



SURVEILLANCE BRIEF

Wisconsin Environmental Public Health Tracking Program OCTOBER 2021

ADULT LEAD POISONING IN WISCONSIN— SOURCES, PREVENTION, AND INTERVENTION

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SUMMARY — Lead is a naturally occurring metal that is toxic to humans when swallowed or inhaled. While children are most commonly exposed to lead through contact with chips and dust from old lead paint or from swallowing soil contaminated by lead paint, adults are more likely to be exposed through inhalation of fumes or ingestion of dust or water contaminated by lead.

When lead accumulates in the body, it can result in severe health problems and potentially death. There is no safe amount of lead exposure. Even low levels of exposure can cause negative health effects.

Adults who are most at risk of lead poisoning include workers that come in contact with materials that contain lead or adults with non-occupational activities that expose them to lead. Some examples of workers that have a higher risk of lead poisoning include welders, artists, contractors, renovators, and manufacturers. Early recognition of lead risk in high-risk groups is crucial to preventing long-term exposure to lead.

In 2019, 571 Wisconsin residents 16 years and older had a blood lead level 10 µg/dL or higher. Of these, 100 adults had blood lead levels 25 µg/dL or higher. Additional data on adult blood lead poisoning in Wisconsin are available on the Wisconsin Environmental Public Health Tracking [Portal](#).

BACKGROUND

Lead is a naturally occurring gray metal that is used in many products such as fuels, batteries, pigments, paints, solder, pipes, ammunition, makeup, jewelry, and toys. Adults can be exposed to lead in occupational or hobby settings, although most exposure occurs in occupational

settings. The majority of adults with elevated blood lead levels work in manufacturing, construction, or mining industries, especially in the manufacturing of storage batteries, in painting and paper hanging, and the mining of lead and zinc ores. Non-occupational adult lead exposures can

occur when shooting firearms, engaging in renovation activities (remodeling and painting), from retained bullets (bullets that remain in the body after gunshot), and eating food containing lead. Some occupations have a higher risk of lead exposure than others. Workers who

could potentially be exposed to high levels of lead include contractors, painters, paint removers, welders, building renovators, radiator repairers, bridge workers, shooting range workers, soldering workers, plumbers, demolition workers, battery manufacturers, auto body employees, electronic recycling (e-scrap) workers, stained glass or pottery artists, fishing sinker and bullet makers, and lead smelters.

Lead poisoning is diagnosed by measuring how much lead is in a person's blood. Blood lead level (BLL) is measured by the number of micrograms of lead per deciliter of blood ($\mu\text{g}/\text{dL}$). An individual is considered to have an elevated BLL when a blood test shows 5.0 $\mu\text{g}/\text{dL}$ or above. According to the Centers for Disease Control and Prevention (CDC), in 2015–2016 the national average BLL among U.S. adults aged 20 or older was 0.92 $\mu\text{g}/\text{dL}$.¹

ADULT LEAD POISONING 101

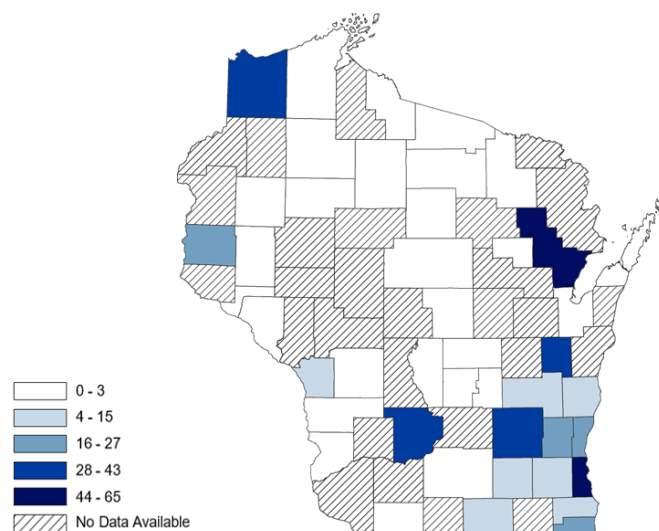
When lead is absorbed by the body, through inhalation or consumption, it is stored in bones, blood, and tissues. When bones and tissue change and break down over time, lead can be released back into the bloodstream where it can affect other organs and tissues. Symptoms of lead poisoning include abdominal pain, constipation, nausea, fatigue, frequent headaches, irritability, loss of appetite, memory loss, pain or tingling in hands or feet, and weakness.

Lead exposure can also cause longer-term health problems, like cancer, heart disease, kidney disease, and reduced fertility.² Post-menopausal individuals are especially at risk of lead poisoning because hormonal changes can result in demineralization of bone, which causes stored lead to be released. As a result, post-menopausal individuals have been found to have higher blood lead levels compared to pre-menopausal individuals.

ADULT LEAD POISONING IN WISCONSIN

The Wisconsin Department of Health Services' Occupational Health Surveillance Program collects adult blood lead data through its Adult Blood Lead Epidemiology and Surveillance (ABLES) program and summarizes these data on the Wisconsin Environmental Public Health Tracking [Portal](#). These data are available to the public and are regularly updated.

Figure 1. Prevalence rate of elevated blood lead levels ($\geq 10 \mu\text{g}/\text{dL}$) per 100,000 employees tested aged 16 years or higher by Wisconsin county, 2019



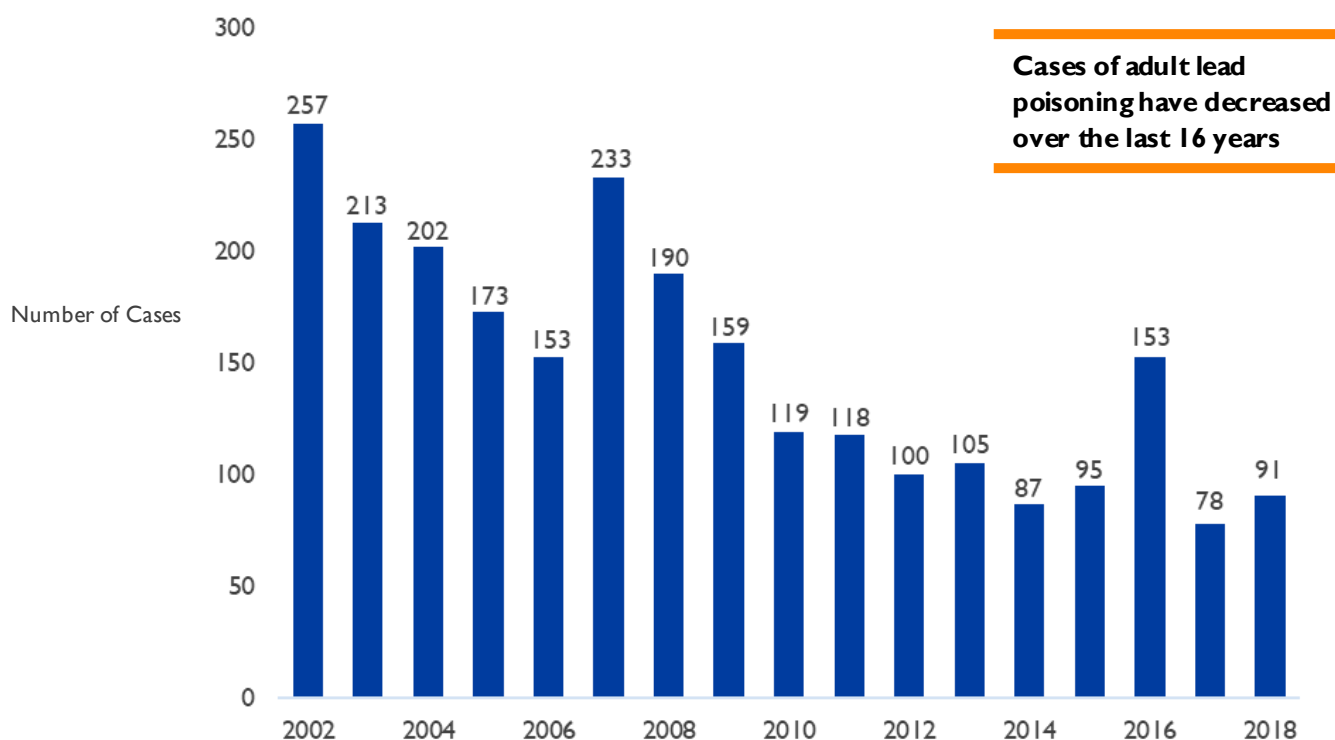
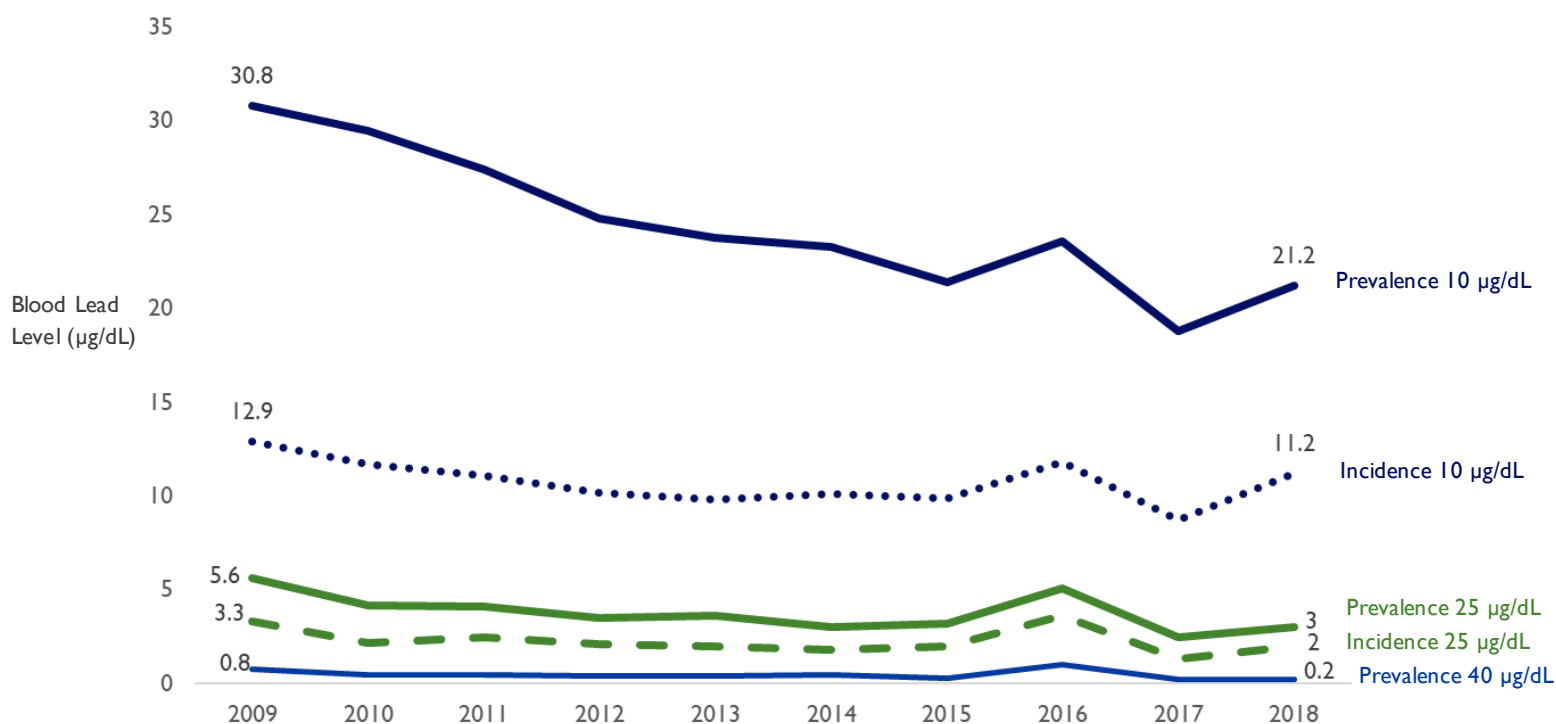
Incidence refers to the rate of occurrences of new cases of adult lead poisoning, while prevalence refers to the proportion of all cases within the population. The prevalence and incidence of adult lead poisoning in Wisconsin vary across counties.

Figure 1 shows the rate of adult lead poisoning in individuals age 16 or higher per 100,000 workers in Wisconsin in 2019. All cases included in this map had a blood lead level 10 $\mu\text{g}/\text{dL}$ or greater. Southeastern Wisconsin has a large number of manufacturing companies that include work with lead, which may explain the higher prevalence rate in that area.

Figure 2 shows Wisconsin adult lead poisoning cases with blood lead levels 25 $\mu\text{g}/\text{dL}$ or higher during the period 2002–2018. There has been a significant decrease in cases with a blood lead level 25 $\mu\text{g}/\text{dL}$ or higher.

Figure 3 shows the decreasing prevalence and incidence of adult lead poisoning during 2009–2018. Prevalence rates of blood lead levels 10 $\mu\text{g}/\text{dL}$ or higher decreased by 30% during this period, while blood lead levels 25 $\mu\text{g}/\text{dL}$ or higher and 40 $\mu\text{g}/\text{dL}$ or higher also decreased by 46% and 75%, respectively.³ Incidence rates decreased by 13% (10 $\mu\text{g}/\text{dL}$), 39% (25 $\mu\text{g}/\text{dL}$), and 71% (40 $\mu\text{g}/\text{dL}$).³

Although prevalence and incidence of lead poisoning in Wisconsin have decreased over time, all Wisconsinites should still take care to avoid lead exposure at work and at home.

Figure 2. Adult lead poisoning (≥ 25 $\mu\text{g}/\text{dL}$) cases aged 16 years and older in Wisconsin, 2002–2018Figure 3. Prevalence and incidence of adult blood lead levels in Wisconsin per 100,000 adults aged 16 years and older, 2009–2018³

ADULT LEAD POISONING PREVENTION

Take steps to avoid bringing lead home if you work with materials that may contain lead (for example water, paint, and manufacturing or construction materials). Lead dust can settle on clothes, shoes, and tools. If possible, shower before leaving work, and don't bring personal items (for example lunch box, wallet, purse) into your work area. If you bring personal items home that may have been exposed to lead, keep them sealed away in a plastic bag. Wash your work clothes separately from other clothing.

Ask your employer if you are unsure if your job requires you to work with lead. Occupational Safety and Health Administration (OSHA) requires employers to provide protection for you if you're working with dangerous substances, including lead. If you are concerned about your safety in your workplace, there are [resources](#) that can help you to understand and address lead safety issues at work.

Take precautions when working with lead. At work, wear protective clothing and personal protective equipment (PPE) to decrease your exposure to lead and lead dust. Use ventilation systems to remove lead dust from the air. Never use compressed air to clean up since this could release more lead dust into the air. Instead, clean up lead dust using a damp mop or a vacuum cleaner with a high efficiency (HEPA) filter. Do not eat or drink near areas where lead dust might settle. To learn more, talk to your safety officer, or contact CDC-INFO (800-232-4636) or the [Wisconsin Occupational Health Program](#). Learn more about [what PPE you may need for your job](#).

Talk with your doctor about getting your blood lead levels tested regularly if you are at a higher risk of lead exposure. Frequent blood lead level tests are a good way to monitor your lead exposures. If you are concerned about your health, tell your doctor:

- What kinds of work you do. Is there anything specific that concerns you that you have questions about.
- What kinds of hazards are in your workplace (for example chemicals, noise, heat, shift work, lifting heavy objects).
- If you or your partner are pregnant or trying to become pregnant, ask your doctor if there is any part of your job you should not do during pregnancy or breastfeeding.

CONCLUSION

No amount of lead exposure is safe for adults or children. Lead is stored in bones, tissues, and blood and can accumulate in the body over time. Some occupations and activities have higher risk of lead exposure. Although the prevalence and incidence of high blood lead levels have declined across Wisconsin over time, precautions should still be taken to avoid exposure to lead.

The Wisconsin Department of Health Services maintains the Adult Lead Program and provides information on workplace safety in Wisconsin with resources about adult lead poisoning. In addition, the Wisconsin Environmental Public Health Tracking Portal contains up-to-date information on adult lead poisoning for individuals 16 or higher, made available through collaboration with the Wisconsin Occupational Health Surveillance program. The Tracking Portal is a great resource for anyone who wants to learn more about blood lead levels in their county.

ADDITIONAL RESOURCES

- [CDC Adult Blood Lead Epidemiology and Surveillance \(ABLES\)](#)
- [Keep Your Family Safe: Don't Bring Lead Home From Your Job](#)
- [Lead and Your Health: No Amount of Lead is Safe, Even for Adults](#)
- [Keeping You and Your Family Safe from Lead](#)

References

¹Centers for Disease Control and Prevention. Adult Blood Lead Epidemiology and Surveillance (ABLES). 2021. Retrieved on July 29, 2021, from <https://www.cdc.gov/niosh/topics/ables/data.html>

²World Health Organization. Lead Poisoning and Health. 2019. Retrieved on July 29, 2021, from <https://www.who.int/news-room/fact-sheets/detail/lead-poisoning-and-health>

³Wisconsin Department of Health Services, Division of Public Health, Bureau of Environmental and Occupational Health, Wisconsin Occupational Health Indicators Report 2009-2018. P-45104-2020 (08/2020).

Acknowledgements

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