dept. of Housing & Urban Development
- The Ecology Center
- The Erb Family Foundation
- Healthy Homes Coalition of West Michigan
- Dept. of Health & Human Services
- Michigan Environmental Council
- Local health departments statewide
- Wayne State Center for Urban Studies
- WSU CURES - Citizen Advisory Board

### Contact Us



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*The Michigan Alliance for Lead Safe Homes is proudly organized and funded by:*



## **Facts: Lead in Michigan**

[Click here](#) to see how your community is impacted by lead.

“In Michigan, deteriorated lead paint is the [#1 source](#) of lead exposure.”  
(Michigan.gov)

“On Tuesday, the Environmental Protection Agency identified a range of violations at Benton Harbor’s water facility. The federal inspection found problems so bad that [the city needs to consider forfeiting ownership](#), the EPA said.” (Great Lakes Now)

“Flint has seen almost [six times](#) the national average” of children with elevated blood lead levels. (Cornell Sun)

“Of the 244 children evaluated in Flint, [76.6 percent](#) screened for detectable levels of lead in their bodies after the water supply switch” (Cornell Sun)

“Of the children screened [in Flint], [43.9 percent](#) experienced hyperactivity, 39.3 percent had emotional agitation and 29.1 percent had comprehension issues or learning delays.” (Cornell Sun)

“In 2020, [2,301 Michigan children](#) who were tested for lead had an elevated blood lead level (EBLL), and even that number paints an incomplete picture of lead poisoning in the state.” This number is most likely lower due to the COVID-19 pandemic and lack of testing or ability to test.” (Planet Detroit)

“Lead exposure in early childhood has been linked to [lower performance](#) on state achievement tests for many Detroit Public School students in several grades.”  
(University of Michigan)

“In reality, there is no well-documented threshold for acceptable levels of lead in the body, and our research shows that in amounts as small as 2-5 micrograms per deciliter, children had [significant cognitive](#) impairment.” (University of Michigan)

“The city [of Benton Harbor] has already increased water rates twice to pay for the effort [to clean up lead pipes], he said, and he worries that residents, [1 in 5 of whom live in poverty](#), can’t handle much more.” (Bridge MI)

“Although the Michigan Lead Safe Home program covers most costs of abatement, Williams says the process can still be lengthy and difficult. The cost of full abatement for a home in Detroit can often [exceed the value of the home](#).” (Planet Detroit)

## Lead in General

- Sources of lead- <https://www.clinmedjournals.org/articles/ijpr/ijpr-7-083-table1.html>
  - Table that lists environmental sources and other sources of lead.
  - Different types of paint, plaster, cosmetics and religious powders, herbs and dietary supplements, novel jewelry, charms, and medallions, drinking water, as well as a few other sources all can contain lead
- Learn about Lead- <https://www.epa.gov/lead/learn-about-lead>
  - “Lead can be found in all parts of our environment – the air, the soil, the water, and even inside our homes. Much of our exposure comes from human activities including the use of fossil fuels including past use of leaded gasoline, some types of industrial facilities and past use of lead-based paint in homes. Lead and lead compounds have been used in a wide variety of products found in and around our homes, including paint, ceramics, pipes and plumbing materials, solders, gasoline, batteries, ammunition and cosmetics.”
  - “Lead is particularly dangerous to children because their growing bodies absorb more lead than adults do and their brains and nervous systems are more sensitive to the damaging effects of lead.”
  - “Lead can affect almost every organ and system in your body. Children six years old and younger are most susceptible to the effects of lead.”
- Lead- <https://www.niehs.nih.gov/health/topics/agents/lead/index.cfm>
  - “Despite progress in reducing lead exposure in U.S. communities, [elevated blood lead levels remain an issue for children](#), particularly those living in poorer areas. Disparities in who is harmed by lead contamination persist”
  - Primary sources of lead today are old paint dust, contaminated soil, and contaminated drinking water.
  - “Lead can get into your body by consuming contaminated water or food, or from breathing fumes or dust that contain lead.”
  - “Most adults with elevated blood lead levels are exposed to lead at work. A greater chance for lead exposure is found in people who work in occupations related to mining, ironwork or welding, construction including building renovation and remodeling, smelters, shooting ranges, manufacture and disposal of car batteries, automobile radiator repair, and manufacture of pottery or stained glass.”
- Evaluating the Cost of Lead Hazard Control and Abatement in Baltimore City- <https://abell.org/publication/evaluating-the-cost-of-lead-hazard-control-and-abatement-in-baltimore-city/>
  - “The most common cause of lead exposure today is deteriorating lead-based paint in homes”
- Midwest kids have some of the highest blood lead levels in the nation- <https://www.klkntv.com/midwest-kids-have-some-of-the-highest-blood-lead-levels-in-the-nation/>
  - “The four states [Iowa, Missouri, Kansas, and Nebraska] have some of the most lead water pipes per capita in the country. While

representative data on the prevalence of lead poisoning is hard to come by because screening rates lag in many areas, one study published last year found that the four states struggled with some of the highest rates of lead poisoning.”

- “Children who are lead poisoned now, however, have much lower levels and don’t show blatant or immediate symptoms.”
- “Officials with the World Health Organization warn there is no safe level of lead in blood. Even levels as [low as five micrograms per deciliter](#) can cause behavioral difficulties and learning problems in children.”
- “In predominantly Black neighborhoods of North St. Louis, across town from Pascoe’s old home, children suffer some of the highest rates of lead poisoning in the city. Black children in Missouri are nearly twice as likely to suffer lead poisoning as their white peers.”

## Lead in Housewares

- Your Herbs and Spices May Contain Lead and Other Heavy Metals-  
<https://www.verywellhealth.com/spice-lead-exposure-5209991>
  - “A new study from Consumer Reports found high levels of lead, arsenic, and cadmium in one-third of the dried herbs and spices tested. Many of them are made by well-known brands like McCormick, La Flor, Trader Joe’s, Whole Foods, and Great Value (Walmart).”
  - “31 products contained such high levels of lead that exceeded the maximum amount anyone should consume in a day”
  - “Home cooks don’t have to go overboard with seasonings to be exposed to heavy metals. Consuming just 3/4 teaspoon a day of some spices was enough to be concerning”
  - Brightly colored spices could be more likely to contain lead as it can be used as a coloring agent.
  - “Currently, there aren’t federal limits on heavy metals in spices”
- Consumer Reports: Spices and their level of concern-  
<https://www.consumerreports.org/food-safety/your-herbs-and-spices-might-contain-arsenic-cadmium-and-lead/>
  - “Roughly one-third of the tested products, 40 in total, had high enough levels of arsenic, lead, and cadmium combined, on average, to pose a health concern for children when regularly consumed in typical serving sizes. Most raised concern for adults, too.”
  - “a 2018 study in Morbidity and Mortality Weekly Report found high lead levels in 22 percent of food samples—mostly spices and herbal remedies—taken from homes of children with lead poisoning in North Carolina.”
  - “Currently, about two dozen spice companies from 11 countries are subject to import alerts for lead contamination, which signal to regulators that they can detain those products. But that represents a fraction of the herbs and spices shipped to the U.S.”
- Questions and Answers on Lead-Glazed Traditional Pottery-

<https://www.fda.gov/food/metals-and-your-food/questions-and-answers-lead-glazed-traditional-pottery>

- “Today many potters of traditional or ‘folk’ pottery have switched to non-lead glazes, but they may still be using old kilns that were once used for firing lead-containing glazes, unintentionally contaminating the “lead free” pottery with lead residues that remain in the kiln from past usage. Because the lead may not fuse into the non-lead glaze, it may contaminate food when the pottery is used with food.”
- “Lead may be present in the glazes or decorations covering the surface of some traditional pottery. If the pottery is not manufactured properly, this lead can leach into food and drink that is prepared, stored, or served in the dishes.”
- “FDA has received reports from local health authorities that traditional pottery from several manufacturers in Mexico labeled as “lead free” in fact contains levels of extractable lead comparable to levels that may be found in lead glazed pottery, and in some cases, in excess of FDA’s action levels for extractable lead in ceramic tableware.”
- Beyond Lead: Toxins in Toys <https://www.greenamerica.org/green-living/beyond-lead-toxins-toys>
  - “Regardless of what is legally permissible in the US, Norton says, toys made in China or other developing countries carry a higher risk of containing chemicals that are illegal than toys made in the US, Canada, or the European Union (EU), because dangerous chemicals are less well-regulated in these countries.”
  - “Though there is no comprehensive US ban on lead in toys, it is illegal for the paint to contain more than 0.06 percent concentration lead”
  - “several high- profile toy recalls over the summer revealed that some toys made in China and sold to families in the US contained illegal and dangerous levels of lead. The levels of lead in some of the toys recalled by the Mattel Corporation were as high as 11 percent, 180 times the legal limit.”
  - “The CECLP advises parents to avoid fake painted pearls, including Mardi Gras beads, and cheap children’s jewelry of the type sold in vending machines or given away as party favors. A 2006 study by Ashland University researchers found that 70 percent of the 20 cheap toy jewelry samples they tested contained illegal levels of lead, only three of which have been subsequently recalled.”
- Lead Hazards in Toys-  
<https://www.cdc.gov/nceh/features/leadintoy/index.html#:~:text=Lead%20softens%20plastic%2C%20making%20a,between%20the%20lead%20and%20plastics>
  - “The use of lead in plastics has not been banned. Lead softens plastic, making a toy more flexible to return to its original shape. Lead may also be used in plastic toys to stabilize molecules from heat.”
  - “Lead dust can form on toys when some plastics are exposed to sunlight, air, and detergents that break down the chemical bond between the lead and plastics.”
  - “Lead also may be combined with other metals, such as tin, to create

- o alloys that are used to make toys.”
  - o “Just wearing toy jewelry that contains lead will not cause your child to have a high level of lead in their blood. However, chewing, sucking on or swallowing toy jewelry that contains lead will expose your child to lead. Make sure children in your home do not have access to jewelry or other items that may contain lead.”
- How 2 Industries Stymied Justice for Young Lead Paint Victims- link [here](#)
  - o This article includes many personal stories exemplifying the dangers of lead paint.
  - o “The level was so high that he immediately began a 19-day treatment to help rid his body of the toxin, which can cause irreversible damage to a child’s brain and nervous system. A health inspector soon found lead paint and dust throughout the family’s rental home.”
  - o “the firm that owns the home protected its assets in a tangle of limited liability companies, and the property insurer excluded lead from its coverage. These practices are now the norm across the United States,”
  - o “But with little public attention and the approval of state officials, insurance companies across the country excluded lead from their policies, declining to pay out when children were poisoned on properties they covered, according to interviews with health and housing officials, regulators and lawyers who represented children and their families”
  - o “Congress allocated money in the infrastructure bill to replace lead pipes that can taint water, but removed funding for the far larger problem of lead paint in older dwellings, which accounts for up to 70 percent of elevated lead in children, [according to the C.D.C.](#)”
  - o “The [federal housing department estimates](#) that significant lead paint hazards remain in about 29 million housing units, and that young children live in approximately 3.3 million of them”
  - o “Nonetheless, landlords can take less expensive measures to make houses “lead safe”: removing peeling paint and sealing surfaces with a new coat to prevent children from ingesting toxic flakes and dust, for example.”

#### Lead in Cosmetics

- Lead in Cosmetics- <https://www.fda.gov/cosmetics/potential-contaminants-cosmetics/lead-cosmetics>
  - o “Kohl, Kajal, Al-Kahal, Surma, Tiro, Tozali, or Kwalli: These traditional eyeliners, popular in many parts of the world, are a serious health concern because they commonly contain large amounts of lead, as well as other heavy metals. Products containing kohl and similar ingredients have been linked to lead poisoning, especially among children, and are not allowed to be sold in the U.S. Nevertheless, these products sometimes make their way into specialty markets in this country”
  - o “As of January 6, 2022, lead acetate is no longer allowed as a color additive in “progressive” hair dyes. We intend to exercise enforcement discretion for 12 months following the effective date to provide industry with the opportunity to deplete their current stock and reformulate

their hair dye products containing lead acetate.”

- Lead in Lipstick- <https://www.safecosmetics.org/get-the-facts/regulations/us-laws/lead-in-lipstick/>
  - “An expanded FDA study in 2010 found lead in 400 lipsticks at levels up to 7.19 ppm. Five of the 10 most lead-contaminated brands in the FDA study are made by L’Oreal USA”
  - “The cosmetics industry has ignored the findings of toxic metals in lipsticks, arguing that it’s not a source of concern because the dose is so low per application. That is essentially the argument made by the FDA as well. But, what both the industry and FDA are ignoring is the issue of cumulative exposure; that is, exposure to a little bit of a toxic chemical over a long period of time can add up to harm. A chemical like lead builds up in the body over time so low exposures repeated daily can add up to a significant exposure.”
  - “For example, in the University of California study, researchers found women applied lipstick from two to 14 times every day. In terms of chemical exposure, that translates into ingesting or absorbing as much as 87 milligrams of product a day.”
- Concentrations and Potential Health Risks of Metals in Lip Products- <https://ehp.niehs.nih.gov/doi/10.1289/ehp.1205518>
  - “We measured lead and eight other metals in a convenience sample of 32 lip products used by young Asian women in Oakland, California, and assessed potential health risks related to estimated intakes of these metals.”
  - “Lead was detected in 24 products (75%), with an average concentration of  $0.36 \pm 0.39$  ppm, including one sample with 1.32 ppm.”
  - “Approximately half (47%) of the samples contained Pb at concentrations higher than the FDA-recommended maximum level of 0.1 ppm for Pb in candy likely to be consumed frequently by small children”
  - While the lead levels are relatively low and within FDA limits for cosmetics, multiple sources including the CDC recommend the daily intake of lead be zero.
- Limiting Lead Lipstick and other Cosmetics- [https://www.fda.gov/cosmetics/cosmetic-products/limiting-lead-lipstick-and-other-cosmetics#expanded\\_survey](https://www.fda.gov/cosmetics/cosmetic-products/limiting-lead-lipstick-and-other-cosmetics#expanded_survey)
  - In the expanded survey of 400 lipsticks, 177 had lead levels of 1 ppm or above, 51 had lead levels of 2 ppm or above, and 11 had levels above 4 ppm.
  - The top two lipsticks tested (Maybelline Color Sensational- Pink Petal and L’Oreal Colour Riche- Volcanic) had 7.19 ppm and 7 ppm, respectively.
  - Even ‘cleaner’ brands such as Burt’s Bees had levels of 2.81ppm (Lip Shimmer- Toffee) and 2.24 ppm (Lip Shimmer- Guava).
- FDA suggests limit on lead in lipstick and other cosmetics- <https://www.cnn.com/2016/12/22/health/fda-lead-levels-lipstick-cosmetics/index.html>
  - “More than 99% of the cosmetic lip products and externally applied

cosmetics on the US market contain lead at levels below 10 ppm, according to the FDA. Testing by the FDA found one eye shadow, Clarins Paris Mono Couleur 19 Ice Blue, and one blush, L'Oreal Lancome Blush Subtil 8 Brun Roche, contained 14 parts per million of lead."

- "How does lead get into lipstick and lip gloss in the first place? According to Steinberg, lead contamination comes from the colors."
- FDA's Testing of Cosmetics for Arsenic, Cadmium, Chromium, Cobalt, Lead, Mercury, and Nickel Content- <https://www.fda.gov/cosmetics/potential-contaminants-cosmetics/fdas-testing-cosmetics-arsenic-cadmium-chromium-cobalt-lead-mercury-and-nickel-content#SIES>
  - Study measured levels of metals in cosmetics, including eyeshadow, blush, lipstick, lotions, mascaras, foundations, body powders, shaving cream, and face paints.
  - Clarins Paris Mono Couleur Ice Blue eyeshadow had 14 ppm of lead.
  - Mary Kay signature blush in Santa Fe Sun had 10 ppm of lead.
  - Lancome's Blush Subtil in Brun Roche had 14 ppm of lead.
  - Elizabeth Arden's pure finish blush in Rosy Glow had 11 ppm of lead.

## Lead and Health

- Lead paint dangers and Health Effects of lead- <https://health.clevelandclinic.org/lead-paint-dangers/>
  - High levels of lead can lead to reproductive problems, anemia, kidney damage, Alzheimer's disease, Parkinson's disease, or Schizophrenia. There are also lesser but still significant symptoms such as constipation, headaches, stomach pain, memory loss, trouble sleeping, tiredness, irritability, and lack of appetite.
  - "While it can affect people of all ages, lead poisoning hits children the hardest. Its health effects are more severe for kids under the age of six because their bodies are developing and growing fast. This age group also tends to be at a higher risk for lead poisoning because young children often put their hands and other objects in their mouths. "
  - "For a child, even the smallest amount of lead can cause developmental problems. With kids, 3.5 mcg/dL of lead in their blood is considered higher than most children's levels."
- Lead exposure linked to Parkinson's Disease- <https://connect.uclahealth.org/2021/04/15/lead-exposure-linked-to-parkinsons-disease/>
  - "Now, a new study from UCLA Health has shown a link between lead exposure and Parkinson's disease."
  - A new way of looking at DNA showed indicators of lead exposure, and these indicators showed "higher long-term lead exposure correlated with an increased risk of Parkinson's disease."
- Health effects of lead on children and solutions- Personal Story/Example- <https://planetdetroit.org/2022/01/michigan-families-navigate-scarce-resources-when-seeking-help-for-lead-poisoned-kids/>
  - "When Detroit resident TaNiccica Henry's grandson Lloyd Toliver was 4,

his hair stopped growing and his feet turned black. Henry took her grandson to the doctor, and she was shocked by what she learned: her grandson had lead poisoning.”

- “After having her house tested, Henry was similarly dismayed to learn that there was “literally lead everywhere in the house,” from the walls to the windows to the tiles in the bathroom. With the help of the Wayne County Health Department, Henry learned cleaning practices to reduce the lead in her home, as well as dietary changes that could help lower Lloyd’s blood lead level.”
- “Now 9, Henry says Lloyd’s memory is terrible and he doesn’t learn at the same pace other kids do. But his feet are no longer black, his hair grew back in a year ago, and his grades have recently improved. Henry credits all the interventions she’s taken advantage of so far, including cleaning the house, Lloyd’s dietary changes, and educational support at school.”
- “In 2020, 2,301 Michigan children who were tested for lead had an elevated blood lead level (EBLL), and even that number paints an incomplete picture of lead poisoning in the state.” This number is most likely lower due to the COVID-19 pandemic and lack of testing or ability to test.”
- Cornell Team Finds Health Defects in Children of Flint Related to Lead Exposure- <https://cornellsun.com/2022/02/02/cornell-team-finds-health-defects-in-children-of-flint-related-to-lead-exposure/>
  - “Ezell and his team found that of the 244 children evaluated in Flint, 76.6 percent screened for detectable levels of lead in their bodies after the water supply switch, with approximately a quarter of those children having more extreme cases of clinician-diagnosed elevated blood lead levels.”
  - “But the extent of elevated blood lead levels goes beyond physical impacts. Lead poisoning in children can increase the likelihood of permanent neurological damage, developmental delays and behavioral issues such as attention deficit hyperactivity disorder.”
  - “Of the children screened, 43.9 percent experienced hyperactivity, 39.3 percent had emotional agitation and 29.1 percent had comprehension issues or learning delays.”
  - “In 2014, the Center for Disease Control and Prevention found that 4.2 percent of children in the United States tested for elevated blood lead levels. With 25 percent of the sampled children screening for clinically-diagnosed elevated blood lead levels, Flint has seen almost six times the national average.”
- Exposure to lead in drinking water as a child linked to teenage delinquency- <https://www.studyfinds.org/lead-drinking-water-delinquency/>
  - “researchers from Duke University and Indiana University report that exposure to lead in drinking water from a young age can increase the risk of delinquent behavior as a teen.”
  - “The research finds that children drinking water from private wells before the age of six had higher levels of lead in their blood. Consequently, those same adolescents were 21 percent more likely to

be reported for delinquency after age 14. Similarly, such teens had a 38 percent increased risk of having a run-in with law enforcement for incidents including misdemeanor assault and weapons offenses.”

- “In comparison to kids with community water service, children relying on private wells from a young age showed roughly 11 percent higher lead levels in their blood.”
- Bone lead levels higher in young adults exposed to lead as children-  
<https://oem.bmj.com/content/57/7/465>
  - The effects of lead can outlast exposure; in this study, young adults are shown to have lasting effects of lead exposure as a child.
  - Exposed children had significantly higher levels of lead in their bones.
  - Age is the best predictor of bone lead concentration.
  - “childhood lead exposure has persisted in the bone matrix until adulthood”
  - “In seven out of 11 age groups, bone lead concentration were significantly higher in the exposed than in the control group.”
  - “In women, the relation between blood and bone was lower than in men, but the relation in women was dominated by data from parous women.”
- E-cigarettes expose users to toxic metals such as arsenic, lead-  
<https://factor.niehs.nih.gov/2022/2/feature/3-feature-e-cigarettes-and-toxic-metals/index.htm>
  - “Through the EMIT study, Rule’s team has analyzed metal concentrations in the e-liquid before it is in contact with the heating coil, and in the aerosol generated afterwards. They were surprised to find toxic metals, such as arsenic and lead, in the liquid even before it came into contact with the metallic coil.”
  - “The researchers have also measured the levels of metals in blood, urine, saliva, and exhaled breath condensate of 250 e-cigarette smokers, conventional cigarette smokers, and non-smokers. They have found significant differences between e-cigarette smokers and non-smokers”
- The impact of childhood lead exposure on adult personality: Evidence from the United States, Europe, and a large-scale natural experiment-  
<https://pubmed.ncbi.nlm.nih.gov/34253605/>
  - “childhood lead exposure may adversely affect normal-range personality traits”
  - “US adults who grew up in counties with higher atmospheric lead levels had less adaptive personality profiles: they were less agreeable and conscientious and, among younger participants, more neurotic.”
  - “we replicated associations in Europeans. European participants who spent their childhood in areas with more atmospheric lead were less agreeable and more neurotic in adulthood.”
- Association of Childhood Lead Exposure With Adult Personality Traits and Lifelong Mental Health-  
<https://jamanetwork.com/journals/jamapsychiatry/fullarticle/2720691>
  - “The Dunedin study reported in 1988 that children with higher BLLs at 11 years of age scored higher on concurrent parent-report measures of

- hyperactivity and inattention symptoms.”
  - “We tested whether study members with higher BLLs at 11 years of age also scored higher on measures at 11 years of age that assessed a broader suite of early-life externalizing and internalizing problems, including parent- and teacher-report measures of antisocial behavior, hyperactivity, and internalizing problems. We found that they did score higher ([Table](#)), suggesting that the association between lead exposure and psychopathology may begin to manifest broadly well before adulthood.”
  - “First, across nearly 3 decades of follow-up, childhood BLLs were associated with higher levels of general psychopathology, driven primarily by greater rates of internalizing and thought disorder symptoms.”
  - “Second, childhood BLLs were associated with higher neuroticism, lower agreeableness, and lower conscientiousness.”
  - “Third, childhood BLLs were associated with greater externalizing and internalizing symptoms assessed contemporaneously with BLL measurement at 11 years of age.”
  - “In childhood, these psychopathology symptoms tended to involve more externalizing symptoms, particularly hyperactivity, whereas in adulthood, they tended to involve more internalizing symptoms.”
- Lead Acts to Trigger Schizophrenia-  
<https://www.publichealth.columbia.edu/public-health-now/news/lead-acts-trigger-schizophrenia>
  - “mice engineered with a human gene for schizophrenia and exposed to lead during early life exhibited behaviors and structural changes in their brains consistent with schizophrenia.”
  - “Their findings suggest a synergistic effect between lead exposure and a genetic risk factor, and open an avenue to better understanding the complex gene-environment interactions that put people at risk for schizophrenia and other mental disorders.”
- Maternal lead exposures correlated with sex ratios of offspring-  
<https://www.sciencedaily.com/releases/2022/03/220314095712.htm>
  - “Higher lead levels in a mother's blood can increase the chance of her bearing male offspring, according to new research led by Japanese scientists at the Tohoku University Graduate School of Medicine.”
  - “The findings may explain why the percentage of male births in Japan has been declining. The authors explain that, as restrictions in leaded gasoline and paint have been implemented, air lead levels have decreased,”
  - “Guidelines for pregnant women are that blood lead levels should not exceed 50 nanograms per gram of blood. Yet, this study indicates that a maternal blood level of less than 1 nanogram per gram could affect the sex ratio of offspring.”
- Protecting you and your child from the harmful effects of lead-  
[https://www.michigan.gov/documents/lead/Pregnant\\_Breastfeeding\\_Women\\_Final\\_705538\\_7.pdf](https://www.michigan.gov/documents/lead/Pregnant_Breastfeeding_Women_Final_705538_7.pdf)
  - “In Michigan, deteriorated lead paint is the # 1 source of lead exposure.”

- “If a person has lead exposure during pregnancy or while breastfeeding, lead can also enter their baby's body”
- “Regularly wash hands, bottles, pacifiers, and toys. Wipe off horizontal surfaces, like windowsills with wet paper towels or other disposable cleaning materials.”
- “If your home had a water test with high lead levels, use water that was put through a certified lead-reducing filter (or bottled water) for drinking, cooking, and preparing infant formula. Follow manufacturer instructions and never put hot water through the filter.”
- “Routine blood lead testing of all pregnant and breastfeeding persons is not recommended. However, all pregnant or breastfeeding persons should be assessed for risk of lead exposure”

## Lead and Cognition/Academics

- Lead exposure negatively impacts MEAP scores of Detroit schoolchildren- <https://news.umich.edu/lead-exposure-negatively-impacts-meap-scores-of-detroit-schoolchildren/>
  - “Lead exposure in early childhood has been linked to lower performance on state achievement tests for many Detroit Public School students in several grades”
  - “strong relationship between lowered math, science and reading scores on the Michigan Education Assessment Program tests and elevated blood lead levels. High blood lead levels before age 6 were associated with poor academic achievement in elementary and junior high students.”
  - “Further, the researchers found that the higher the blood lead levels, the lower the scores”
  - “In reality, there is no well-documented threshold for acceptable levels of lead in the body, and our research shows that in amounts as small as 2-5 micrograms per deciliter, children had significant cognitive impairment”
- The Link Between Lead Poisoning and Alzheimer’s Disease- <https://www.psychologytoday.com/us/blog/american-dementia/202203/the-link-between-lead-poisoning-and-alzheimer-s-disease>
  - “Researchers estimate that half of Americans were exposed to adverse lead levels in early childhood, with 2.6 IQ points lost per person.”
  - “Exposure also weakens the biological substrate that makes brains resilient to aging processes, increasing susceptibility to dementia.”
  - “The authors of the study estimated that, for the cohort born from 1951-1980, a total of 824,097,690 IQ points have been lost”
  - “Those affected [by early exposure to lead] are at greater risk for criminality/incarceration, reduced educational attainment, aggression and disrupted impulse control, substance abuse, and other lifelong patterns that suppress upward social mobility.”
  - “exposure to the neurotoxin has long-term consequences for the

- brain's structural-functional integrity and cognition.”
  - “neurotoxins would, at the point of exposure and over the course of time, weaken the biological substrate (that is, the cognitive reserve) that buffers the brain against cognitive decline and dementia as we age.”
- Leaded Gasoline Exhaust Shrank IQ for Half of U.S. Adults-  
<https://www.everydayhealth.com/neurology/leaded-gasoline-exhaust-shrank-iq-for-half-of-us-adults/>
  - “A new study suggests that many middle-aged and older adults experience cognitive problems today because they breathed car exhaust from leaded gasoline when they were young.”
  - “Typical levels of childhood lead exposure during these decades [1960s-70s] resulted in an average IQ score reduction of six points, with even larger hits to IQ for those with the highest levels of lead exposure.”
  - “Losing just a few IQ points might be enough to shift some people with average cognitive ability — IQ scores of 85 to 115 — to below average — with IQ scores below 85. It might also mean that people who would be below average without any lead exposure would shift to the intellectually disabled classification — an IQ below 70 — because of lead poisoning, the researchers point out.”
- Association of Childhood Lead Exposure With MRI Measurements of Structural Brain Integrity in Midlife-  
<https://jamanetwork.com/journals/jama/article-abstract/2772961>
  - “In this longitudinal cohort study, higher blood lead levels during childhood were associated with smaller cortical surface area, smaller hippocampal gray matter volume, lower global fractional anisotropy, and older BrainAGE index measured on brain MRI in adults during midlife”
  - “MRI-measured lead-related brain morphology differences may indicate smaller neurons, reduced neurogenesis, reduced dendritic arborization, or changes in neuropil (gray matter differences)<sup>29</sup>; disrupted axonal pruning, mild gliosis, or demyelination (white matter differences); and an overall morphological profile suggestive of older brains.”
  - “lead-related midlife brain integrity differences, as indicated by MRI measurements, may reflect the long-term consequences of early developmental disruption in morphological domains that are characterized by active development throughout the long period of chronic lead exposure experienced by Dunedin Study participants”
  - “In this study, children with higher blood lead levels also had, in midlife, lower objectively assessed cognitive performance reflecting decline from childhood and greater rates of everyday cognitive problems.”
  - “evidence suggests that individuals with the morphological profile of adults exposed to lead in this study (lower MRI measurements of gray and white matter integrity, older BrainAGE index) may be at higher risk of dementia in old age.”

## Lead in Water

- Lead in Drinking Water-  
<https://www.cdc.gov/nceh/lead/prevention/sources/water.htm>
  - “Some drinking water fountains with lead-lined tanks and other plumbing fixtures not intended for drinking water (e.g., lab faucets, hoses, spigots, hand washing sinks) may also have lead in the water.”
  - “You cannot see, taste, or smell lead in drinking water. The best way to know your risk of exposure to lead in drinking water is to identify the potential sources of lead in your service line and household plumbing.” This can involve asking your local water authority and water provider whether you have lead pipes and asking to have your water tested.
  - “infants who drink formula prepared with lead-contaminated tap water may be at a higher risk of exposure because of the large volume of water they consume relative to their body size. Bathing and showering should be safe for you and your children because human skin does not absorb lead in water.”
  - “The best way to tell if you or your child has been exposed is with a blood lead test. Your health care provider can help you decide whether a blood lead test is needed and can also recommend appropriate follow-up actions if you or your child has been exposed. As levels of lead in the blood increase, adverse effects from lead may also increase.”
- Lead in Drinking Water Infographic-  
[https://www.epa.gov/sites/default/files/2017-08/documents/epa\\_lead\\_in\\_drinking\\_water\\_final\\_8.21.17.pdf](https://www.epa.gov/sites/default/files/2017-08/documents/epa_lead_in_drinking_water_final_8.21.17.pdf)
  - Sources of lead include copper pipes with lead solder, a lead service line, faucets, galvanized pipes, and lead goosenecks.
  - To reduce your exposure to lead, you can use cold water for drinking and cooking, regularly clean your faucet’s screen, consider using a water filter that is certified to remove lead, and flush your pipes by running your tap before drinking.
- Why are so many Michigan water systems finding lead? They're looking harder- <https://www.bridgemi.com/michigan-environment-watch/why-are-so-many-michigan-water-systems-finding-lead-theyre-looking>
  - “The four communities currently in violation of Michigan’s lead-in-water standard are among dozens across the state that have been flagged for high levels of lead since the new rules took effect. And with hundreds of water systems — from whole towns to small retirement centers — still awaiting their first water test results since Michigan’s rules changed, the list could keep growing.”
  - “Michigan’s new rules required operators to target homes with known lead pipes or fixtures. Under old rules, operators had more liberty to decide where they pulled samples, which made it less likely they would detect lead risks.”
  - “Under the old rules, operators were required to test only the first liter — a tactic that might spot problems caused by lead-containing faucets inside homes, but is unlikely to spot contamination coming from the public pipes that deliver water into homes.” Now they have to test the

- first and the fifth liter of water.”
  - “State data shows that since the new testing protocols took effect, 43 Michigan water systems have been in violation of Michigan’s lead standards — some of them repeatedly.”
  - “While costly, removing lead lines saves money in the long run by avoiding future costs linked to lead exposure, such as increased health care, education and social assistance needs.”
- Benton Harbor on edge as lead water crisis persists-  
<https://www.greatlakesnow.org/2021/11/ap-michigan-benton-harbor-lead-water-crisis-persists/>
  - “Michigan Gov. Gretchen Whitmer has promised to spend millions of dollars to replace the city’s lead service lines within 18 months – a blistering pace for a process that often takes decades. For now, residents have been warned not to cook, drink or make baby formula with tap water.”
  - “On Tuesday, the Environmental Protection Agency identified a range of violations at Benton Harbor’s water facility. The federal inspection found problems so bad that the city needs to consider forfeiting ownership, the EPA said.”
  - “Water systems occasionally produce high test results, but in Benton Harbor, authorities haven’t been able to bring them down. The long-term fix involves replacing the roughly 2,400 pipes that may contain lead, state officials said.”
  - “exposure to lead isn’t safe for children and it’s too soon to predict what the long-term impact may be. Lead levels can vary by household and individuals can respond differently to exposure. The impact can depend on other factors like poverty, too, making it especially important to address the issue in city’s like Benton Harbor”
  - “Sylvester Bownes, who wears a prosthetic on his right leg, said he has consumed bottled water for years because he doesn’t trust Benton Harbor’s water.”
  - “Nelson, who has 12- and 14-year-old daughters and a 5-year-old son, said preparing dinner can take 15 to 20 water bottles.”
- Michigan's Revised Lead and Copper Rule FAQ: Basic Questions-  
<https://graham.umich.edu/project/revised-lead-and-copper-rule/faq>
  - A resource including many frequently asked questions about lead in water and service lines. More answers to questions can be found on this website, including questions about the Lead and Copper rule itself.
  - “Lead can move into tap water from water pipes and plumbing materials that contain lead, especially if the water supply is not properly managed to control for corrosion”
  - “lead could be present in drinking water in property that has lead sources in household plumbing or in the [water service line](#) that connects the water main in the street to the property”
  - “The major concern for exposure is swallowing lead-contaminated water, whether as drinking water, other beverages prepared with water, food cooked with water, or rinsing after brushing teeth”
  - “lead-contaminated water is not a concern for exposure in the air or by

contact with the skin while showering, bathing, laundering, or washing dishes.”

- “Some of the health effects from drinking water highly contaminated with lead are anemia, hypertension, renal impairment, and toxicity to the reproductive organs”
- “Remove and clean the aerators on your faucets monthly. If water has gone unused in the home for six hours or more, run the water for 30 seconds to 2 minutes before drinking. If you have a lead service line, let the water run 3-5 minutes to flush water from both the interior building plumbing and the lead service line. If you have a lead service lines or if there is a pregnant woman or children age 6 and under in your home, consider buying a filter that meets NSF standard 53 for lead removal for drinking and cooking.”
- Michigan's Revised Lead and Copper Rule FAQ: Lead Exposure and Blood Samples- <https://graham.umich.edu/project/revised-lead-and-copper-rule/faq?faq=3>
  - “If a home’s water is contaminated with lead, the lead can enter the body and may be detected in the blood if the water is swallowed.<sup>1</sup> However, detection of lead in blood should not be relied on as an indication of lead contamination of drinking water.”
  - “after an exposure incident, it takes about one month for lead levels in the blood to decrease by one-half”
  - “Some of the lead that is in the blood moves from the blood into other parts of the body, such as bones and teeth, where it can be stored for several years.”
  - “a blood lead test alone cannot definitively determine if a person is exposed to lead in drinking water.”
- Michigan cities must begin replacing lead pipes. But who has the cash?- <https://www.bridgemi.com/michigan-environment-watch/michigan-cities-must-begin-replacing-lead-pipes-who-has-cash>
  - “The city has already increased water rates twice to pay for the effort, he said, and he worries that residents, 1 in 5 of whom live in poverty, can’t handle much more.”
  - “As utilities across the state launch into a massive lead line replacement effort that is expected to be paid for largely by ratepayers, they are navigating a host of challenges, from the price to replace lead pipes, which can cost several thousand dollars per house, to where they’ll find enough contractors to do the work.”
  - “Often, the communities with the biggest backlog of upgrades and fixes are the least-equipped financially to pay for them.”
  - “As a result, they must raise rates. That makes water less affordable for customers, so more of them may stop paying. That creates budgetary shortfalls, leaving utilities with even less income to pay for infrastructure maintenance.”
  - “so far, state and federal dollars available have paled in comparison to the billions of dollars it could collectively cost cities and towns to modernize water systems.”
  - “The Michigan Municipal League has estimated there are as many as

500,000 lead lines in Michigan, with a price tag [as high as \\$2.5 billion](#) to replace them all.”

- “They are often rural towns or once-dense urban centers with high poverty rates and shrinking populations, where water rates are already high. Cash-strapped Flint, for instance, [had the highest residential water rates in the nation](#) at the time it was being poisoned by lead.”
- “Jernberg worries that the sheer volume of needed replacements across the state will create labor shortages making it difficult to finish work on time.”

## Lead in Nature

- Can a fungus help clean up lead-contaminated soil?-  
<http://www.buffalo.edu/news/releases/2022/01/019.html>
  - “in so-called legacy cities like Buffalo, where lead and other contaminants have seeped into the soil over decades of heavy industry, it can be extremely dangerous to grow food.”
  - “Mycelium has several features that help remediate lead or other toxicants. Specifically, mycelium is a fibrous network, where the cell wall of each fiber contains several proteins and enzymes that actively interact with heavy metals and other organic pollutants,” says [Katarzyna Kordas, PhD](#),”
  - “Lead contamination of residential and gardening soils contributes to the risk of lead poisoning among children and adults”
  - “To address lead poisoning, former industrial cities like Buffalo — where the soil often contains lead from industrial sources, including deteriorated lead-based paint — need a wide range of lead remediation, educational and policy approaches at their disposal to complement ongoing efforts.”
  - “There are also cultural implications. In Buffalo, for instance, the city’s population has increased over the past decade due primarily to an influx of refugees, many of whom, following traditions, set up home gardens, unaware of the potentially toxic conditions in the soil.”
  - “It is currently not safe to grow food in-ground anywhere in the city that hasn’t been tested or remediated, due to lead and other heavy metal contamination, which is why you’ll find mounded beds or raised beds in all of our member-gardens.”
- Most U.S. eagles suffer from lead poisoning, study suggests-  
<https://www.nationalgeographic.com/animals/article/bald-eagles-golden-eagles-lead-poisoning-ammunition>
  - “The majority of adult bald and golden eagles carry high levels of lead, which derives from hunters’ ammunition, a large study found.”
  - “The primary source of exposure is ammunition—as eagles scavenge on the carcasses of animals shot by hunters, they can ingest lead fragments from rifle rounds and shotgun pellets.”
  - “They found that more than half of the adult birds had bone lead concentrations above 10 parts per million, which pathologists define as

- chronic lead poisoning.”
- “While acute poisoning can kill eagles in horrific fashion—for example causing them to become immobile and slowly starve to death—chronic exposure can also have other less visible effects, such as impairing movements and flight, reducing sperm quality, making it impossible to swallow and digest food, and lowering immunity”
- “Nearly every single eagle we tested had some lead exposure over the course of its life”
- “It is really frustrating that lead poisoning in birds of prey has been well known for more than 50 years, and there have been very limited movements in the regulations adopted in most of the countries’ to reduce use of lead ammunition,”
- “Lead can also poison birds in other ways. Waterbirds that consume small pebbles to help them digest food can inadvertently consume shotgun pellets or ammunition fragments.”
- “Most hunters don’t realize lead ammo can end up hurting eagles, he says, and are willing to explore alternatives.”
- “Lead concentrations in the bones of humans and wildlife such as eagles were below 0.1 parts per million, hundreds of times lower than the average concentration found in adult eagles in the Science study.”
- “Lead exposure is reducing the bald eagle’s growth rate by 4 percent per year”, although conservation efforts have caused the population to increase overall.
- Minnesota lawmakers take aim at lead bullets and lead in drinking water- <https://www.kare11.com/article/news/politics/minnesota-lawmakers-take-aim-at-lead-ammo/89-831a0339-7ae4-4bd8-aae4-259ccc8b4530>
  - “There's also plenty of evidence that raptors and other scavenger birds are sickened when they accidentally eat lead bullet fragments from large game hunting.”
  - "It only takes a piece of lead the size of a grain of rice about half to one centimeter large to kill a bald eagle when ingested."
  - “Strate told lawmakers about trumpeter swans that had been found with fatal levels of lead poisoning at area lakes. She said they were most likely sickened by ingesting lead fishing sinkers.”
  - "Despite receiving treatment both swans had to be humanely euthanized after their conditions continued to deteriorate."
- Lead in Garden Soils- <https://extension.umd.edu/resource/lead-garden-soils>
  - “Elevated lead levels are more common in urban neighborhoods, but suburban and rural soils may also be contaminated.”
  - “The greatest lead concentration is in the top 1 to 2 inches of soil.”
  - “All vegetable garden soils should be tested for lead.”
  - “Don't locate food gardens next to a busy road or a home built prior to 1940 with a painted wooden exterior.”
  - “Soil removal (by a certified contractor) and replacement should be considered if the total soil lead level is over 5,000 ppm”
  - “Don't allow young children to play in contaminated soils.”
  - “Wash all vegetables and peel all root crops before they are cooked and eaten. Remove the outer wrapper leaves of cabbage. If possible, wash

- off excess soil from root and leaf crops outside the house to prevent bringing contaminated soil into your home.”
  - “Soil can be contaminated with lead from several other sources - industrial sites, leaded fuels, old lead plumbing pipes, or even old orchard sites in production when lead arsenate was used as a pesticide.”
  - “Contamination is long-term. High soil lead levels do not decline over time but lead can be made less available through some best gardening practices”
- Lead in Soil- <https://www.epa.gov/sites/default/files/2020-10/documents/lead-in-soil-aug2020.pdf>
  - “Higher levels of lead are found in soil: Near roadways as a result of air emissions from vehicles that used leaded gasoline” and “Near the perimeter of buildings that used lead paint that deteriorated as chips and dusts, or from past renovation activities”
  - “Lead naturally occurs in soil at low levels. Hundreds of years of human activities have contributed to increased levels of lead in soil, especially in and around urban areas and near older homes. Lead does not breakdown over time, so lead deposited in the past can still be a problem today.”
- Michigan's bald eagles face a growing threat: lead poisoning- <https://www.thetimesherald.com/story/news/2022/03/25/bald-eagles-lead-poisoning-ammunition-michigan-dnr/7059960001/>
  - “But Melotti and others have been witnessing a growing killer in the iconic birds - lead poisoning.”
  - “Melotti said about 12% of the eagles she sees have enough lead in their livers to be fatal. She said in 2005, lead poisoning made up about 10% of the eagle deaths.”
  - “The lead poisoning can be linked to the eagles scavenging off deer that have been shot with lead bullets or their gut piles.”
  - “She said the number of lead-poisoned eagles increases following the state's deer firearm season each November.”
- Lead concerns for gardeners: Mitigating risk- [https://www.canr.msu.edu/news/lead\\_concerns\\_for\\_home\\_gardeners\\_mitigating\\_risk?utm\\_source=cc&utm\\_medium=email&utm\\_campaign=extensiondigests](https://www.canr.msu.edu/news/lead_concerns_for_home_gardeners_mitigating_risk?utm_source=cc&utm_medium=email&utm_campaign=extensiondigests)
  - “In undisturbed soils, concentrations are generally highest in the top 3 inches of the soil surface. This risk is not only present with vegetable gardening in high-lead soils but is also a concern to gardeners with landscape beds.”
  - “The concern with lead-contaminated gardens is primarily about contact and inhalation of the soils.”
  - “Mulch any bare soil to prevent lead-contaminated soil dust from drifting onto other plants and garden surfaces. Wear gloves when gardening.”
  - Get your soil tested and increase soil organic matter.
  - “Avoid growing root crops such as [carrot](#), [beet](#), [rhubarb](#), low-growing leafy greens, and parsnips in lead-contaminated soils.”

- “Do not grow edible produce if soil lead levels exceed the recommended guidelines. Cover the existing soil with a barrier and build a raised bed for produce”
- “Avoid composting root crops that have been grown in high lead conditions with poor soil quality. This can contaminate your compost pile.”
- “Allocate a specific play area for children with a sandbox or covered substrate to minimize exposure to soil. Keep this area away from old painted buildings.”
- If lead levels are above the EPA’s recommendation, “Do not leave bare soil accessible”

## Lead Policy and Funding

- Cleveland Clinic donate \$60 million to stop lead paint poisoning- <https://www.cleveland19.com/2022/01/14/city-cleveland-cleveland-clinic-donate-60-million-stop-lead-paint-poisoning/>
  - “The city announced it would be giving \$17 million over the course of two years to the Lead Safe Cleveland Coalition. Those dollars will come from the American Rescue Plan Act. The Cleveland Clinic also backed the cause, announcing that they will be giving 50 million dollars to the coalition.”
  - “‘It’s time to focus on implementation and accelerating the pace of change to truly eradicate the lead paint crisis epidemic,’ said Cleveland Mayor Justin Bibb.”
  - “‘This effort is critical because prevention is the only effective approach, it is important to emphasize that there is no cure and no way to reverse the damage of lead poisoning once it’s done,’ said Cleveland Clinic President and CEO, Dr. Tom Mihaljevic.”
- Working group to examine impact of EU lead shot ban- <https://www.agriland.ie/farming-news/working-group-to-examine-impact-of-eu-lead-shot-ban/>
  - “In January 2021, the European Commission decided to restrict the use of lead gun ammunition in wetlands across all 27 EU member states.”
  - “This restriction also allows member states to ban lead shot in all areas if over 20% of a country’s territory is deemed to be wetlands.”
  - “As a result of this, the agency estimates that 100,000t of lead is dispersed into the environment across the EU annually.”
  - “The group said that the ban “will prevent the avoidable death by lead poisoning of around one million water birds every year”.”
  - “The minister said that in the coming weeks he plans to appoint a chairperson to a working group which will “scope out the impact of the regulation”.”
- Minnesota lawmakers take aim at lead bullets and lead in drinking water- <https://www.kare11.com/article/news/politics/minnesota-lawmakers-take-aim-at-lead-ammo/89-831a0339-7ae4-4bd8-aae4-259ccc8b4530>

- “Minnesota lawmakers are weighing the idea of phasing out lead ammunition, especially in wildlife areas, to cut back on lead poisoning of wildlife and humans who accidentally ingest fragments of buck shot or bullets.”
- “One bill, authored by Deep Haven Democrat Kelly Morrison, would create a lead bullet buy-back program through the DNR, and pay for vouchers to help hunters buy less-toxic ammo.”
- “A separate bill authored by Rep. Peter Fischer of Maplewood would ban lead sinkers and jigs that weigh less than an ounce and are shorter than two and a half inches long.”
- “Brian Gosch of the National Rifle Association was among those who testified against Morrison’s bill. “Banning lead ammunition will make the supply chain problem of any type of ammunition much worse. Further, the alternatives to lead ammunition can be less lethal, and therefore less ethical for hunting.””
- “Rep. Sydney Jordan of Minneapolis has a bill that would create a grant program to help cities replace aging lead water service lines. Those are the buried lines that carry water from the city water mains into homes.”
- “She said one goal of the bill would be to help cities leverage aid from the federal Infrastructure and Jobs Act that Congress passed late last year.”
- Draft Strategy to Reduce Lead Exposures and Disparities in U.S. Communities- <https://www.epa.gov/lead/draft-strategy-reduce-lead-exposures-and-disparities-us-communities>
  - The EPA’s new strategies and policies regarding lead.
  - “EPA has updated the draft Lead Strategy to include additional actions to address lead in water due to the recently signed Bipartisan Infrastructure Law. This legislation provides a historic investment to replace lead pipes and provide additional funds for testing water in schools and childcare program.”
  - “Reduce lead exposures locally with a focus on communities with disparities and promote environmental justice”
  - “Reduce lead exposures nationally through protective standards, analytical tools, and outreach”
  - “The EPA will target opportunities to collaborate across EPA programs and with federal partners and other governmental stakeholders, including states, tribes, cities, and counties, as well as non-governmental organizations and industry stakeholders, to focus the full range of resources to reduce lead exposures from all sources in the most impacted communities across the country.”
  - Can watch recording of public outreach for region 5; comments are available in writing until March 16th
- Lead poisoning response in Cleveland provides funds to landlords, but none for victims- <https://www.liberationnews.org/lead-poisoning-response-in-cleveland-provides-funds-to-landlords-but-none-for-victims/>
  - “On Jan. 13, Cleveland Mayor Justin Bibb, members of city council and the CEO of Cleveland Clinic announced \$67 million in contributions to the Lead Safe Home Fund. This fund, now totaling \$115 million,

- “provides landlords with loans, grants, and incentives to make properties lead safe and assist in getting their needed certificates,” the Cleveland Clinic announced.”
- “While lead-safe housing is necessary, funds have not been made available for the victims to assist them with costs of lead poisoning. Cleveland elites have neglected the immediate needs of victims. This has forced families and grassroots organizers to find solutions to the problems elites have neglected.”
  - “Almost [94% of kindergarteners screened for lead have had detectable traces in their blood](#)” in Cleveland

## Lead and Environmental Justice

- Cornell Team Finds Health Defects in Children of Flint Related to Lead Exposure- <https://cornellsun.com/2022/02/02/cornell-team-finds-health-defects-in-children-of-flint-related-to-lead-exposure/>
  - “‘We specifically care about lead because it’s associated with a lot of things that are going to prevent children from having full lives or certain opportunities,’ Ezell said. ‘In areas like Flint or other lower income cities it becomes particularly problematic, because these are already cities that are under-resourced and underserved.’”
  - “Black children, specifically, were almost twice as likely to experience emotional agitation compared to other races.”
  - “With 25 percent of the sampled children screening for clinically-diagnosed elevated blood lead levels, Flint has seen almost six times the national average. The study calls attention to the need for more clinical monitoring of Flint children for elevated blood lead levels, particularly among Black and low-income children.”
- How America’s Complicated History With Toxic Exposure and Environmental Racism is Impacting Vulnerable Communities- [https://www.newamericanjournal.net/2022/01/how-americas-complicated-history-with-toxic-exposure-and-environmental-racism-is-impacting-vulnerable-communities/?utm\\_source=rss&utm\\_medium=rss&utm\\_campaign=how-americas-complicated-history-with-toxic-exposure-and-environmental-racism-is-impacting-vulnerable-communities](https://www.newamericanjournal.net/2022/01/how-americas-complicated-history-with-toxic-exposure-and-environmental-racism-is-impacting-vulnerable-communities/?utm_source=rss&utm_medium=rss&utm_campaign=how-americas-complicated-history-with-toxic-exposure-and-environmental-racism-is-impacting-vulnerable-communities)
  - “The disaster began when the city failed to adequately clean its municipal water system following a switch in water sources, resulting in mass lead poisoning of hundreds of children and adults between April 2014 and December 2015”
  - “Despite a significant volume of complaints and reports of illness from area residents (the majority of whom were low-income persons of color) city management failed to respond appropriately and treated the situation with disdain”
  - “The situation has deteriorated to the point where even the local elementary school has been forced to close and relocate due to

- excessive concentrations of lead discovered in youngsters.”
  - “Many people consider Flint, Michigan’s water shortage to be an “egregious demonstration of environmental injustice.”
  - “For a lengthy period of time, the climate crisis exposed vulnerable groups to heavy metals such as lead, mercury, arsenic and cadmium, which have been shown to have devastating impacts even at low levels of exposure”- in section on Warren County, NC
  - “Asthma and lead poisoning are among many disorders connected with harmful substances or poisons in the environment, according to the Mount Sinai Journal of Medicine.”
- Michigan’s Environmental Justice Public Advocate speaks on water crisis in Benton Harbor- <https://www.abc57.com/news/michigan-s-environmental-justice-public-advocate-speaks-on-water-crisis-in-benton-harbor>
  - Video about thoughts on the Benton Harbor water crisis. Thoughts from Regina Strong, Michigan EJ Public Advocate
  - Priority of administration and community to make sure that everyone has water, though there may not be enough bottled water. She said 20 truckloads of water should be coming to Benton Harbor, however.
  - There are similarities of this situation and Benton Harbor to Flint. Both are majority black cities with aging infrastructure.
  - She believes Benton Harbor is different from Flint, however, because they are working to fix it.
  - Her office, Office of EJ was created by Gov Whitmer so something like flint can’t happen again.
- Benton Harbor's water crisis highlights failing infrastructure's impact on the poor- <https://abcnews.go.com/US/benton-harbors-water-crisis-highlights-failing-infrastructures-impact/story?id=80681291>
  - “Benton Harbor's water system has exceeded EPA standards for lead contamination since 2018, according to the Michigan Department of Environment, Great Lakes and Energy.”
  - “Benton Harbor, which is 90.5% nonwhite, and where median household income is only \$21,916, according to [2019 Census data](#), is not unlike other poorer, majority nonwhite cities when it comes to lead water contamination.”
  - “An ABC News analysis of EPA data shows that 1 in 6 majority nonwhite ZIP codes has at least one water district with excessive lead contamination, compared to 1 in 8 majority white ZIP codes. And 1 in 4 of America's poorest ZIP codes -- where median household income is less than \$35,000 -- has at least one water district with excessive lead contamination, compared to 1 in 11 of America's wealthiest ZIP codes, where median household income is more than \$75,000.”
  - ““It's pretty well documented that communities that have high levels of poverty and lower-income communities that are predominantly Black and brown, and communities that have suffered from disinvestment over the years -- in infrastructure, in community engagement, all of those things -- are directly correlated to environmental issues that can pop up like lead in drinking water.””

- Lead toxicity risk factors in Philadelphia-  
file:///C:/Users/aligr/Downloads/Lead%20toxicity%20risk%20factors%20in%20Philadelphia%20\_%20EurekaAlert!.pdf
  - “Black children are more likely to have elevated blood-lead levels than other children”
  - “clear connection between demographic factors like household income and race with elevated blood-lead levels”
  - “high rates of housing code violations and demolitions were strongly correlated with elevated blood-lead levels.”
  - “Gieré describes this as a vicious circle: Poverty prevents residents from completing necessary home maintenance, which leads to housing code violations and exposed lead paint, in some cases triggering demolitions that increase the amount of lead dust in the local environment.”

## Lead Solutions

- Health effects of lead on children and solutions-  
<https://planetdetroit.org/2022/01/michigan-families-navigate-scarce-resources-when-seeking-help-for-lead-poisoned-kids/>
  - “Professional assessment of a lead-exposed child’s development is a helpful first step in determining the most effective interventions. In Genesee County, for example, residents who may have been exposed to lead-contaminated Flint water are eligible for a neuropsychological assessment from the Genesee Health System’s [Neurodevelopmental Center of Excellence](#) (NCE)”
  - “But if a neuropsychological assessment isn’t available, families can also consult with their doctor or local health department about next steps.”
  - “One example is the [Early On program](#), funded by the state and local governments. Although not exclusively designed for lead-exposed children, Early On provides early intervention services for children with developmental disabilities from birth to age three.”
  - “Other programs offer assistance for parents seeking to support a lead-exposed child’s cognitive development. The state’s [Great Start Readiness Program](#) and [Head Start](#) programs provide preschool and school readiness services for low-income families.”
  - It is unsure as to whether diet changes help treat lead exposure, however “Scientific evidence most strongly supports an iron-rich diet as an intervention for lead poisoning.”
  - “Williams’ work focuses largely on finding new housing for families who have been exposed to lead in their homes – either permanently or temporarily, until lead abatement can be carried out. Williams and her colleagues have also provided cleaning kits to families, teaching them how to clean toys and other high-touch items to eliminate lead dust. But she says the ultimate goal is abating the home, or removing lead from it entirely. Although the [Michigan Lead Safe Home](#) program

covers most costs of abatement, Williams says the process can still be lengthy and difficult. The cost of full abatement for a home in Detroit can often exceed the value of the home.”

- Can a fungus help clean up lead-contaminated soil?-  
<http://www.buffalo.edu/news/releases/2022/01/019.html>
  - “Live mycelium has shown tremendous promise as a solution to cleaning up environmental pollutants in soil, but that requires expertise in growing and maintaining mycelium and mushrooms”
  - “The UB-led research team, however, is now looking to address soil hazards in an innovative, cost-effective way, which excites project partner Jeanette Koncikowski, executive director of Grassroots Gardens of WNY.” A solution they are looking into is a fungus that could potentially help lead contaminated soil be safe again.
- Lead Services Section programs, program services, program eligibility criteria, and program service map- [link](#)
  - Provides what services one can get for lead reduction based on program type and where in Michigan they are located
  - Lists the criteria one has to have to be eligible for certain services
  - The programs include:
    - the Lead Prevention Fund Program,
    - Action Level Exceedance (ALE) Lead Inspection Program,
    - Elevated Blood Lead (EBL) Response Program,
    - Local Grantee Program,
    - Lead Safe Home Program,
    - Lead Safe Home Housing and Urban Development (HUD) Program,
    - Lead Safe Home Daycare Program
- How America’s Complicated History With Toxic Exposure and Environmental Racism is Impacting Vulnerable Communities-  
[https://www.newamericanjournal.net/2022/01/how-americas-complicated-history-with-toxic-exposure-and-environmental-racism-is-impacting-vulnerable-communities/?utm\\_source=rss&utm\\_medium=rss&utm\\_campaign=how-americas-complicated-history-with-toxic-exposure-and-environmental-racism-is-impacting-vulnerable-communities](https://www.newamericanjournal.net/2022/01/how-americas-complicated-history-with-toxic-exposure-and-environmental-racism-is-impacting-vulnerable-communities/?utm_source=rss&utm_medium=rss&utm_campaign=how-americas-complicated-history-with-toxic-exposure-and-environmental-racism-is-impacting-vulnerable-communities)
  - Provides some general EJ solutions to environmental problems and racism.
  - “Establish an environmental and climate justice section inside the US Department of Justice.
  - Raising the profile of environmental justice inside the federal government and modernizing the approach at all levels of government
  - Restructure the External Civil Rights Compliance Office of the Environmental Protection Agency
  - Increase monitoring in villages on the frontline and along the fence line
  - Require community notification
  - Establish interagency task teams to address specific issues and communicate directly with communities
  - Adopt a scientific approach when dealing with water pollution

- Prioritize programs and technologies that assist disadvantaged areas in reducing traditional air pollution.”
- “Changes in policy, such as stricter regulation, more consistent enforcement, and larger fines, are all necessary components of the solution. When the most cost-effective course of action is for a firm to pay penalties while continuing to be reckless or sloppy in its environmental compliance, the policy has failed.”