MISSOURI DEPARTMENT OF
HEALTH &
SENIOR SERVICES

Childhood Lead Poisoning Prevention

Annual Report

July 1, 2024 - June 30, 2025

Annual Report for Fiscal Year 2025

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Childhood Lead Poisoning Prevention Program

Mission Statement

The mission of the Missouri Department of Health and Senior Services (DHSS) Childhood Lead Poisoning Prevention Program (CLPPP) is to assure Missouri children a safe and healthy environment through primary prevention and the identification of lead exposures that may cause illness or death.

Operations

Established in 1993, the CLPPP is staffed by professionals in public health nursing, environmental science, epidemiology, data analysis and administrative support. Nurses and environmental public health staff at local public health agencies, the Department of Social Services' MO HealthNet team, and managed care contractors also support the CLPPP program. As directed by Section 701.343 RSMo, the CLPPP is supported primarily by federal funds made available for state lead poisoning prevention programs.

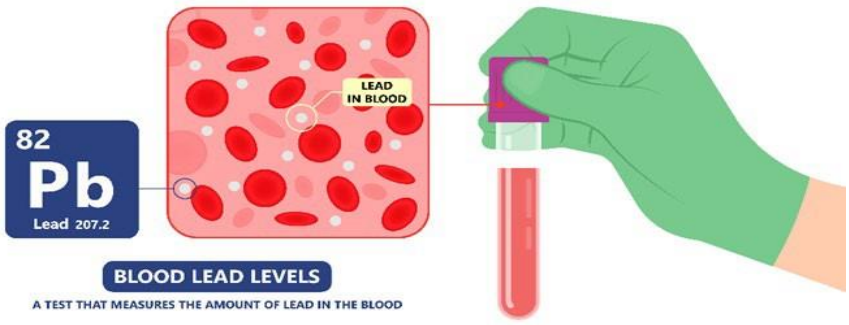
The program uses the Missouri Health Strategic Architectures and Information Cooperative (MOHSAIC) database to collect lead-specific data from medical providers and lead program activities. This database provides documentation of medical testing, case management and environmental risk assessments statewide. The data is used to provide comprehensive lead case management services, as well as statistical information. MOHSAIC securely maintains all child and adult lead test information. In November of 2024, the CLPPP began transitioning to a new data surveillance system: ShowMe WorldCare (SMWC). When fully implemented, the system will have new capabilities and allow for a more comprehensive data analysis to identify Missouri trends.

Lead

Lead is a soft, silver-colored metal found naturally in the earth's crust. Historically, lead was used in a variety of ways, including in paints, gasoline, batteries, bullets, keys and some vinyl products like mini blinds.

Lead contained in products, fine particles of processed or recycled lead and lead dust becomes a health hazard when they are taken into the body through ingestion or inhalation.

Lead dust becomes a hazard when ingested or inhaled



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History of Lead in Missouri

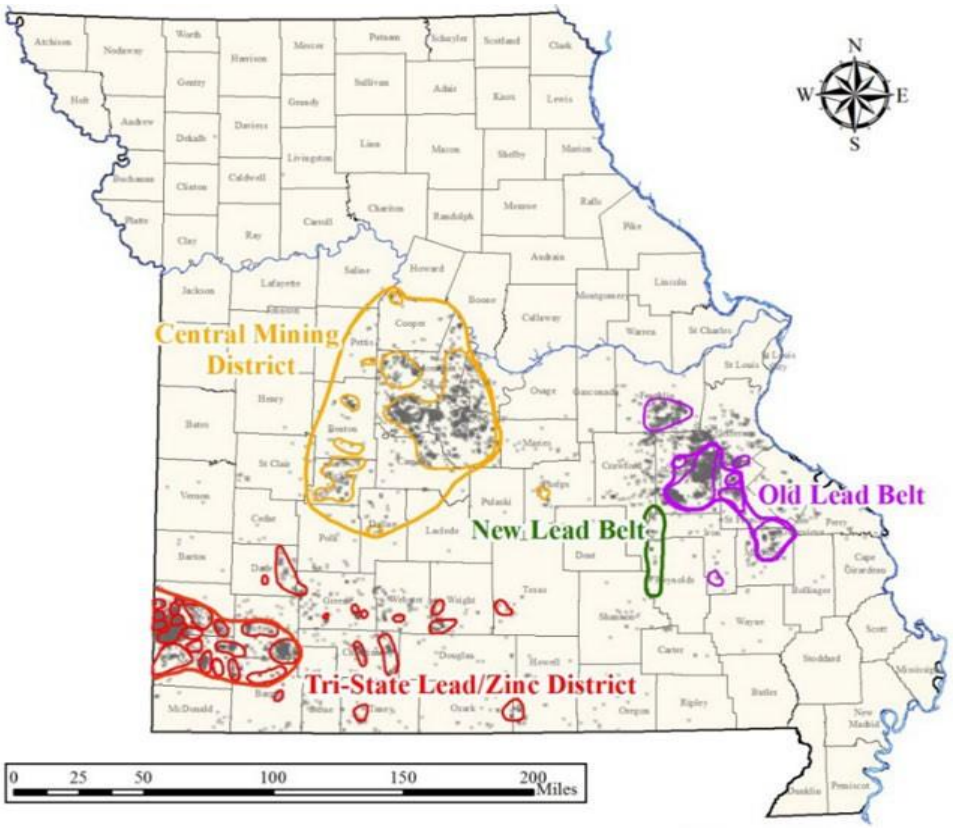
Lead mining and smelting are important parts of Missouri's history. In the 1700s, while searching for gold and silver, French explorers discovered lead along the Meramec River. Missouri became the dominant lead-producing state in the United States in 1907 and has remained so ever since.

Most early lead production came from the Old Lead Belt district (located in the Park Hills-Bonne Terre in southeast Missouri) and the Tri-State Zinc-Lead district (located near Joplin in southwest Missouri). Today, all the state's lead production comes from the New Lead Belt, also known as the Viburnum Trend district. This district is a very narrow, 35-mile-long ore area extending southward from the town of Viburnum, Iron County, in southeast Missouri.

Residents in these areas have used mining waste products in driveways, yards and even children's play areas for generations. If children live and play in these historic mining areas, it can increase their blood lead levels and put them at an increased risk for lead poisoning.

Historical lead mining impacts 60 of Missouri's 114 counties. The waste creates major environmental exposure issues through contaminated soil and contaminated private drinking water wells. Missouri has nine lead-contaminated sites on the U.S. Environmental Protection Agency (EPA) National Priorities List (NPL) because of the historical mining operations. DHSS has worked with federal, state and local agencies for years to conduct health assessments, provide technical assistance and offer blood-lead testing and health education for these lead sites (e.g., Big River Mine Tailings NPL site, Madison County Mines NPL site, Newton County Mine Tailings NPL Site, Oronogo-Duenweg Mining Belt NPL Site, Southwest Jefferson County Mining NPL site and Washington County Lead District NPL sites), as well as other lead sites in the state. Lead mining sites with widespread contamination like Missouri's can take years or decades to fully investigate and remediate. The work continues each year on these sites. DHSS has noted a decline in childhood elevated blood-lead levels (EBLs) around many historical lead-mining sites in the state, which can be attributed to environmental remediation, collaborative efforts to identify and mitigate exposures and health education near those sites.

Missouri Lead Mining Districts



Map courtesy of Missouri Department of Natural Resources, 2012

Lead Poisoning in Missouri

Lead poisoning is one of the most common and preventable environmental health problems in today's world. The effects of lead are the same whether it is inhaled or ingested and can damage the brain, central nervous system, kidneys and immune system. Lead is most harmful to young children under six years of age. It is especially detrimental to children less than three years of age because their systems are developing rapidly. Children absorb up to four to five times more lead in the body than adults do. Young children are more likely to take lead into their bodies due to hand-to-mouth behaviors and their proximity to the ground. Damage from lead is irreversible and may not become apparent until later in life.

Lead can affect all body systems in children and fetuses but primarily affects the brain and nervous system. Even low blood lead levels can cause lowered IQs, decreased cognition, difficulty with fine motor coordination, attention deficit disorders, reading disabilities and vocabulary deficits.

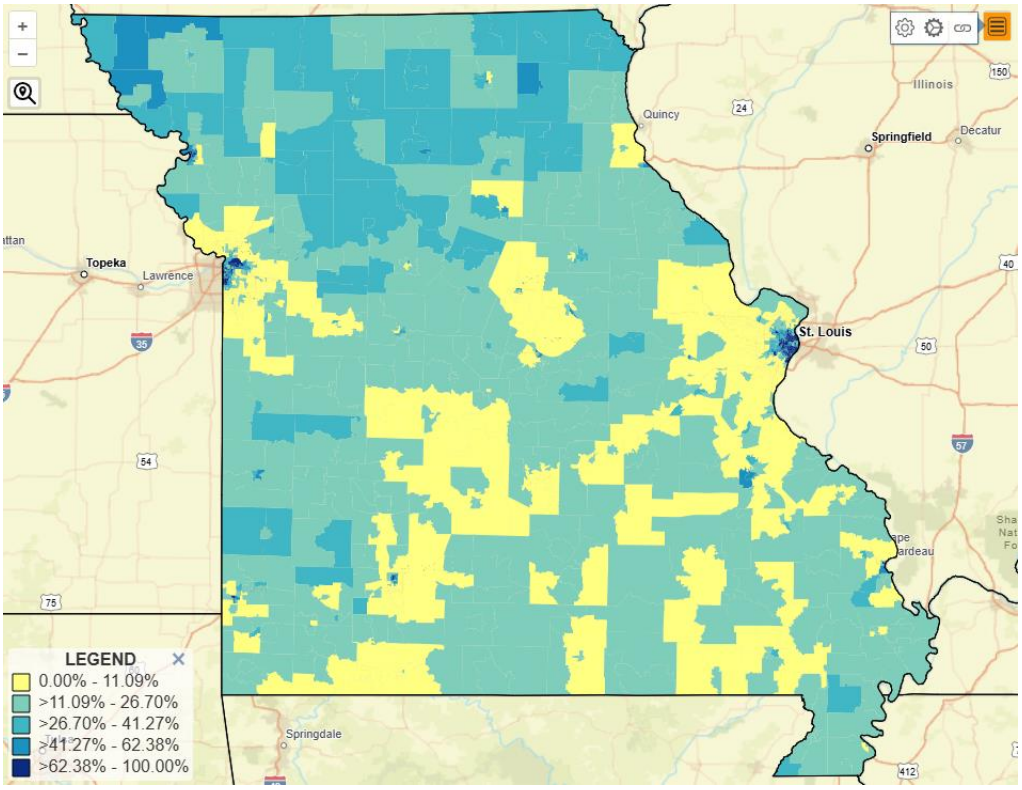
Lead poisoning often goes undetected. If symptoms occur, they can include, but are not limited to, mild toxicity symptoms, such as fatigue, irritability, muscle pain, lethargy or hyperactivity. Moderate toxicity can appear as headache, abdominal pain, joint pain, difficulty concentrating, behavioral deficits, constipation or weight loss. Severe toxicity can cause paralysis, encephalopathy, seizures, coma or death. Since symptoms of lead poisoning are like those of other diseases, clinicians may not suspect lead poisoning at first.

In the United States, lead dust from deteriorated lead-based paint is the primary lead hazard associated with childhood lead poisoning. The U.S. Consumer Product Safety Commission banned lead-based paint manufacturing for residential use in 1978; however, homes built prior to 1978 may still contain lead-based paint. The highest risk of exposure to lead dust is in homes built before 1950, when most paint contained a high percentage of lead.

Nationally, the average percentage of housing built before 1950 decreased from 22% in 2000 to 17.2% in 2020. Missouri is above the national average, with 18.5% of housing units built before 1950.

Age of Missouri Housing

This map shows the percentage of pre-1950 housing by census tracts using 2020 census data.



View the interactive map on CDC's website

Sources of Lead in Missouri

Drinking water and soil can be additional sources of lead exposure. Lead found in drinking water can be from groundwater contamination or from plumbing components that leach lead into the water. Lead contamination in soil can be found near areas of mining, near roadways from historical automobile emissions, or around homes where lead paint chips and dust accumulate. Lead does not go away once it is in the soil, so children may contact lead in soil while playing in these areas even years after lead was deposited there.

Lead dust is a common source of lead poisoning

Occupations

Individuals who handle lead at work can bring home lead on clothing and in vehicles, which can be harmful to children in the home. These occupations can include:

- Lead smelting or recycling
- Bridge reconstruction
- Auto repair
- Plumbers and pipefitters
- Steel welders and cutters
- Manufacturing of batteries, rubber products, printers, glass, plastics and ammunition

Folk Remedies

As people from other countries move to Missouri, they often bring their regions' folk remedies with them. Some of these remedies can contain high amounts of lead. For example, imported *azarcon* and *greta* are used to treat "*empacho*", a colic illness, in Mexican Folk remedies. These lead-containing remedies have multiple names such as *liga*, *Maria Louisa*, *Alarcon*, *coral* and *rueda*. In another example, remedies and cosmetics from Asia, such as *chuifong tokuwan, pay-loo-ah, ghasard, bali goli* and *kandu* may contain lead. Additionally, imported products from the Middle East, such as *alkohl, kohl, surma, saoott,* and *cebagin,* may contain lead.

Other

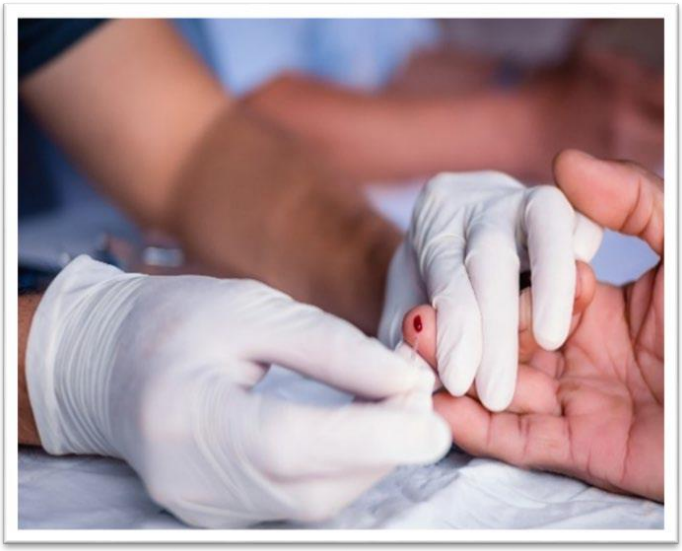
Additional sources identified during follow-up home assessments included:

- Glazed pottery
- Stained glass
- Lead bullets
- Furniture refinishing
- Fishing sinkers
- Lead soldering or crystals
- Target shooting at firing ranges
- Mini blinds
- Leaded candle wicks

Statewide Screening & Testing Plan

A blood test is the only way to determine the blood lead level in the body. Blood drawn from a vein (venous draw) or a finger stick (capillary sample) can measure the amount of lead in your blood. Blood lead levels are measured and reported as micrograms of lead per deciliter of whole blood (µg/dL).

In October 2021, the Centers for Disease Control (CDC) lowered the blood lead reference value to 3.5 µg/dL from the previous level of 5 µg/dL. This value helps to identify children with higher levels of lead in their blood compared to most children. For more information regarding the CDC's change in blood lead reference value, visit their Blood Lead Surveillance webpage.



In 2001, Missouri legislation (Section 701.340-349) required DHSS to create regulations to establish a statewide screening plan. The statutes and regulations define criteria for establishing geographic areas in the state considered to be high risk for lead poisoning, outline blood lead testing requirements and protocols, and define follow-up for lead testing.

Missouri legislation also states that all children under the age of six, regardless of location or Medicaid status, should be tested once.

In developing these regulations, CLPPP applied Missouri surveillance and census data to establish criteria for High-Risk Testing and General-Risk Testing areas in Missouri. Based upon these criteria, and as required by the state statute, the following activities shall occur in these two areas.

Beginning August 28, 2023

- On Aug. 28, 2023, Missouri regulations for lead testing in children changed (RSMo 701.340- 342). In making these changes, testing guidelines were simplified for providers and families. Missouri lead testing requirements include:
  - All children under 72 months of age should be screened for lead risk factors using the Healthy Child and Youth (HCY) Lead Risk Assessment Guide. If a parent or guardian answers yes or no to any question, or provides no response to any question, the child should get a blood lead test.
  - All parents of a child under age 4 shall be provided lead education annually, and every child under age 4 shall be offered a blood lead test annually.
- All children receiving Medicaid benefits must have lead testing at 12 and 24 months of age.
- High-risk area testing requirements:
  - Every childcare facility affiliated with a school system, a business or a nonprofit organization shall, within 30 days of enrolling a child, require the child's parent or guardian to provide evidence of lead poisoning testing in the form of a statement from the health care professional that administered the test. If the parent or guardian refuses testing, the childcare facility must receive a written statement including the reason for refusing such testing.

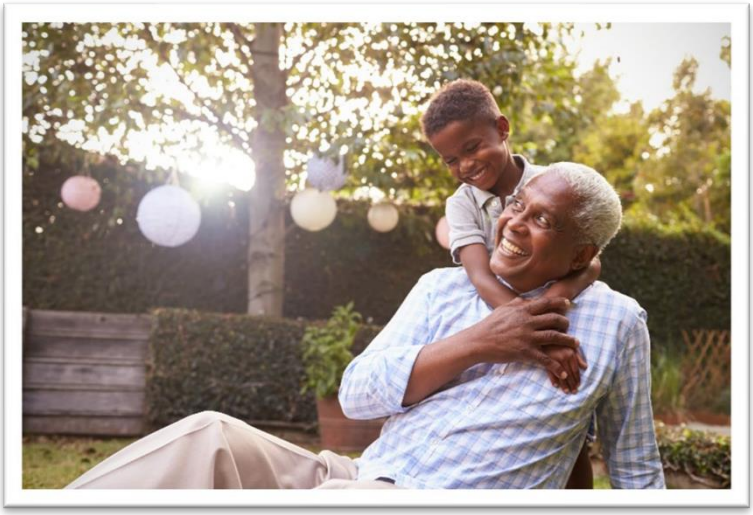
Testing and Reporting of Blood Lead Results

Missouri's disease and conditions reporting rule, 19 CSR 20-20.020, defines the demographic patient information required to be submitted with the blood lead level report; and requires the reporting of all blood lead tests, both elevated and non-elevated, regardless of the age of the individual. The data contributes to Missouri's local, regional and statewide statistics on blood lead poisoning.

The following information is required:

- Date test was conducted
- Type of specimen (capillary or venous)
- Result of the test
- Name and address of the attending physician
- Name of the disease or condition diagnosed or suspected
- Date the test results were obtained
- Patient's complete name and home address with zip code
- Patient's date of birth
- Patient's sex and race

In FY 2025, Missouri tested 74,440 children under the age of six years old for lead poisoning. Despite multiple obstacles, Missouri's testing rates have increased by 0.6% over the last year.



Elevated Blood Lead Prevalence

In 2012, the CDC introduced a blood lead reference value to identify children with higher levels of lead in their blood compared to most children. This level is based on the 97.5th percentile of the blood lead values among children ages 1-5 years identified in a national health survey. Children with blood lead levels at or above this level represent those at the top 2.5% with the highest blood lead levels. Currently, the national blood lead reference value is 3.5 µg/dL; however, data on Missouri children indicate the top percentage is higher at 5 µg/dL. Missouri calculates the 97th percentile the same way CDC calculates the national level. The testing and elevation rates are below.

There is no safe blood level for children.

National Lead Level

3.5 µg/dl

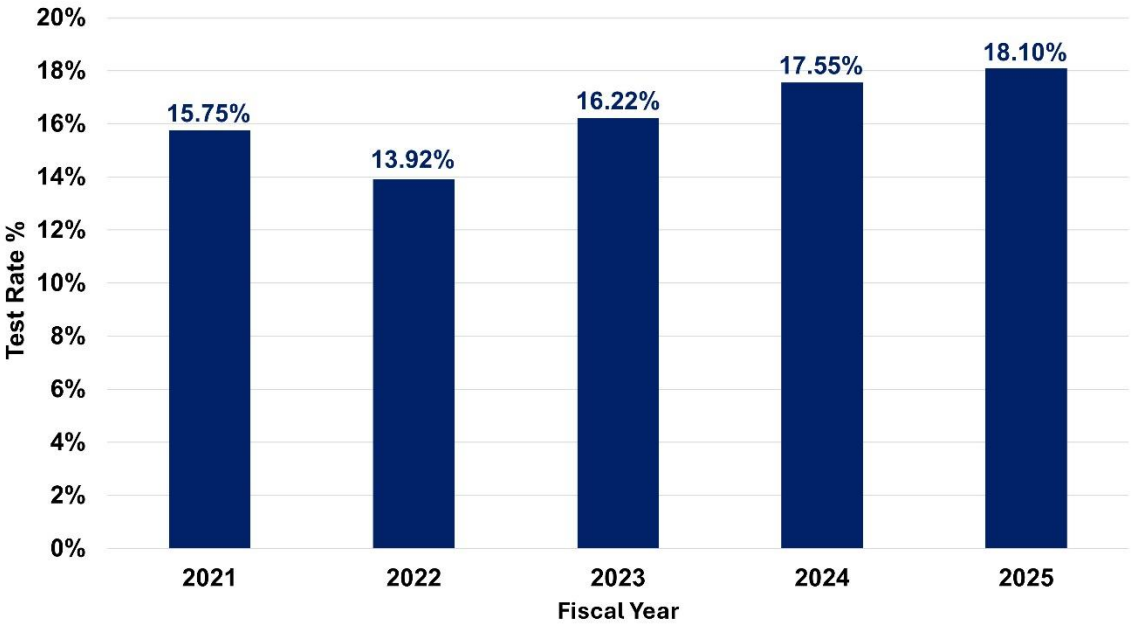
Micrograms per deciliters
National lead level at the 97th percentile

Missouri Lead Level

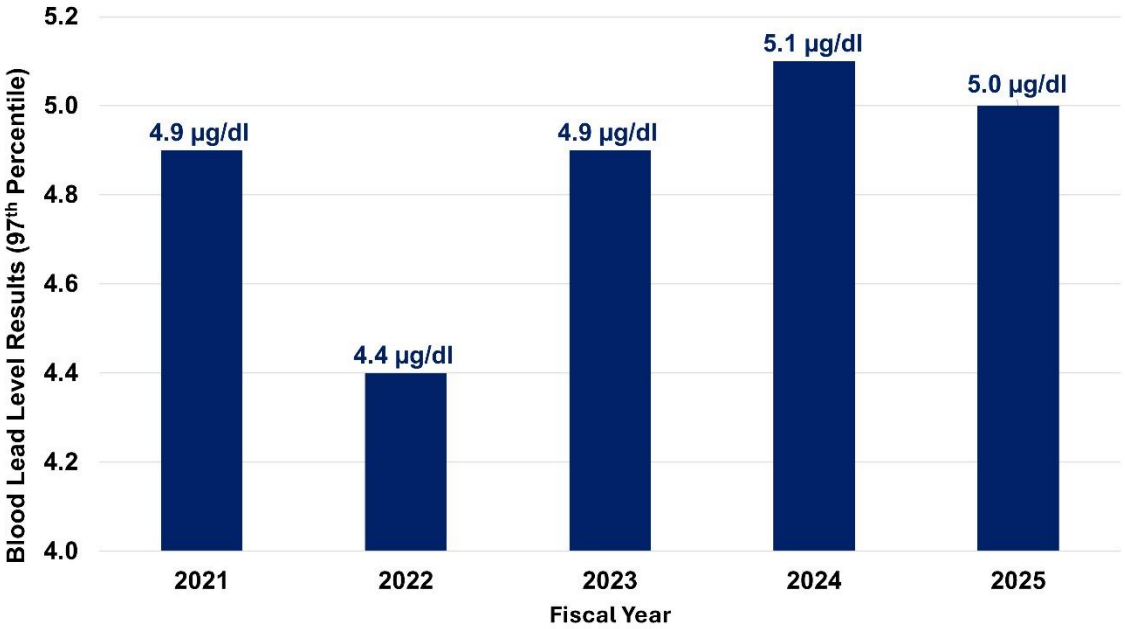
5 µg/dl

Micrograms per deciliters
Missouri lead level at the 97th percentile

Percentage of Children (<72 months) Tested by Fiscal Year



Percentage of Blood Lead Test Results ≥3.5 mcg/dL



Lead Poisoning Prevention Services

Outreach

Lead poisoning is entirely preventable. Outreach and education are key to limiting and preventing exposure. In addition to information made available on the DHSS website, CLPPP gathered resources and developed education materials that help identify sources of lead and how to address and mitigate those exposures. Many of these materials are themed to capture the attention of specific segments of the population. DHSS distributes these materials through attendance at conferences, health fairs, home shows, blood lead testing events and other public events. Educational materials can be ordered through the DHSS website at no cost.

Lead poisoning prevention week outreach activities in 2025 included several health fairs and Head Start testing events throughout the State of Missouri. During lead poisoning prevention week, video ads ran on social media to showcase information to Missouri residents. Radio and print ads with Zimmer Radio group played during St. Louis Cardinals baseball games.

CLPPP reached families specifically impacted by high levels of lead through home risk assessments and encouraged participation in case management activities provided by managed care plans and local county health departments. CLPPP staff provided case management training throughout the state at regular intervals and upon request to meet the needs of case managers. CLPPP nurses provided consultation upon request for clinicians, nurses, case managers and the public.

Case Management Services

Case management of children with EBL levels involves coordinating, providing and overseeing the services required to help reduce the child's blood lead level. Case managers strive to reduce EBL levels to less than 3.5 µg/dL. Case management efforts include a multi-disciplinary team and are child, physician and family centered. The child's primary care physician, local public health agency (LPHA) or a MO HealthNet Managed Care health plan may provide lead case management services. Additional partners, such as behavioral health professionals, school nurses, First Steps, etc., will join the team to meet the needs of the family. CLPPP staff monitor case management activities provided by LPHA or managed care plans for children identified with a blood lead level greater than or equal to 3.5 µg/dL.

The DHSS Bureau of Environmental Epidemiology (BEE) staff have been working with DHSS Data Integration teams to establish new parameters for ShowMe WorldCare, which houses lead testing, lead case management and environmental management. BEE staff have been diligently working with LPHAs and managed care plans to train users on the new data surveillance system and provide education on utilizing it to its fullest capacity.

Environmental Evaluation

CLPPP provides lead risk assessment services to all areas of Missouri except for six jurisdictions that provide this service directly: Jasper, Jefferson, Dent and St. Louis counties, St. Louis City and Kansas City. Lead risk assessments detect lead hazards in children's homes. Risk assessments conducted by the State of Missouri staff are offered for children aged six and younger who have a confirmed venous blood lead level beginning as low as 3.5 µg/dL, if requested by the owner/occupant of the dwelling. As of April 30, 2025, risk assessments are required for children with a blood lead level of 10 µg/dL or greater.

A professional, trained and licensed risk assessor conducts a risk assessment. The risk assessor consults with the child's family to determine areas of the home where the child may encounter lead. Lead risk assessors use special equipment to analyze painted surfaces and household objects for the presence of lead. Dust, soil and water samples also determine if lead hazards exist and where they are located. Upon completing the assessment and receiving the lab analysis, the risk assessor provides the property owner and/or occupant (if other than the owner) with recommendations for reducing lead hazards.

The risk assessor revisits the home at an agreed upon time to ensure the lead hazard reduction work is successful. As part of their role in case management of the elevated child, the risk assessor collaborates with the child's parent or legal guardian, property owner, LPHA or MO HealthNet lead case manager, CLPPP staff and the child's physician as indicated.

Lead Licensing Program

The Lead Licensing Program (LLP) licenses lead abatement professionals, including supervisors, workers, inspectors, risk assessors and project designers. The LLP requires individuals to attend accredited training to be licensed and is subject to auditing for compliance with state statutes and regulations. The LLP ensures compliance with lead abatement regulations and safe work practices on active abatement projects across the State of Missouri.

Childcare Licensing Inspections

The DHSS Bureau of Environmental Health Services (BEHS) performs sanitation inspections for childcare facilities seeking licensure. As part of these inspections, staff trained as lead professionals screen for potential lead hazards and provide remediation guidance as needed.

Get the Lead Out of Schools

The Get the Lead Out of School Drinking Water Act (RSMo 160.077) went into effect on Aug. 28, 2022, establishing a drinking water standard for lead at less than five parts per billion for all schools and early childhood education programs that receive state funding.

The Missouri Legislature allocated $27 million to support schools in reducing lead concentrations in schools. A Get the Lead out of Schools team was created within the Bureau. The team established processes and guidance to assist schools in complying with the new law, including a webpage with links to technical documents, an online reporting platform, a frequently asked questions section, as well as other resources and tools. In addition, the team has participated in multiple conferences, meetings and outreach opportunities hosted or attended by school representatives to share information regarding the law and available resources.

Schools are required by RSMo 160.077 to submit all water sample results to DHSS. DHSS is currently reviewing the last round of data submissions from schools for 2025 and will be reaching out to schools that have not reported by the end of the year. A published report of the water sample data will be published after the required data has been reviewed and evaluated.

Water Infrastructure Improvements for the Nation (WIIN) Program

DHSS is committed to addressing lead in drinking water in our schools and childcare facilities, as well as the overall reduction of childhood lead exposure across our state. With the funding appropriated under section 1464(d) of the Safe Drinking Water Act, amended by the Water infrastructure Improvement Act (WIIN) section 2107, DHSS began the Initiative of testing our schools and childcare facilities that request assistance.

DHSS began this work with the Federal Fiscal Year (FFY) 2019 grant and has secured four (4) additional grants for periods Federal FFY 2020, 2021, 2022 and 2023. With the FFY 2019 grant, DHSS tested 15 schools and 122 childcare facilities. Work has recently started on FFY 2020 funds and DHSS is already working with 57 childcare facilities and 26 Head Start facilities. DHSS amended the FFY 2020 and 2021 grants to add remediation funding. FFY 2022 and 2023 grants also allow for funding of remediation. DHSS is in the process of securing additional grants for FFY 2024 and 2025.

Goals continue to include assistance with development of sample site plans, initial sampling and remediation. Community outreach to schools and childcare facilities will be the main priority so that schools and childcare facilities know of this opportunity and learn the importance of healthy drinking water and the reduction of lead exposure.

Adult Blood Lead Epidemiology Surveillance (ABLES) Program

The Missouri ABLES program has participated in the National ABLES Program since 2001. The program objective is to build state capacity to initiate, expand or improve adult blood lead surveillance programs that can accurately measure trends in adult BLLs and that can effectively intervene to prevent lead overexposures. All blood lead testing of Missouri residents is reportable to the Missouri Department of Health and Senior Services (DHSS) under the Missouri Code of State Regulations, 19 CSR 20.20-020, regardless of patient age or blood lead laboratory result. Non-identifying patient-level data are reported to NIOSH for surveillance purposes. Missouri companies with worker BLLs that warrant removal from lead exposure per OSHA Lead Standards are reported to OSHA via a memorandum of understanding established between the two agencies.

Program Advancements

- Regulatory changes went into effect on April 30, 2025.
- Literacy and educational level of risk assessment paperwork was reviewed by Health Literacy Media.
- Title V block grant funding was used to purchase LeadCare analyzers and test kits to enhance access to testing in vulnerable communities.
- During Fall 2024, several Head Start testing events were conducted throughout the state. In these testing events, 309 children were tested for lead poisoning, and 45 children were identified with an elevated blood lead level above or equal to the CDC's blood lead reference value of 3.5 mcg/dL.
- Over 139 homes were assessed for lead hazards by DHSS licensed risk assessors in SFY25.
- LeadCare II analyzers were placed in six local county health departments to increase access to testing.
- Lead cleanup education videos were created in English and Spanish to educate families on how to wet scrape, wet clean and vacuum lead-based paint hazards.
- Social media videos were also created to bring awareness to the importance of testing children under the age of six in Missouri.
- A clinician education course was created and promoted in the fall of 2025.
- ShowMe WorldCare surveillance for lead went live on November 18, 2024.
- Through CLPPP's Lead Advisory Committee, a guide was created for comforting a child through a medical procedure. This publication will be printed as a one-page guide provided to pediatrician offices.

Collaborative Partnerships

The CLPPP collaborates with multiple stakeholders to provide safe and healthy environments for Missouri children to learn and grow. Stakeholders include, but are not limited to:

- Agency for Toxic Substance and Disease Registry (ATSDR)
  - Brownfield Project
  - Exposure investigation
- Environmental Protection Agency (EPA)
- Missouri Department of Natural Resources (MDNR)
- DHSS Lead Licensing Program
- DHSS Healthy Drinking Water program
- Missouri Department of Social Services, MO HealthNet Division (MHD)
- Missouri Managed Care Plans
- Women, Infant, and Children (WIC) Program
- Missouri Department of Economic Development (DED)
  - Community Development Block Grant
- Missouri Housing Commission
- Missouri Local Public Health Agencies (LPHAs)
- Missouri Department of Elementary and Secondary Education (DESE)

Lead Advisory Committee

The CLPPP Lead Advisory Committee includes a diverse group of stakeholders and meets quarterly to discuss the impacts of lead across the state. The committee has identified two focus areas: provider engagement and school engagement. CLPPP initiated a Masterclass project to engage providers and provide one Continuing Medical Education (CME) credit hour. Education has been carried out through multiple regional case management trainings, provider outreach and trainings to different programs within other departments. Attempts to engage school health leaders are ongoing. Education for teachers and school nurses has been made available.

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This report evaluating the childhood lead poisoning prevention program has been created per §701.343, RSMo.