# 2025 Lead Report

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City of Cincinnati Health Department
Environmental Health
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Image 1: Centers for Disease Control and Prevention. (2009). 11378 [Photograph]. Public Health Image Library. https://wwwn.cdc.gov/phil/

city of CINCINNATI HEALTH DEPARTMENT

This document is updated annually with the most recent information on hazards, exposures, research, and data.

# ABOUT THIS REPORT

This report is intended to provide background and data from the Cincinnati Health Department's Childhood Lead Poisoning Prevention Program (CLPPP) to the public and local policymakers. The purpose is to provide information about childhood lead poisoning in Cincinnati, why it is a hazard, who is affected, and what the Cincinnati Health Department (CHD) is doing to protect the health and safety of the community. This document is published annually with the most up-to-date information and research in the field of lead poisoning prevention.

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# DATA PARAMETERS AND LIMITATIONS

The data analyzed in this report is from the Blood Lead Testing Secure (2005-Present) dataset housed and managed by DataOhio, the official State of Ohio data platform. Cases are identified as the highest recorded test per patient identification (PATIENT_ID) per lifetime (BEST_TEST_FOR_LT). Only venous testing defines a confirmed elevation in the state of Ohio per Ohio Administrative Code 3701-30-03. Data is limited to cases within Cincinnati City jurisdiction (PATIENT_CITY= CINCINNATI) and to patients under 72 months of age (PATIENT_MON<=72) at the time of testing. Location is determined by the patient's home address. This could be a limitation of the data as exposure can occur outside the home. [1,2]

In 2021, the national guideline on lead reference value changed the threshold for an elevated blood lead level case from 5 µg/dL to 3.5 µg/dL. Ohio Department of Health (ODH) adopted 3.5 µg/dL as the threshold for an elevated case in retroactively adopted the change in 2023. To accurately assess the health of the population, for the 2025 annual report, CHD will evaluate 3.5 to 5 µg/dL, 5 to 10 µg/dL, and 10 µg/dL and greater. Data from 2025 is provisional and subject to change. [3]

Population data is taken from the *American Community Survey Table: B09001, Population Under 18 Years by Age (5-Year Estimates)* from 2015 to 2024 for 'Children Under Six' for Cincinnati City Jurisdiction. Maps are based on American Community Survey 2019-2024 5-Year population data by age and census tract for children under six. Due to the small population of children under six in each census tract and within the city, the margin of error can be large. [4]

# DEFINITIONS

- **Blood Lead Level (BLL):** The concentration of lead within the blood.
- **Blood Lead Reference Value (BLRV):** The threshold at which a blood lead test is considered elevated. References children aged one to five with EBLL in the 97.5 percentile.
- **Capillary Blood Draw:** Often a finger stick or heel stick of a capillary vessel to collect a small quantity of blood for testing.
- **Census Tracts:** A unit of measure of area, often small, ranging only a few city blocks or streets based on population density.
- **Confirmed Elevated Blood Lead Level (Confirmed EBLL):** The concentration of lead in the blood at a rate equal to or greater than 3.5 µg/dL by venous blood draw.
- **Elevated Blood Lead Levels (EBLL):** The concentration of lead in the blood at a rate equal to or greater than 3.5 µg/dL, "a blood level of concern" that should prompt public health action.
- **Hand-to-Mouth Behavior:** Contact between hands and the mouth or the area around the mouth (the perioral area) including sucking or chewing on fingers/thumb or fist.
- **High Risk Zip Code:** Any ZIP code partially/fully containing a “hot census tract”.
- **Hot Census Tract:** Any census tract in which at least 12% of the children are predicted to have blood lead levels of 3.5 µg/dL or greater.
- **Lead-Contaminated Housing:** Housing that is deemed unsafe because the home contains lead hazards such as contaminated water or deteriorating lead-based paint.
- **Lead Dust:** surface dust contaminated with or containing mass concentrations of lead.
- **Maximum Contaminant Level (MCL):** legal threshold limit on the amount of substance that is allowed in the public water systems under the Safe Drinking Water Act.
- **Micrograms per Deciliter (µg/dL):** How much mass of a contaminant (lead) exists in a deciliter of liquid (blood).
- **Object-to-Mouth Behavior:** Contact between objects and the mouth or the area around the mouth (the perioral area) including sucking or chewing on toys, furniture, or surfaces.
- **Venous Blood Draw:** When at least 1mL of blood is taken from a vein for blood testing.

# DATA AT A GLANCE

**CHILDREN TESTED**

7073 children under age six were tested for lead in Cincinnati in 2025. That is 30.11% of all children under six in Cincinnati.

**3.5-5 µg/dL**

101 Children had confirmed blood lead levels of 3.5-5 µg/dL. This was 1.42% of the total tested in 2025.

**5-10 µg/dL**

94 children had confirmed blood lead levels of 5-10 µg/dL. This was 1.32% of the total tested in 2025.

**10 µg/dL OR GREATER**

38 children had confirmed blood lead levels of 10 µg/dL or greater. This was 0.54% of the total tested in 2025.

**RISK ASSESSMENTS**

26 properties had risk assessments performed in 2025 to identify possible lead exposures within the home.

# ABOUT LEAD

## Where is Lead Found

Lead (Pb) is a naturally occurring environmental hazard that can have negative health effects on humans and animals. Lead compounds have previously been used as a pigment in paints, dyes, and lead alloys. Additionally, lead has been found in water pipes, gasoline anti-knock additives, ammunition, fishing lures, cosmetics, jewelry, teas, ceremonial powders, spices, soil, and pesticides.

### Lead Paint

Lead was added to paint as lead carbonate and lead oxides for its adhesion, drying, pigmenting, and covering abilities. Lead-based paint was used extensively before 1960, especially on woodwork and high-gloss surfaces since it was more vibrant and durable than other paints of the time. Lead-based paint was banned by the United States Consumer Product Safety Commission in 1978, yet housing contaminated by lead-based paints remains a significant public health problem. The Centers for Disease Control and Prevention (CDC) estimates that at least 29 million lead-contaminated homes remain in the United States today, with 2.6 million being home to young children. In 2025, roughly 76% of Cincinnati's housing stock is estimated to be built prior to 1978, meaning roughly 122,962 homes could have deteriorating lead-based paint hazards. Lead paint chips and lead dust are often found where lead-based paint may be worn away by rubbing on surfaces such as doorways, windows, floors, porches, stairways, and cabinets. [5, 6, 7]

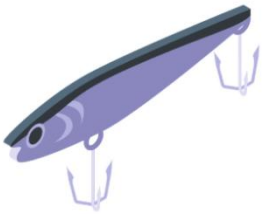
### Water Pipes

Lead water service lines became common in U.S. cities starting in the late 1800s. Lead pipes were chosen over cheaper materials, like iron, due to their increased longevity and flexibility. However, deteriorating or corroding lead pipes, lead-soldered plumbing, chrome-plated faucets, and galvanized iron pipes can leach lead into drinking water that cannot be seen, smelled, or tasted. Once health risks were known, officials began restricting lead pipe use by the 1920s. Cincinnati stopped installing lead in its service lines in 1927 and has since been replacing old lines. In 2017, Greater Cincinnati Water Works (GCWW) inventoried the city's service lines, identifying 52,129 lead or unknown service lines. As of June 3rd, 2026, 40.5% have been identified as non-lead or replaced with copper, leaving 30,995 active or unknown service lines in use today. In December 2021, Cincinnati City Council voted to cover all costs of replacing residential lead service lines. In January of 2025, GCWW was awarded the Ohio City and County Management Association Citizen Participation Award, acknowledging the Lead Service Line Replacement Program's significant community participation. The program averages approximately 90% participation on projects throughout Cincinnati. If you receive water through GCWW, and are interested in determining whether a waterline includes lead pipes, please see GCWW lead map. All Cincinnati residents are eligible to receive free water test kits from GCWW. [8, 9, 10, 11, 12]

### Gasoline Additives

Lead in the form Tetraethyl lead ($Pb(C_2H_5)_4$), was first added to gasoline in 1921 as an anti-knock additive to improve fuel efficiency. Due to concerns about air pollution and health risks, this type of gasoline was phased out for automotive use with the Clean Air Act of 1970 and then banned in the U.S. in 1995. On October 27, 2011, the United Nations Environmental Program (UNEP) announced a global eradication of leaded gasoline for cars and trucks, with the last reserves officially emptied in Algeria in July 2021. Tetraethyl lead is still used in aviation gasoline (avgas) despite the EPA determining that "lead emissions to air from certain aircraft engines cause or contribute to air pollution which may reasonably be anticipated to endanger public health and welfare." The Federal Aviation Administration (FAA) has enforced improved emission standards over the past 30 years, with an industry-wide goal to remove lead from avgas by 2030 through the Eliminate Aviation Gasoline Lead Emissions (EAGLE) initiative. The FAA reports approximately 167,000 aircraft in the U.S., and a total of 230,000 aircraft worldwide rely on lead avgas. When used, leaded gasoline is aerosolized into a gas vapor that can be inhaled and topical exposure to tetraethyl lead can be absorbed easily through the skin. The compound tetraethyl lead is acutely toxic, meaning if inhaled sudden and severe outcomes in both children and adults, including insomnia, weakness, anxiety, tremors, bradycardia, hypotension, hypothermia, nausea, confusion, hallucinations, psychosis, mania, convulsions, comas, and death can occur. [13, 14, 15, 16, 17, 18, 19]

### Ammunition and Fishing Lures



Lead poisoning in wildlife was first reported in 1894 from lead-based ammunition and fishing lures. Lead is used in ammunition and fishing lures because of its weight and shaping ability. When left in the environment, these lead items navigate into the food chain via birds and fish. Raptors and scavenging birds eat the remains of hunted or fished animals and are poisoned by lead fragments embedded in the carcasses, which are then distributed throughout the body by digestion. Waterfowl and terrestrial game birds that have gizzards for grinding up food are at risk of being poisoned by ammunition. Lead fishing tackle is the leading cause of death for common loons and swans, and poses a risk to more than 70 other species in the U.S. Eating game, specifically birds and fish, killed with lead shots or lead lures pose a serious risk to a person's health and the health of the environment by introducing lead into the food chain. [20, 21, 22, 23]

### Cultural Items and Cosmetics

The U.S. has strict safety standards that screen products for heavy metals prior to distribution. However, unregulated products can often still be imported from other countries where lead is not regulated in consumer products. Check for state or federal agency safety labels on products before use or check the Consumer Product Safety Commission (CPSC) website for current products that have been recalled for lead contamination or if there is question on the safety of a product. [24, 25]

Spices and teas can be contaminated when grown in areas with polluted soil from leaded gasoline, battery manufacturing plants, and mines with contaminated water runoff. In unregulated countries, lead can be added to spices and powders to increase weight and brighten the color. Lead has been found to be added in traditional powders and tablets given for arthritis, infertility, upset stomach, menstrual cramps, and other illnesses. Lead has also been found in products typically used in cosmetics or in religious ceremonies. For example, in some Hindu and Sikh traditions, married women wear red sindoor powder in the parting of their hair to indicate marital status. Other cosmetic products use lead for pigmentation purposes, such as kajal and kohl, which are used in traditional eyeliners in Asian and Middle Eastern countries. [24, 26]

### Jewelry

Lead is sometimes incorporated into jewelry to enhance its weight, brightness, and stability. While more common in antique or plastic jewelry, it is often considered safe for adults to wear and handle. However, children are at risk of exposure due to hand-to-mouth contact after handling jewelry or sucking, biting, or chewing on jewelry, or accidental swallowing of small jewelry components. [27]

### Lead in Soil and the Environment

Lead can naturally exist in soil at low levels but is found in higher levels in cities due to the increase in human activities. Lead does not break down over time, so lead from the past can still pose a risk today. Lead can settle in the soil near roadways and airports from leaded gasoline, near buildings from previous lead paint deterioration, and in hunting grounds or outdoor shooting ranges from lead lures and ammunition. Industrial sites may also release lead into the environment. Lead-contaminated soil particles can be tracked into the home as lead dust on shoes, clothes, or pets. [28]

### Pesticides

Chemicals such as organophosphorus pesticides (e.g., tebufenozide, homofenazine, etc.) that are used for eliminating pests or insects from homes and outdoor spaces may contain toxic heavy metals, including lead. Spraying aerosol pesticides can cause lead exposure through inhalation. Additionally, spraying kitchen surfaces near food can cause lead ingestion once food becomes contaminated. Avoid this risk of exposure by purchasing pesticides that are free of toxic metals and contain safer ingredients. Also, switching from aerosols to powders, soaps, and oils can minimize risk of inhalation. Safe, non-toxic pesticide or insecticide options can include boric acid powder, potassium soap, and neem oil. [29, 30]

## Exposures

Lead poisoning is the leading preventable environmental disease in children. According to the CDC, there is no safe blood lead level (BLL) in children, even low levels of lead in the blood have been shown to negatively affect a child's neurological development. Damage from lead poisoning can be permanent. Lead poisoning often develops gradually, becoming well established before symptoms become apparent. [31, 32]

*Image 2: Baby engaging in object-to-mouth behavior*

### How Exposures Happen

Lead exposure occurs when a person comes in contact with lead by touching, swallowing, or breathing in lead or lead dust. Lead poisoning occurs when lead builds up in the body over months or years, and because of the slow accumulation of lead, children may have no obvious immediate symptoms. [31, 32, 33, 34]

*Image 3: Baby engaging in hand-to-mouth behavior*

Childhood lead poisoning in the U.S. is most often caused by chronic exposure to lead-based paint. Lead-based paints were banned for residential use in 1978. However, homes built before this time can contain some level of lead-based paint. When lead paint peels and cracks due to rubbing or friction, lead paint chips and lead dust form. Children, specifically babies and toddlers, are at highest risk of inadvertent lead ingestion. Hand-to-mouth or object-to-mouth behavior includes sucking or chewing on objects that lead dust or paint chips may settle on. This includes hands, fingers, toys, or surfaces, which can result in unintended ingestion of particles. [31, 32, 33, 34]

Adult lead poisoning in the U.S. is most often caused by occupational exposures. The National Institute for Occupational Safety and Health estimated that roughly 3 million American workers are at risk of lead exposure. Professions at high risk include smelting, battery making, soldering, stained glass manufacturing, brass foundry work, lead pipe abatement, and construction and demolition workers. Severe exposures often occur in construction and demolition workers who are involved in the demolition or renovation of steel structures coated in lead paint such as bridges and elevated highways. [34, 35, 36]

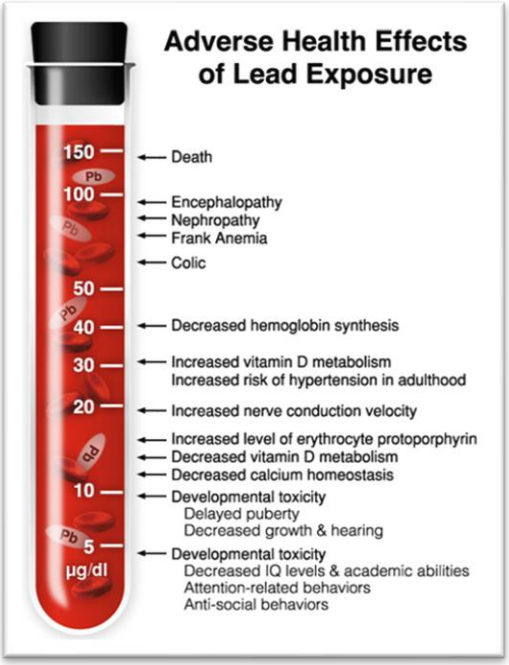



*Image 4: Taken from Adair County (MO) Health Department. Outlines at what level of lead per deciliter of blood adverse health effects can occur. There is no safe level of lead in the blood.*

### Effects of Lead Exposures

Children younger than six years are especially vulnerable to lead as exposure can have serious permanent effects on neurological and physical development. Signs and symptoms in children include developmental delay, lower IQ, learning difficulties, irritability, loss of appetite, weight loss, sluggishness, fatigue, abdominal pain, vomiting, constipation, hearing loss, seizures, and pica (eating things that are not food). Signs and symptoms of lead poisoning could occur from current exposures or latently, long after previous exposures. Many signs and symptoms of lead poisoning can be misidentified or go unnoticed. The only way to determine lead poisoning is with a blood test. [31, 32, 33, 34]

In adults, lead poisoning can be dangerous. Elevated blood lead levels (EBLL) can result in high blood pressure, joint and muscle pain, difficulties with memory or concentration, headache, abdominal pain, mood disorders, reduced sperm count, and abnormal sperm. [31, 33, 34]

Pregnant individuals exposed to lead can pass lead to their fetus in utero. This exposure before birth can cause babies to be born prematurely, have lower birth weights, and have slowed growth and development. EBLL during pregnancy can cause miscarriage and stillbirth. Lead can also be passed from mother to baby through breastmilk. [31, 33, 34]

## Prevention Measures

Lead exposure occurs when a person comes in contact with lead by touching, swallowing, or breathing in lead or lead dust. Childhood lead poisoning in the U.S. is usually caused by exposure to lead-based paint in the form of lead paint chips and lead dust. Children, specifically babies and toddlers, are at the highest risk of inadvertent lead ingestion of lead particles from hand-to-mouth or object-to-mouth behavior. Mitigating lead dust through regular cleaning can help reduce in-home exposures. Adult lead poisoning in the U.S. is usually caused by occupational exposure. Adults with exposure to lead particles need to take precautions to avoid bringing lead hazards into the home. [31, 34, 35, 36, 37]

To prevent lead poisoning, adopting a layered approach of preventative behaviors can mitigate the risk. Removing lead hazards from the home, maintaining proper cleaning, and eating a healthy diet can help reduce the chance of lead poisoning. [31, 33, 34]

**1.) Removal of Lead Hazards**: Removal of lead hazards is the most effective way to ensure that children do not experience the long-term effects of lead poisoning. Removing products such as toys or furniture coated in lead paint can greatly decrease the amount of lead dust within the home. Removal of other household products that may contain lead, such as lead ammunition, lead fishing lures, imported cosmetics, homemade glazed pottery, jewelry, imported teas, ceremonial powders, and imported spices can help mitigate lead exposure. [6, 34]

**2.) Do Not Bring Lead Dust into the Home**: Lead dust can be tracked into a home on shoes, clothes, or pets from outdoor lead hazards or occupational exposure. [6, 36]

**3.) In-Home Cleaning:** Cleaning the home to remove any lead particles that may reside in dust or soil residue can greatly mitigate the risk of lead poisoning in children. Use the following cleaning methods to safely and effectively remove lead: [38, 39]

- *Vacuum Properly:* A special vacuum is necessary for lead dust removal. High-Efficiency Particulate Air Filter (HEPA) vacuum should be used for cleaning. This vacuum has a filter that can collect the small pieces of lead that would otherwise be missed by a regular vacuum.
    - Cincinnati CLPPP facilitates a HEPA vacuum loan program where residents may borrow a HEPA vacuum up to six times a year for up to a week to clean lead dust. Call (513) 357-7420 to learn more.
- *Wet Washing:* Wet washing areas that lead dust may collect on (windowsills, walls, doors, etc.) can minimize your risk of inhalation.
- *Regular Cleaning:* Wash sheets and clothing in detergent regularly. Wash toys, pacifiers, bottles, stuffed animals, and anything a child can put in their mouth in dish-washing detergent or Tri-sodium Phosphate (TSP) and water solution.

**4.) Personal Hygiene:** Routine personal washing with soap after lead dust contact can reduce the risk of ingestion or inhalation of lead dust. Handwashing with warm, soapy water after floor or outdoor play can remove lead dust from hands that may be ingested from hand-to-mouth behavior. [33, 38]

**5.) Adopt a Lead Conscious Diet**: Parents can provide healthy dietary options for children that can protect them from harmful lead absorption. Make sure food is not exposed to lead by avoiding storing or serving food in pottery. By adopting the habits below, children can reduce their risk of the harmful effects of lead poisoning: [40, 41]

- *Eat Regular Meals:* Lead is absorbed more easily on an empty stomach. Eating nutritional meals regularly will result in a decreased amount of lead absorbed.
- *Adopt a Low-Fat Diet*: Dietary fat increases lead absorption. Therefore, a low-fat diet helps decrease amount of lead absorbed. Aim for vegetables, poultry, and lean meats such as beef and chicken.
- *Eat Calcium Rich Foods*: The body mistakes lead for calcium and as a result will absorb lead when calcium is needed. Incorporate dairy products such as milk, yogurt, and cheese into daily meals.
- *Eat Iron Rich Foods:* Low iron levels make it easier for the body to absorb and store lead. High iron prevents this absorption. Eat foods such as red meat, beans, and dark leafy vegetables like spinach and kale.
- *Reduce Salt Intake:* Excessive amounts of salt in the body can cause rapid calcium loss. This deficiency can result in a greater absorption of lead in the body.
- *Switch to Water Instead of Soda*: Sugary drinks can lead to impaired gut function and further immune system concerns. Drinking water can aid in digestion and improve overall health outcomes.
- *Use the 1/2 Plate Rule*: The goal for each meal should be half a plate of fruits and vegetables. Grains and protein should be the other half of the plate.

# CHILDHOOD LEAD PREVENTION PROGRAM

## Ohio

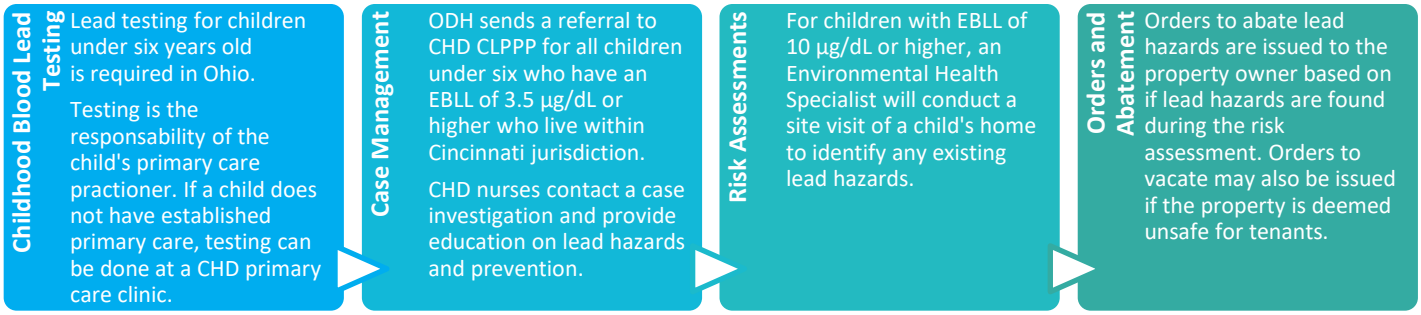
Ohio is ranked second nationally for the highest percentage (5.2%) of lead poisoned children under the age of six according to a 2021 review of state data from the CDC, far exceeding the national average of 1.9%. In response, ODH hosts The Ohio Health Homes and Lead Poisoning Prevention Program (OHHLPPP), a comprehensive statewide lead poisoning prevention program. The program offers guidelines on lead testing and medical management, educates healthcare providers, conducts surveillance, licenses professionals, and provides compliance assistance and monitoring through the statewide Healthy Housing and Lead Poisoning Surveillance System (HHLPSS), which includes a lead poisoning and testing database and risk assessment management system. [42, 43]

## Cincinnati

In 2025, Hamilton County ranked 54th of Ohio's 88 counties for the highest percentage of lead-poisoned children according to OHD Blood Lead Testing Public Data. This represents a slight worsening from its 2024 rank of 54th. [1]

The Cincinnati Health Department Childhood Lead Poisoning Prevention Program (CHD CLPPP) received an average of 220 cases of children annually from 2015 to 2025 with elevated blood lead levels above corresponding reference level each year (2015-2020 = 5 µg/dL & 2021-present = 3.5 µg/dL); however, only 36.2391% of Cincinnati children are being tested annually. This means that some children with EBLLs are likely not identified, resulting in an under-reporting bias. Currently, the CHD CLPPP provides case management to children referred with a lead level of 3.5 µg/dL and higher. Each family receives a home visit from a public health nurse providing assessment of the child, education to the family, and necessary referrals to other agencies. Children with lead levels of 10 µg/dL and above additionally receive an environmental risk assessment of their home, which includes testing of painted surfaces, dust, soil, and water. In 2025, 26 risk assessments were done. Cincinnati Board of Health orders are issued to the property owner to correct lead hazards. When owners do not comply, legal cases are filed in housing court to enforce orders. [1]

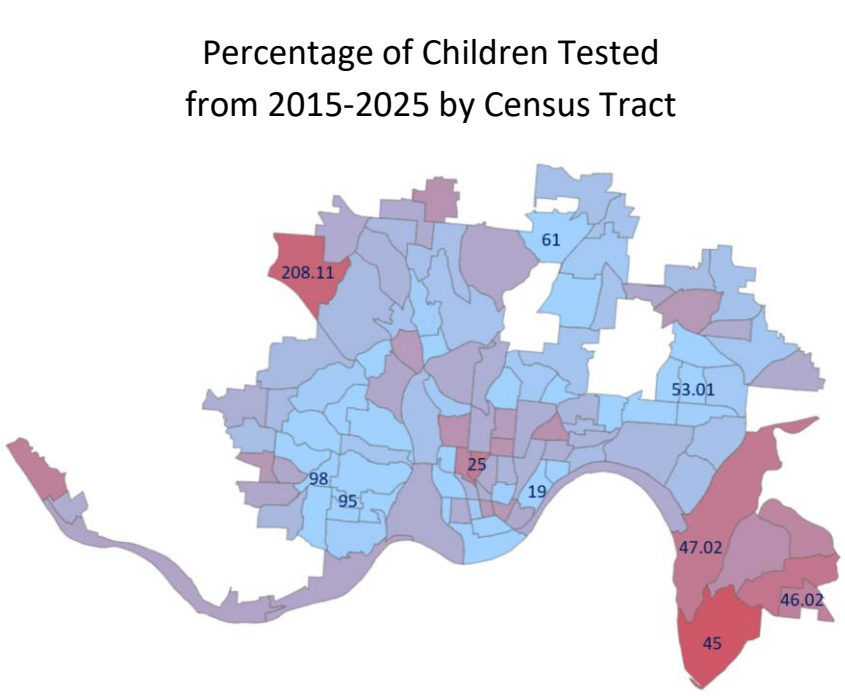
## Childhood Blood Lead Testing




It is Ohio law that all children should be tested for lead per Ohio Administrative Code 3701-30. The rule outlines that it is the primary health care provider's responsibility to test children under the age of six. All children between one and two years of age should be tested at annual check-ups. All children between the ages of three to six years of age with no BLL test history should receive a test. BLL testing is inexpensive and typically covered by health insurance. [2, 44]

Outside of regular testing, additional testing for children up to age six is warranted if any of the following are met:

- If the child is on Medicaid.
- If the child lives in a high-risk zip code. *All Cincinnati zip codes are considered high-risk.*
- If the child lives in or regularly visits a home, childcare facility, or school built before 1950.
- If the child lives in or regularly visits a home, childcare facility, or school built before 1978 that has deteriorated paint.
- If the child has a sibling or playmate who has or previously had lead poisoning.
- If the child has frequent contact with an adult who works with lead. e.g., construction, welding, pottery, painting.
- If the child lives near an active or former known lead environmental industrial hazard such as a lead smelter, battery recycling plant, or other industry known to generate airborne lead dust. [2, 44]




| Census Tracts with the **LOWEST** Percentage of Children Tested | | | |
|---|---|---|---|
| **Census Tract** | Rank | Neighborhood | Tested |
| ***45*** | *118* | *California* | 7.53% |
| ***208.11*** | *117* | *Mt. Airy* | 13.22% |
| ***46.02*** | *116* | *Mt. Washington* | 18.07% |
| ***47.02*** | *115* | *Sayler Park* | 20.45% |
| ***25*** | *114* | *Mt. Washington* | 21.20% |

| Census Tracts with the **HIGHEST** Percentage of Children Tested | | | |
|---|---|---|---|
| **Census Tract** | Rank | Neighborhood | Tested |
| ***95*** | *1* | *East Price Hill* | 96.22% |
| ***53.01*** | *2* | *Oakley* | 79.92% |
| ***19*** | *3* | *Walnut Hills* | 73.63% |
| ***61*** | *4* | *Carthage* | 72.49% |
| ***98*** | *5* | *East Price Hill* | 68.19% |

***Figure 1: 2015-2025 Average percentage of children tested in Cincinnati by census tract. Average citywide venous blood lead testing from 2015-2025 for children under six is 36.2391%. We do not see a correlation between population size and testing rates among census tracts.*** [1]

## Tests

There are two types of tests to detect lead in blood, capillary blood draw and venous blood draw. Capillary blood draw, also known as a finger or heel stick, is less invasive than venous tests because it requires a smaller amount of blood volume and can be performed quickly and easily.

Capillary testing is great for screening and creating a baseline for testing but *cannot confirm an EBLL*. Though it has many advantages, capillary testing has a greater risk of false results due to the small proportion of blood volume and possible lead contamination on the skin. Venous testing, though more accurate, can be more invasive because it draws blood from a vein such as in the inner elbow. In Ohio all capillary tests that indicate EBLL need to be confirmed by a more accurate, venous blood draw. [45]

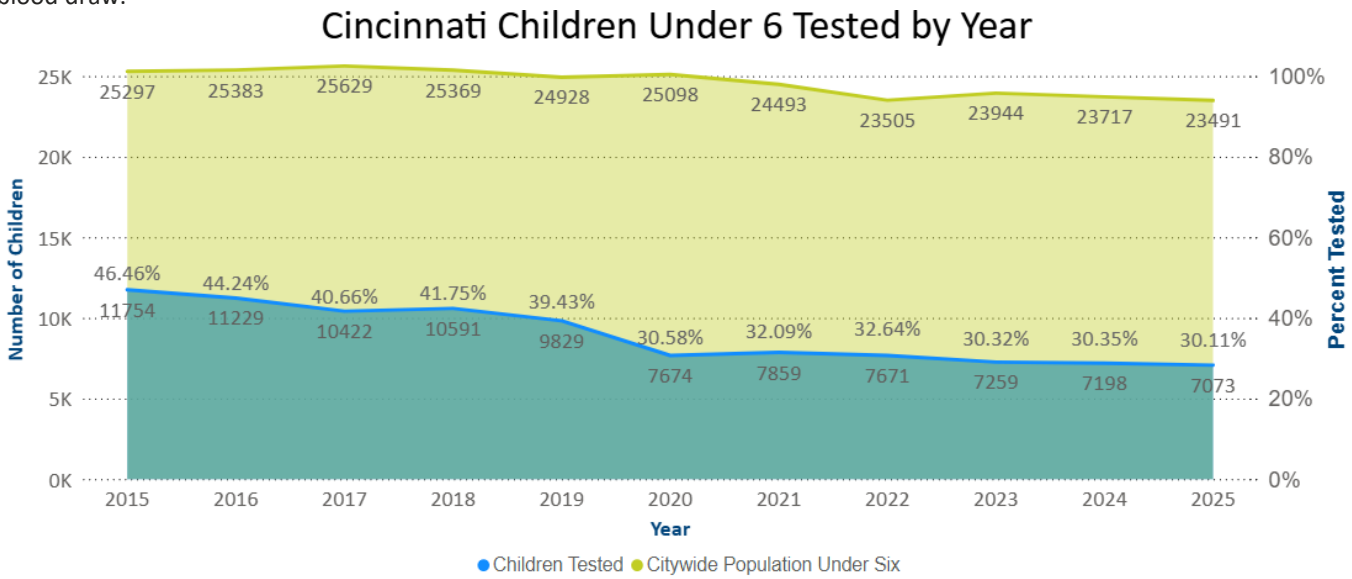
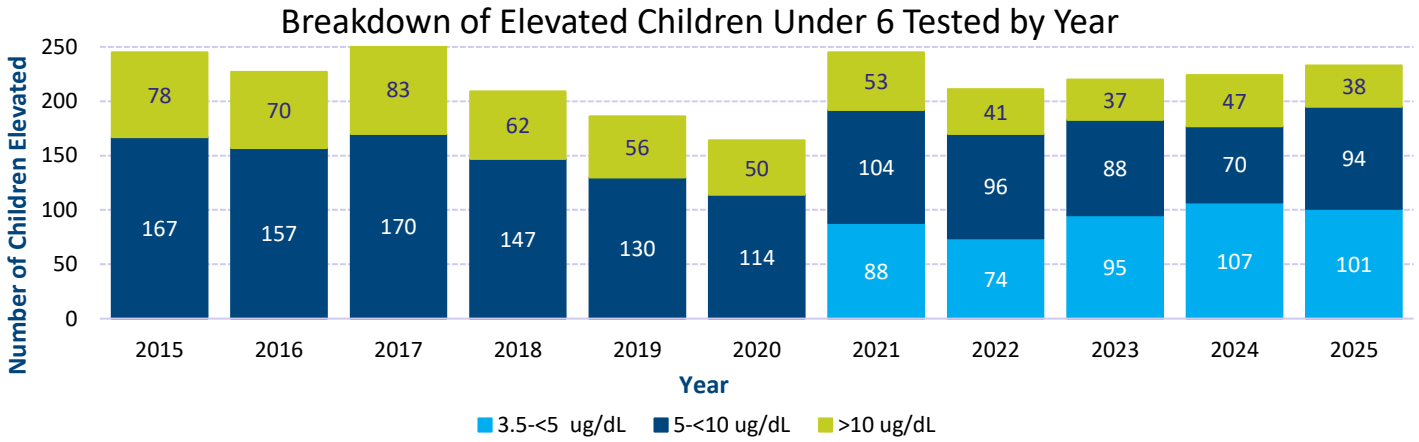



***Figure 2: Since 2015, on average 36.2391% of children in Cincinnati have been screened for lead using either a venous or capillary blood test. A significant decrease in testing is seen in 2020 suspected due to COVID-19. The estimated population under six is taken from the ACS table B09001, differing from annual reports prior to 2024 where the population was estimated using linear regression leading to a change in percent of population tested.*** [1, 4]

## Results

According to the CDC there is no safe level of lead. In 1991, the Advisory Committee on Childhood Lead Poisoning Prevention (ACCLPP) defined EBLL greater than or equal to 10 micrograms per deciliter (µg/dL) as "a blood level of concern" that should prompt public health action. In 2012, that blood lead reference value (BLRV) was revised to reference children under six with EBLL in the 97.5 percentile by the National Health and Nutrition Examination Survey (NHANES). In 2012, the children with the highest 2.5 percentile of blood levels had EBLL at or above 5 µg/dL. In 2021, the NHANES determined that children with the highest 2.5 percentile EBLL had levels at or above 3.5 µg/dL. ODH implemented the change of threshold from 5 µg/dL to 3.5 µg/dL. The presented data uses the reference level of 5 µg/dL since that was the reportable threshold at the time of testing for 2015 through 2020 and adds 3.5 µg/dL as an additional category in 2021. Though state thresholds were not lowered until 2023, the Cincinnati Health Department proactively adopted the NHANES change, beginning case management of all elevated cases 3.5 µg/dL and above upon the NHANES change in 2021. [3]

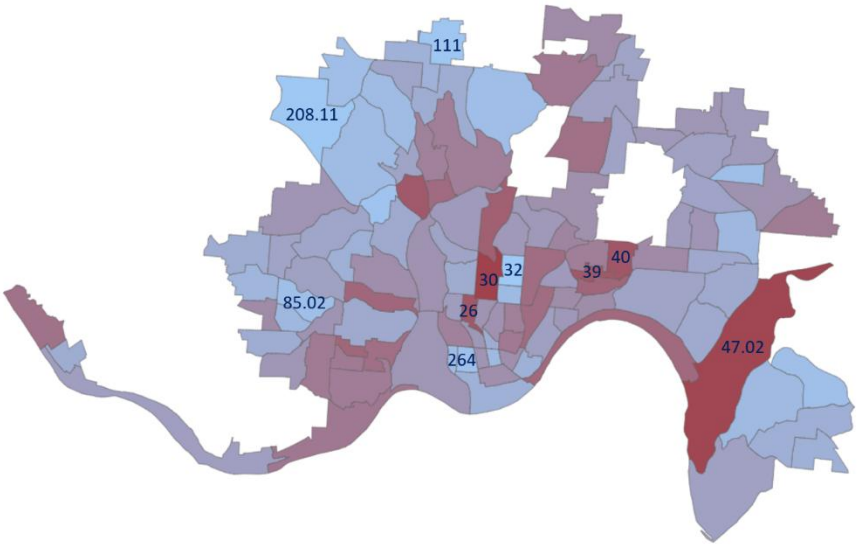
# CHILDREN WITH CONFIRMED ELEVATED BLOOD LEAD LEVELS




| Year | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mean (µg/dL) | 13.19 | 11.87 | 12.13 | 11.33 | 11.04 | 14.67 | 11.73 | 11.65 | 12.36 | 11.66 | 10.92 |
| Median (µg/dL) | 10.10 | 9.10 | 9.70 | 9.10 | 9.05 | 9.20 | 8.90 | 7.85 | 8.05 | 8.80 | 8.25 |
| Maximum (µg/dL) | 104.6 | 52.7 | 53.0 | 56.0 | 55.7 | 108.8 | 51.2 | 73.0 | 92.5 | 46.0 | 57.7 |
| Prevalence (%) | 4.2% | 3.8% | 3.8% | 3.3% | 3.2% | 3.6% | 3.0% | 3.3% | 3.0% | 3.0% | 3.0% |

***Figure 3: On average, 3.38% of all Cincinnati children who received a confirmatory BLL test (venous) had EBLL from 2015 to 2025. In 2025, 3.0% of all Cincinnati children tested had an EBLL at or above 3.5 µg/dL. The prevalence of elevated cases is stable and the variability between years does not indicate a significant change. Note the change of threshold adopted by ODH in for 2023, though CHD adopted NHANES guidance in 2021.*** [1]

## Percentage of Confirmed Elevated Children from 2015-2025 by Census Tract




High Percentage Elevated — Low Percentage Elevated

| *Census Tracts with the **HIGHEST** Percentage of Children Elevated* | | | |
|---|---|---|---|
| **Census Tract** | Rank | Neighborhood | Elevated |
| ***30*** | *118* | *CUF* | 10.91% |
| ***47.02*** | *117* | *Linwood* | 10.57% |
| ***39*** | *116* | *Evanston* | 9.68% |
| ***40*** | *115* | *Evanston* | 9.65% |
| ***26*** | *114* | *CUF* | 9.50% |

| *Census Tracts with the **LOWEST** Percentage of Children Elevated* | | | |
|---|---|---|---|
| **Census Tract** | Rank | Neighborhood | Elevated |
| ***32*** | *1* | *Corryville* | 0.64% |
| ***208.11*** | *2* | *Mt. Airy* | 0.66% |
| ***111*** | *3* | *College Hill* | 0.78% |
| ***85.02*** | *4* | *Roll Hill* | 1.08% |
| ***264*** | *5* | *West End* | 1.25% |

***Figure 5: 2015-2025 Average prevalence of elevated children in Cincinnati by census tracts (confirmatory venous testing). Average citywide elevated prevalence from 2015-2025 is 3.38% of all tested children.*** [1]

## Breakdown of Confirmed Elevated Children from 2015-2025 by Age & Sex

| | UNDER 1 YEAR | 1 YEAR | 2 YEARS | 3 YEARS | 4 YEARS | 5 YEARS | TOTAL |
|---|---|---|---|---|---|---|---|
| **Male** | 84 | 721 | 435 | 210 | 133 | 95 | **1678** |
| **Female** | 95 | 641 | 355 | 150 | 117 | 60 | **1418** |
| **Unknown** | 2 | 4 | 1 | 0 | 0 | 2 | **9** |
| **Total** | **181** | **1366** | **791** | **360** | **250** | **157** | **3105** |

***Table 1: Average age for an elevated case in Cincinnati from 2015-2025 is 1.87 years (22.4 months). Significantly more males had elevated tests from 2015-2025 compared to females. α=0.05; z= 4.67. Males consistently outnumber females from age 1 through 5.*** [1]

## Percentage of Confirmed Elevated Children from 2015-2025 by Race & Ethnicity

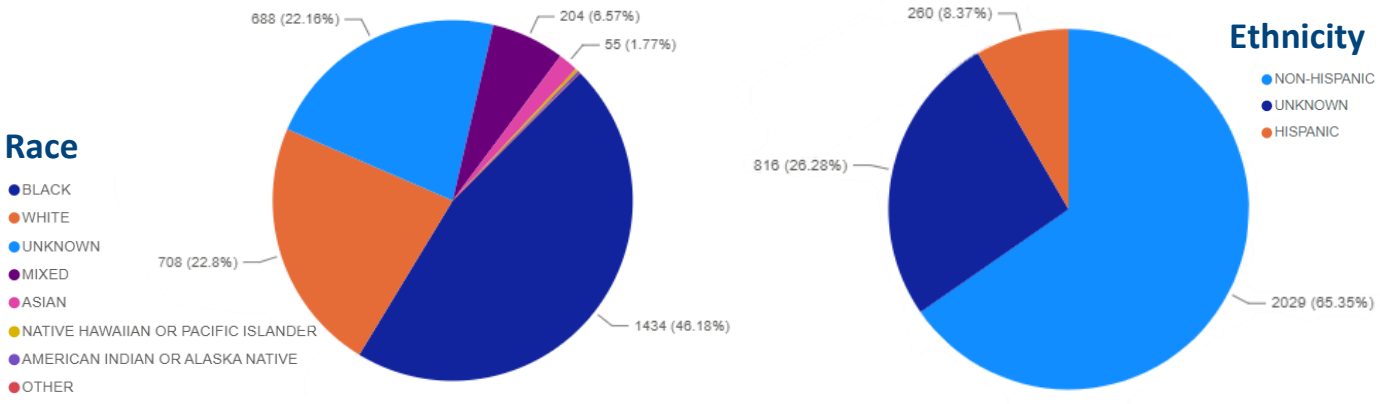



***Figure 6: Black children accounted for 46.18% of all elevated cases from 2015-2025, though 22.16% of elevated cases do not have a race reported. 66.35% of elevated cases occurred in children who identified as non-Hispanic.*** [1]

## Risk Assessments

In 2025, the CLPPP team performed 26 risk assessments in homes of children with EBLL at or above 10 µg/dL. Multiple children residing in a single unit (siblings), children who moved from the suspected lead hazardous property (no access), and children tested at the end of the calendar year resulting in a risk assessment performed after January 1, 2026, account for the discrepancy between cases above 10 µg/dL (n=38) and number of risk assessments performed. All 26 risk assessments were analyzed to identify common hazards specific to Cincinnati. Risk assessments test for deteriorating lead paint, lead dust, and lead traces found in soil and water.

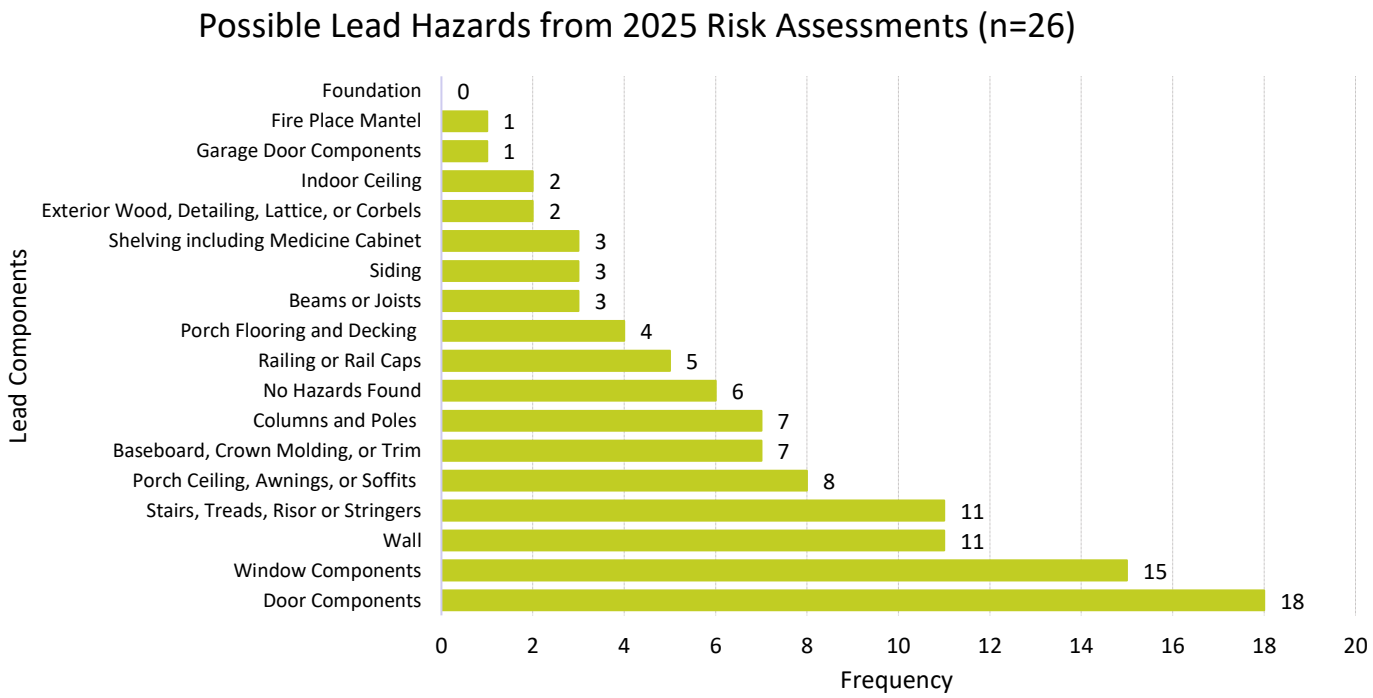
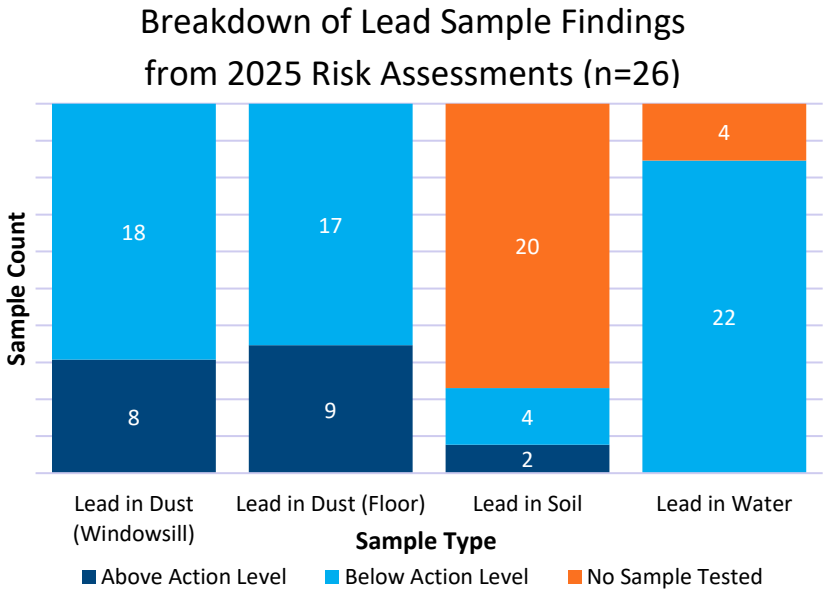



*Figure 7: Lead based paint is regularly found primarily in the paint of doors and windows, though it is present in many other locations in the home. Six properties had no lead hazards found, meaning that the lead exposure had to have come from another location.*




When lead paint peels or cracks, it makes lead chips and dust that can be found in areas of high friction or rubbing such as windowsills and doorways or could accumulate in the soil. During risk assessments, CHD takes dust and soil samples and tests them for lead. Water samples are taken and sent to GCWW to test for lead.

Each sample has a threshold, referred to as an action level at which immediate action to remove the lead hazard is required.

- Soil Sample in play area ≥ 400 µg/g
- Water Sample ≥ 15 µg/L
- Dust Sample, Floors ≥ 10 µg/ft$^2$
- Dust Sample, Windowsills ≥ 100 µg/ft$^2$

***Figure 8: Dust samples from windowsills and floors are the most likely sample type to find lead particles and require immediate remediation efforts. No water samples found actionable levels of lead.***

# REFERENCES


1.) Ohio Department of Health (2026). DataOhio. *Ohio Healthy Homes and Lead Poisoning Prevention Program (HHLPSS) Blood Lead Testing Secure (2005-Present).* [Data Set]. data.ohio.gov/wps/myportal/gov/data/home

2.) Ohio Rev. Code § 3701.30 Lead Screening and Assessment. Ohio Lead Advisory Council. Columbus, OH February 2018. Retrieved June 2, 2026, from codes.ohio.gov/ohio-administrative-code

3.) Centers for Disease Control and Prevention. (2025, March 7). *About the Data: Blood lead Surveillance*. Centers for Disease Control and Prevention. Retrieved June 2, 2026, from cdc.gov/lead-prevention/php/data/blood-lead-surveillance.html

4.) United States Census Bureau / American FactFinder. "B09001: Population Under 18 Years of Age (5-Year)." *2015– 2024 American Community Survey*. U.S. Census Bureau's American Community Survey Office. Web. 2 June 2026. Retrieved from data.census.gov/table?q=b09001

5.) U.S. Federal Reg. Code § 1303 CPSC Announces Final Ban on Lead-Containing Paint and Certain Consumer Products Bearing Lead-Containing Paint. Office of Information and Public Affairs. CPSC. Washington, D.C. September 1977.

6.) Centers for Disease Control and Prevention. (2025, March 26). *About Lead in Paint*. Centers for Disease Control and Prevention. Retrieved June 2, 2026, from cdc.gov/lead-prevention/prevention/paint.htm

7.) United States Census Bureau. (n.d.)."DP04 Selected Housing Characteristics" *2024: American Community Survey.* U.S. Census Bureau's American Community Survey Office. Web Retrieved June 2, 2026, from data.census.gov/table/ACSDP1Y2024.DP04

8.) Rabin R. (2008). *The lead industry and lead water pipes "A Modest Campaign"*. American Journal of Public Health*, 98*(9), 1584–1592. hdoi.org/10.2105/AJPH.2007.113555

9.) Environmental Protection Agency. (2026, January 2). *Lead and Copper Rule*. EPA. Retrieved June 2, 2026, from epa.gov/dwreginfo/lead-and-copper-rule

10.) Centers for Disease Control and Prevention. (2025, August 20). *About Lead in drinking water*. Centers for Disease Control and Prevention. Retrieved June 2, 2026, from cdc.gov/lead-prevention/prevention/drinking-water.html

11.) Environmental Defense Fund. (2024, April 23). *Top 10 cities with the most lead pipes*. Retrieved June 2, 2026, from edf.org/top-10-cities-most-lead-pipes

12.) Greater Cincinnati Water Works. (2026). *Lead Service Line Replacement Program*. GCWW. Retrieved June 2, 2026, from la.mygcww.org

13.) National Center for Biotechnology Information (2025). PubChem Compound Summary for CID 6511, Tetraethyl lead. Retrieved June 2, 2026, from pubchem.ncbi.nlm.nih.gov/compound/Tetraethyl-lead

14.) U.S. Rev. Code 42 U.S.C. §7401 et seq. Clean Air Act, 1970, Retrieved June 2, 2026 from uscode.house.gov/view.xhtml?path=/prelim@title42/chapter85&edition=prelim

15.) Rogers, P. G. (1990, Jan/Feb). *EPA history: The Clean Air Act of 1970*. EPA Journal- Archives. Retrieved June 2, 2026, from archive.epa.gov/epa/aboutepa/epa-history-clean-air-act-1970.html

16.) United Nations News (2021, August 30). *End of leaded fuel use a 'milestone for multilateralism'.* Retrieved June 2, 2026, from news.un.org/en/story/2021/08/1098792

17.) U.S. Environmental Protection Agency. (2026, May 8). *Regulations for Lead Emissions from Aircraft.* Environmental Protection Agency Emissions from Vehicles and Engines. Retrieved June 2, 2026, from epa.gov/regulations-emissions-vehicles-and-engines/regulations-lead-emissions-aircraft

18.) Aircraft Owners and Pilots Association. (2023, October 18). EPA Releases Final Avgas Emission Endangerment Finding. Retrieved June 2, 2026, from aopa.org/news-and-media/all-news/2023/october/18/epa-releases-final-avgas-emission-endangerment-finding

19.) Federal Aviation Administration. (2019, November 20). *Leaded Aviation Fuel and the Environment.* Retrieved June 2, 2026, from faa.gov & https://www.faa.gov/unleaded

20.) *A Brief History of Lead Ammunition Policy*. Humane Society of the United States. (n.d.). Retrieved June 2, 2026, from slidetodoc.com/a-brief-history-of-lead-ammunition-policy-lead

21.) Totoni, S. (2021, December 6). *Lead in hunting and fishing*. Environmental Health News. Retrieved June 2, 2026, from ehn.org/lead-ammunition-2655880670/lead-in-hunting-and-fishing

22.) Pain, D. J., Mateo, R., & Green, R. E. (2019, March 16). *Effects of lead from ammunition on birds and other wildlife: A review and Update*. Ambio. Retrieved June 2, 2026, from ncbi.nlm.nih.gov/pmc/articles/PMC6675766

23.) Arnemo JM, Andersen O, Stokke S, Thomas VG, Krone O, Pain DJ, Mateo R. *Health and Environmental Risks from Lead-based Ammunition*: Science Versus Socio-Politics. Ecohealth. (2016, December 13) (4):618-622. doi: 10.1007/s10393-016-1177-x. Epub 2016 Sep 23. PMID: 27663438; PMCID: PMC5161761.

24.) Centers for Disease Control and Prevention. (2025, August 20). *About Lead in Foods, Cosmetics, and Medicines*. Centers for Disease Control and Prevention. Retrieved June 2, 2026, from cdc.gov/lead-prevention/prevention/foods-cosmetics-medicines.html

25.) U.S. Consumer Product Safety Commission. (n.d.) *Recalls & Product Safety Warnings*. U.S. Consumer Product Safety Commission. Retrieved June 2, 2026, from https://www.cpsc.gov/Recalls

26.) Tirupatur, I. (2023). *Lead in Spices and Other Cultural Items*. Chapel Hill, NC; University of North Carolina Institute for the Environment. Retrieved June 2, 2026, from nchealthyhomes.com/wp-content/uploads/sites/6517/2020/01/Factsheet-Lead-in-Spices_English.pdf

27.) Department of Toxic Substances Control. (2026). *Lead in Jewelry*. Retrieved June 2, 2026, from dtsc.ca.gov/toxics-in-products/lead-in-jewelry

28.) Centers for Disease Control and Prevention. (2024, August 30). *About Lead in Soil.* Centers for Disease Control and Prevention. Retrieved June 2, 2026, from cdc.gov/lead-prevention/prevention/soil.html

29.) Abdallah Alnuwaiser, M. (2019, May 29). An Analytical Survey of Trace Heavy Elements in Insecticides. *International Journal of Analytical Chemistry*, *2019*, 1-9. doi.org/10.1155/2019/8150793

30.) Alengebawy A, Abdelkhalek ST, Qureshi SR, Wang MQ. Heavy Metals and Pesticides Toxicity in Agricultural Soil and Plants: Ecological Risks and Human Health Implications. Toxics. 2021 Feb 25;9(3):42. doi: 10.3390/toxics9030042. PMID: 33668829; PMCID: PMC7996329.

31.) Centers for Disease Control and Prevention. (2024, April 10). *Lead Exposure Symptoms and Complications.* Centers for Disease Control and Prevention. Retrieved June 2, 2026, from cdc.gov/lead-prevention/symptoms-complications/?CDC_AAref_Val=https://www.cdc.gov/nceh/lead/prevention/health-effects.htm

32.) Lanphear BP, Hornung R, Khoury J, Yolton K, Baghurst P, Bellinger DC, Canfield RL, Dietrich KN, Bornschein R, Greene T, Rothenberg SJ, Needleman HL, Schnaas L, Wasserman G, Graziano J, Roberts R. Low-level environmental lead exposure and children's intellectual function: an international pooled analysis. Environ Health Perspect. 2005 Jul;113(7):894-9. doi: 10.1289/ehp.7688. Erratum in: Environ Health Perspect. 2019 Sep;127(9):99001. doi: 10.1289/EHP5685. PMID: 16002379; PMCID: PMC1257652.
33.) Mayo Foundation for Medical Education and Research. (2025, Dec 24). Lead poisoning. Mayo Clinic. Retrieved June 2, 2026, from mayoclinic.org/diseases-conditions/lead-poisoning/symptoms-causes/syc-20354717
34.) Landrigan PJ, Todd AC. Lead poisoning. West J Med. 1994 Aug;161(2):153-9. PMID: 7941534; PMCID: PMC1022528.
35.) Landrigan PJ, Baker EL Jr, Himmelstein JS, Stein GF, Weddig JP, Straub WE. Exposure to lead from the Mystic River Bridge: the dilemma of deleading. N Engl J Med. 1982 Mar 18;306(11):673-6. doi: 10.1056/NEJM198203183061112. PMID: 7057827.
36.) Marino PE, Franzblau A, Lilis R, Landrigan PJ. Acute lead poisoning in construction workers: the failure of current protective standards. Arch Environ Health. 1989 May-Jun;44(3):140-5. doi: 10.1080/00039896.1989.9935877. PMID: 2751349.
37.) Centers for Disease Control and Prevention. (2025, August 21). *About Childhood Lead Poisoning Prevention*. Centers for Disease Control and Prevention. Retrieved June 2, 2026, from cdc.gov/lead-prevention/about/index.html
38.) NIOSH [2023]. Leave lead at work. By Couch J, Rinsky J, Grimes R, Carlson K, Reynolds L, Burnett G, Tsai R. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, Publication No. 2024-101 (revised 10/2023). cdc.gov/niosh/docs/2024-101/pdfs.
39.) Minnesota Department of Health. (2025). *Cleaning Up Lead Dust in Your Home.* Minnesota Department of Health. Retrieved June 2, 2026, from health.state.mn.us/communities/environment/lead/docs/fs/cleaningup.pdf.
40.) Kordas, K. (2017). The "Lead Diet": Can Dietary Approaches Prevent or Treat Lead Exposure? The Journal of Pediatrics, 185, 224-231.e1. Retrieved July 29, 2025, from doi.org/10.1016/j.jpeds.2017.01.069
41.) Lee, Y., Hwang, J., Kim, H., Lee, J., Ha, E., & Park, H. et al. (2011). Effect of Calcium and Sodium Intake on Blood Lead Levels in Pregnancy: Mothers and Children's Environmental Health Study. Epidemiology, 22, S266. Retrieved June 2, 2026, from doi.org/10.1097/01.ede.0000392514.06560.20
42.) Hauptman M, Niles JK, Gudin J, Kaufman HW. Individual- and Community-Level Factors Associated with Detectable and Elevated Blood Lead Levels in US Children: Results From a National Clinical Laboratory. JAMA Pediatr. 2021;175(12):1252–1260. doi:10.1001/jamapediatrics.2021.3518
43.) Childhood Lead Poisoning - Ohio Department of Health. (2026). Retrieved June 2, 2026, from odh.ohio.gov/know-our-programs/Childhood-Lead-Poisoning
44.) Ohio Healthy Homes and Lead Poisoning Prevention Program. (n.d.). *Blood Lead Testing Requirements For Ohio Children less than 6 Years of Age*. Ohio.gov. Retrieved June 2, 2026, from odh.ohio.gov/wps/portal/gov/odh/home
45.) Krleza JL, Dorotic A, Grzunov A, Maradin M; Croatian Society of Medical Biochemistry and Laboratory Medicine. Capillary blood sampling: national recommendations on behalf of the Croatian Society of Medical Biochemistry and Laboratory Medicine. Biochem Med (Zagreb). 2015 Oct 15;25(3):335-58. doi: 10.11613/BM.2015.034. PMID: 26524965; PMCID: PMC4622200.

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***MISSION:***

***To provide comprehensive, culturally competent, and quality health care for all.***

***VISION:***

***To create a healthier community by serving one patient at a time.***