

Childhood Lead Exposure

What We Know

*Current research shows the effects of lead poisoning include organ damage, slowed growth, decreased coordination, aggressive behavior, shortened attention span, lowered intelligence, reading or other learning problems. Physical appearance tends to **seem healthy, which can be deceiving.***

Modes of entry into the body include placental passage of lead from mother to baby during pregnancy. Additionally, young children tend to be at a higher risk for exposure based on their curious natures. Keeping lead contaminated items out of their mouths is crucial.

***No safe blood level** has been identified for young children, all sources of lead exposure for children should be controlled or eliminated. The EPA has set the maximum contamination level goal for lead in drinking water at **zero**. This is because lead can be harmful to human health even at the lowest levels.*

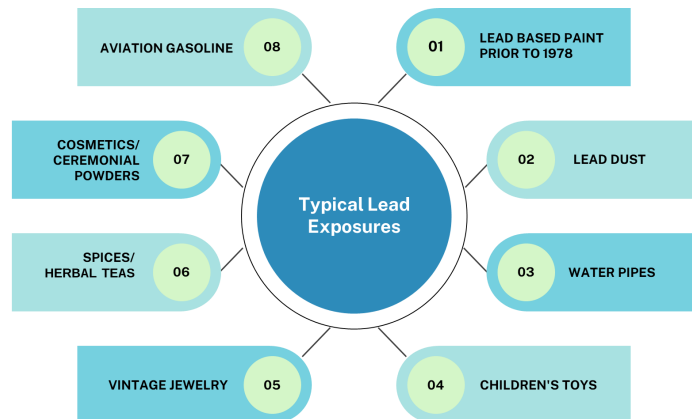
*The overall best method to determine whether you or your child have been exposed to lead is with a **blood test**. Appropriate follow up action can then take place.*

What is Lead?:

Lead is a naturally occurring heavy metal element that can build up in the body over time. It is toxic to humans and animals, and can ultimately cause severe adverse health outcomes. Lead is found in many forms with some particles being invisible to the naked eye with no scent. Lead can be found in the environment, including in the air, water, soil, and within homes.

Forms of Exposure:

The primary forms of exposure are seen through interactions with materials that can be found outside of your home and within. To create optimal safety conditions for you and your family, increase awareness of the lead content in the following items:



Lead Paint and Dust:



Lead-based paints were banned for residential use in **1978**. However, homes built before this time most likely still contain some level of lead-based paint. When this paint peels and cracks, lead paint chips and dust forms. Surfaces covered with the lead-based paint where paint might wear by rubbing or friction can cause lead dust. This includes locations such as windows, doors, stairways,

floors, porches, and cabinets. Children can be exposed to this lead if they chew on any surfaces that may contain lead-based paint, such as windowsills and door edges. Also, can become exposed if they eat flaking paint chips or breathe in the lead dust.

Aged Water Pipes:



You **cannot see, taste, or smell** lead in drinking water. Lead in service lines or household plumbing can leach into an otherwise safe water supply. Ultimately, the Environmental Protection Agency (EPA) has set the maximum contamination level goal of water to be [zero](#). Low levels of lead can be harmful to human health. For example, infants who drink formula prepared with lead contaminated tap water are at a higher risk of exposure due to the large volume of water they drink compared to their relative body size. Additionally, boiling lead contaminated water does not eliminate lead content. However, bathing and showering should be safe for you and your children because human skin does not absorb lead in water. The local water authority is the best resource for testing and identifying lead contamination in tap water. Greater Cincinnati Water Works (GCWW) will test drinking water for residents upon [request](#) at no cost. GCWW offers a [“Lead Look-Up Map”](#) that can provide information on the material your service lines contain. You can request to have your service line replaced if lead is present.

Children’s Toys:



Lead may be found in the **paint, metal, and plastic parts** of some toys and toy jewelry. In specific, those that may have been made in other countries, also including antique toys and collectibles. Young children often put their hands and toys — which may be made of lead or contaminated with lead dust — into their mouths. Also, when some plastics are exposed to sunlight lead dust can form on the toys. You can help reduce a child’s risk of exposure by referencing the [Consumer Product Safety Commission \(CPSC\)](#) website, for current products that have been recalled for lead contamination. You can also call **1(800) 638-2272** to ensure your child’s toys are safe.

Jewelry:



Lead has been used in jewelry, to make the article heavier, brighten colors, and stabilize or soften plastic. Exposures can occur from frequent hand-to-mouth contact after **handling jewelry, sucking or biting on jewelry, and accidental swallowing** of jewelry items. Factors that increase exposure include whether the jewelry is damaged, how worn it is, and how long the item was in the mouth. If your child swallows a piece of jewelry, you should contact your healthcare provider or take your child for urgent medical care.

Ceramics/Glaze Paint:



Traditional ceramicware such as clay pots, cups, and dishes from around the world can be linked to lead poisoning, due to decorative paint or glaze sealants containing large lead quantities. If ceramics are used for the purpose of **serving food or drink**, this may introduce lead exposure. No amount of washing, boiling, or other process can remove lead from ceramicware. To prevent adverse health outcomes and food contamination, inspect ceramic ware for warning labels that indicate “Not for Food Use– May Poison Food”. Additionally, throw away damaged or worn ceramics that may introduce lead dust or paint chips.

Spices/ Herbal Teas:



Spices and teas can be contaminated by lead during their processing journey. Spices and herbs that are grown in countries that may be polluted by leaded gasoline, battery manufacturing plants, and mines. Lead is deposited in soil and water from pollution in the air and fertilizers. Spices can also be changed with lead to **increase the weight or brighten the color**. To avoid this exposure, buy spices locally rather than online or overseas due to the stricter safety standards. Check products for state or federal safety labels.

Cosmetics/Ceremonial Powders:



Cosmetics can be used safely if instructions on labeling is followed. However, lead can be found in makeup products for coloring purposes. In specific, beauty products such as “**kajal**” and “**kohl**,” that are used as traditional eyeliners can cause severe health concerns due to the large amounts of lead they may contain. Most products in the United States have been screened and cleared for safe use. However, cosmetics that may be from other regions of the world could contain high levels of lead and should be researched before applying. Additionally, ceremonial powders that may be imported from Asian/Middle Eastern countries may also increase lead exposure. Powders such as “**Sindoor**” or “**Rangoli**”

may include lead, for the purpose of brightening colors and adding weight. Keep these powders and cosmetics out of children’s reach to reduce exposure.

Leaded Gasoline:



Aircrafts operate on **leaded aviation gasoline (avgas)**, which allows for optimal engine performance. However, the use of leaded gas causes lead to be released into the air. Individuals living in homes near airports and areas of high air traffic tend to have higher levels of lead exposures and as a result higher blood lead levels. Airports are attempting to regulate lead pollution, but it is necessary to be proactive in your own home. Additionally, some **older car models may also utilize lead gasoline**. To remain proactive and minimize exposure utilize air purifiers to remove gas and pollution from the air. Additionally, installing air filters

in HVAC systems to trap harmful particles can help to create a healthier environment in your home.

Soil/Turf:



Lead can be released into the air by cars that may be utilizing leaded gasoline which can then [settle into the soil](#). Additionally, leaded paint chips and residue can settle into the soil if falling off nearby fences or walls. This lead cannot be washed away and builds up in the soil. The lead contaminated soil can easily be **tracked into homes** on shoes or clothing. Increased surface area of lead contamination can lead to greater risk of lead being inhaled or ingested. Take precautions in wiping off shoes, produce, or any items that have come in contact with contaminated soil. Pets who come indoors after being outside should also be bathed or wiped down to prevent tracking in contaminated soil.

Pesticide/Insecticide



Chemicals that are used for eliminating pests or insects from homes and outdoor spaces may contain toxic heavy metals, including lead. Spraying these aerosols can cause lead exposure through **inhalation**. Additionally, spraying kitchen surfaces near food supply 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**.

Lead Ammunition:



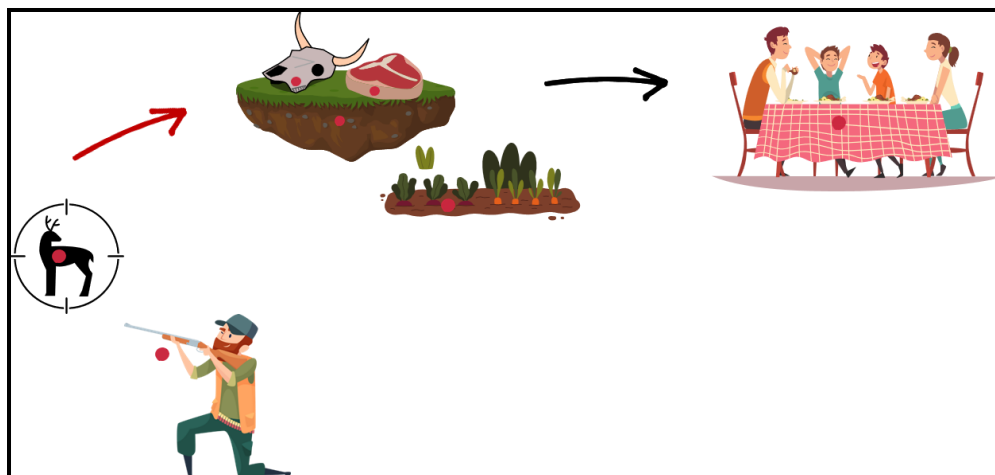
Lead has been used in ammunition because of its weight and shaping ability. Families may unknowingly increase their risk of exposure in many ways such as eating lead shot pellets or lead bullet fragments and residue in game meat. Potentially ingesting lead residue from handling bullets, or inhaling lead in the air after ammunition reloading or at shooting ranges. The **smallest amounts of lead can be incredibly harmful** to the human body. The best alternative to the use of lead ammunition is the transition to copper bullets which leave no lead residue or fragments.

Fishing Gear/Lure:



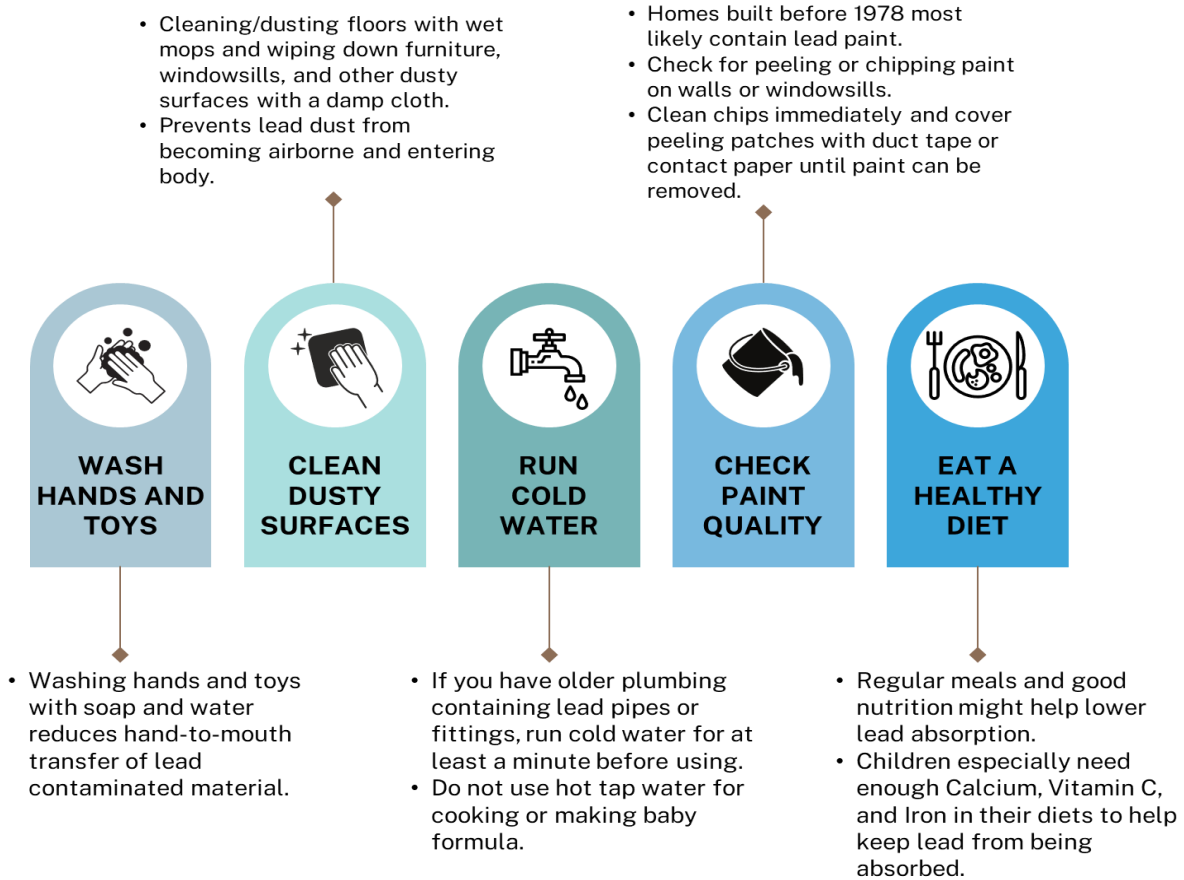
Fishing gear such as **sinkers, lures, and weighted hooks** can contain high lead content. When introduced into the environment, the risk of lead poisoning increases. Parts of fishing equipment can become trapped in the actual fish or snagged onto rocks and fallen trees which may lead to ingestion by waterbirds and nearby animals. As a result, when these animals are fished/hunted as a food source, the likelihood of humans ingesting lead contaminated products is greater. To prevent this direct and environmental exposure, aim to use alternative fishing gear that contains **safer metals such as steel or tin**. When purchasing gear check labeling that designates only lead-free materials are used.

Lead Cycle of Exposure for Game Meat/Soil :



[Follow the red lead exposure dot]- From lead bullets being handled to being lodged into game meat/soil and eventually ending up in food items that are ingested at the dinner table. Prevent lead exposure by thoroughly inspecting and removing lead bullet fragments from meat.

How to Prevent Lead Exposure:



Factors That Affect Lead Absorption

- REGULAR MEALS**

Lead is absorbed more easily on an empty stomach. Eating nutritional meals regularly will result in a decreased amount of lead absorbed.
- LOW FAT DIET**

Dietary fat increases lead absorption. Therefore, low-fat diet helps decrease amount of lead absorbed. Aim for vegetables and lean meats/poultry such as beef and chicken.
- HIGH CALCIUM INTAKE**

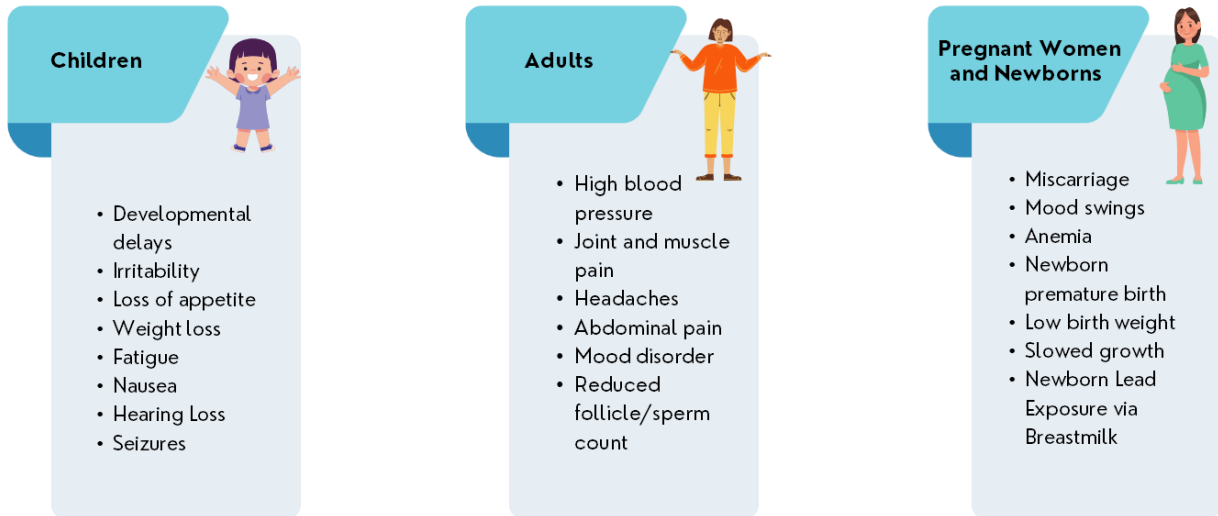
Body mistakes lead for calcium and as a result will absorb the lead when calcium is needed. Incorporate dairy products such as milk, yogurt, and cheese into daily meals.
- HIGH IRON LEVELS**

Low iron levels makes it easier for the body to absorb and store lead. High iron prevents this absorption. Eat foods such as red meat, beans, and leafy vegetables such as spinach and kale.
- INCREASED VITAMIN C**

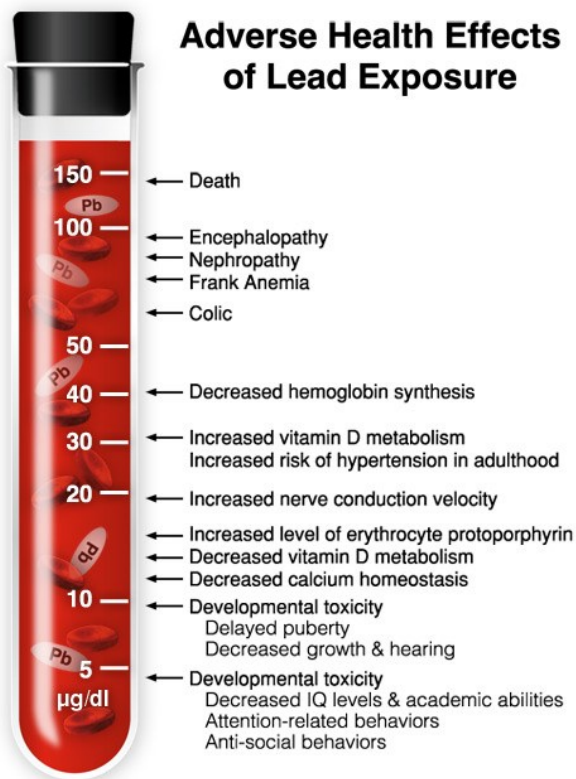
Iron is absorbed best when the body has a sufficient amount of Vitamin C. Increased iron levels results in decreased lead absorption. Try incorporating fruits and vegetables such as oranges, tomatoes, and broccoli.



Lead Poisoning Effects: Life Timeline



Lead Blood Level Testing:



Who Should Be Tested:

All children at the age of **1 and 2 years** of age. Children from **3-6 years**, if they were not tested earlier. Children living in **homes built before 1978** are at highest risk.

Lead poisoning happens when lead builds up in the body, over a series of months and years. Even small amounts of lead can create serious health concerns in children. Kids that are younger than 6 years old are more vulnerable to these effects. At very high levels lead poisoning can cause death. **There is no safe blood level for lead.**

The current health recommendation is to ensure your child is being tested routinely at their check-ups. Testing includes a **simple finger prick** or a **blood draw** from a vein. Lead levels in blood is measured in **micrograms per deciliters (µg/dL)**.

RESOURCES

HOME WATER TEST KITS

<https://la.mycww.org/lead-test-kit/>

Cincinnati Waterworks provides home water testing kits that can be sent to a lab for lead analysis.

<https://la.mycww.org/request-a-faucet-filter/>

Take proactive measures to ensure you and your family are drinking safe water. Request a water filter for your home faucets.

WATER FAUCET FILTERS

LEAD WATER LINES

<https://la.mycww.org/replace-your-lead-service-line/>

Check the online map to see if you have a lead water service line. Request a quote and submit a form for a lead line replacement.

CHD Childhood Lead Poisoning Prevention Program (CLPPP) Website

Cincinnati residents are eligible for free paint chip testing. Fill out sampling form online and mail in paint chips in a sealed plastic bag.

PAINT CHIP TESTING

CDC LEAD TERM GUIDE

https://www.cdc.gov/nceh/lead/tools/leadglossary_508.pdf

To better understand the terminology associated with lead exposures, poisoning, and treatment reference the CDC term guide.

(513) 803-3688

Appointments are required for the Cincinnati Children's Hospital (CCHMC) Lead Clinic. Second floor, 3430 Burnet Ave., Cincinnati OH 45229.

CCHMC LEAD CLINIC APPT

QUESTIONS AND CONCERNS

(513) 357-7420

Cincinnati Health Department Childhood Lead Poisoning Prevention Program (CLPPP) can provide information and further resources.

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This report is intended to provide more information about lead poisoning and is not intended to be individual medical advice. If you have questions specific to your situation, contact your healthcare provider.