



March 2016
The Real Risk of Lead

On March 3, 2015, the water at LeeAnne Walters' house had lead levels 26 times what the Environmental Protection Agency (EPA) considers a cause for concern. She lives in Flint, Michigan. Just nine days later, a consulting group reported that Flint's water—the same water making LeeAnne's children lose their hair and break out in rashes—was safe. Despite the pleas of doctors and growing evidence from researchers, government officials waited until October 16th, 227 days, to change Flint's water source. Then, on January 16th, President Obama declared a federal emergency in Flint, and suddenly the whole country knew about the toxic water flowing through this small, [41.6% poor](#), [65% minority](#) city.

When the water crisis in Flint became headline news and the presence of lead became a topic of national concern, people came forward from across the country, some with an outpouring of support and others with concerns of their own. The health threats posed by different sources of lead in [St. Louis](#), [Ohio](#), [Pennsylvania](#) and [New Jersey](#) joined Flint in the headlines, yet as people watched the details of the Flint tragedy unfold, the media left the false impression that the greatest risk for lead exposure is water. In fact, in most communities toxic lead paint, dust, and other sources pose a greater risk. As the nation reacts to this tragedy, advocates, supporters, victims, and researchers hope to answer two questions: what systems will be in place to aid the residents of Flint as they face the effects of lead for years to come, and what can we learn from Flint to help the thousands of other Americans suffering from lead in their environments, too?

Lead-poisoned water puts Flint's 99,000 residents at risk for [serious physical and mental health problems](#), ranging from headaches to behavioral issues to brain damage. Young children are especially vulnerable, and the effects can last a lifetime. For the 6,044 children in poverty in Flint, [legislators](#), [doctors](#), and [researchers](#) believe that Head Start's two-generation model is best suited to confront their short-term problems and create long-term solutions. What can parents, like LeeAnne Walters, do to keep their families safe? Experts and researchers stress that being aware of the sources of lead poisoning is part of creating the awareness and healthy habits that reduce exposure. Head Start is in a position to help children and their families on every level, and at the beginning of this month the Department of Health and Human Services [allocated \\$3.6 million](#) for immediate expansion of Head Start-- an important part of the solution to Flint's needs. Routine screenings and treatment, strong early learning opportunities with individualized supports, and proper nutrition are all part of catching lead exposure early and intervening to put children on a strong trajectory for the future. By delivering such services, Head Start acts as a powerful intervention not only in Flint but across the nation.

Has your program worked with children who have high lead levels? What's worked for you? We'd love to hear about your experiences and highlight your successes! Contact Cody Kornack at ckornack@nhsa.org.

In addition to the resources below, NHSA has created a fun [Buzzfeed quiz](#) for you, your staff, and your parents to test your lead knowledge! Share your results on social media and tag NHSA.

Resources

Environmental Protection Agency

[Daycare and Classroom Outreach Materials](#) and [Protect Your Family from Exposures to Lead](#)

The Environmental Protection Agency and National Head Start Association produced a set of daycare and classroom outreach materials specific to lead exposure. There are fact sheets available in five different languages and several useful classroom materials such as songs and crafts. For staff, there are talking points and a risk evaluation checklist to share with parents.

USA Today

[Lead Taints Drinking Water in Hundreds of Schools, Day Cares Across USA](#)

USA Today published this article about the 350 water systems that have failed to meet EPA standards between 2012 and 2015. The article details the different factors involved in evaluating school water, such as the fact that about “90,000 public schools and half a million child-care facilities are not regulated under the Safe Water Drinking Act.” Most interestingly, at the end of the article there is an interactive map that allows you to see how many times your water source has tested at elevated lead levels over the past three years.

State of New York Department of Health

[What Your Child's Blood Lead Test Means](#)

New York’s Department of Health published this easy-to-use resource online. It breaks down the numbers parents get back from test results and how to minimize lead-exposure at home. This is a great resource for programs and families.

Health Grove

[CHARTS: The State of Lead Poisoning in the U.S.](#)

Curious which counties in your states have the highest rates of children exposed to lead? Natalie Morin from Health Grove took information published by the Centers for Disease Control and Prevention in 2014 about elevated lead levels in children under 72 months and mapped it by state and county for 21 states. Not all states are included, so the list only ranks the states that report their data.

The Hill

[Head Start: A Necessary Intervention in Flint](#)

On The Hill’s Congress Blog, NHSA Executive Director Yasmina Vinci writes about Head Start’s role in Flint, Michigan. Head Start’s comprehensive services have served as a necessary intervention in New York after Superstorm Sandy and in New Orleans after Hurricane Katrina. Now, Head Start has an important role to play in Flint. Recognizing the power of Head Start as a valuable intervention, the Department of Health and Human Services announced a \$3.6 million one-time emergency fund in early March.

Department of Health and Human Services & Centers for Disease Control and Prevention
[Ethan's House Gets Healthier](#)

Ethan's House Gets Healthier is a children's book and coloring book that the Centers for Disease Control published as a resource to help parents and teachers start a conversation about lead with young children.

Centers for Disease Control and Prevention
[Blood Lead Levels in Children](#)

The CDC published this resource for parents to share some quick facts and provide a clear plan of action about how to make their homes more lead-safe. In [older homes](#) (built before 1978), for example, lead-based paint or metal window frames are concerns. [Soil](#) and dust containing lead can be tracked into homes on shoes. Artificial turf, [imported candy](#), and jewelry are just some of the other places lead is found. This easy-to-read two pager is a great resource to raise awareness among parents and staff.

Research

American Journal of Public Health
[Early Childhood Lead Exposure and Academic Achievement: Evidence From Detroit Public Schools, 2008-2010](#)

By Nanhua Zhang, Harolyn Baker, Margaret Tufts, et al.

These researchers studied the relationship between early childhood lead exposure and academic achievement in math, science, and reading. To do this, they took early childhood blood lead testing results and compared them with data from the Detroit, Michigan public schools. A range of different factors were accounted for in this comparison: grade level, gender, race, language, maternal education, and socioeconomic status. Zhang et al. find an association between blood lead levels prior to age six and poor academic achievement in grades three, five, and eight.

Past findings show an association between elevated blood lead level and lower IQs, inattentiveness, hyperactivity, disorganization, and aggression. Another study (Miranda et al.) demonstrated that early lead exposure makes challenges later more likely, in effect creating an achievement gap. In this study's setting, Detroit, Michigan, problems are compounded by higher poverty rates and lower parent education than the statewide average. The authors suggest that there should be a focus of lead exposure prevention for children, and special education programs should be developed for children suffering from lead poisoning.

Florida International University
[The Effects of a Family-Based Educational Intervention on the Prevention of Lead Poisoning in Children](#)

By Loraine Wasserman

In this study, Wasserman explored whether educational interventions for families and caregivers result in a decrease of lead exposure in children of low socioeconomic backgrounds. The

question is important because of the dire consequences of lead poisoning, like one 11-year longitudinal study that showed that children who were exposed to lead read two grade levels lower than their peers and were seven times more likely to not graduate high school. In that previous study, participants from poor backgrounds tended to have higher lead levels, lower IQs, and worse scores of classroom behavior. Wasserman believes that the effects of lead exposure are well known, but the various preventative measures remain largely untested.

For her study, sixty-three randomly selected participants were assigned to either a treatment group or a control group. The parents of children in the treatment group received educational intervention (information about lead exposure) during their first clinic visit, and the participants in the control received educational intervention during their second clinic visit. For both groups, the intervention was reinforced with a brochure and video on childhood lead poisoning. During both visits, parents were given a test to test their knowledge about lead. The results were promising, showing that participants in the treatment group were more likely to show decreases in blood lead levels than those in the control group. More than 35% of participants in the treatment group lowered their blood lead levels by 10% or more showing that parents are entirely capable of learning and implementing lead prevention strategies that are able to effectively lower blood lead levels in children.

Elsevier

[Early Exposure to Lead and Juvenile Delinquency](#)

By Kim Dietrich, Douglas Ris, Paul Succop, et al.

For this study, the researchers hypothesized that early lead exposure from prenatal to six and a half years old would be associated with delinquent behaviors that were measured later in adolescence by participant and caregiver. This study, published in 2001, was the first study to examine this relationship in the same children over an extended period of time, an approach known as a prospective longitudinal study. Between 1979 and 1985, 195 urban, inner-city children were examined by testing prenatal and postnatal blood lead levels and comparing these to antisocial and delinquent behaviors. These behaviors were self reported and reported by parents. Ultimately, this study confirms the association of lead exposure and antisocial behavior, a finding that was first reported 50 years earlier by the Collaborative Perinatal Project which found in a survey of Philadelphia youth that a history of lead poisoning was the strongest predictor of criminality in males.

These researchers find that lead exposure was associated with an increased frequency of reported delinquent behaviors. An underlying message is conveyed throughout the study's discussion: lead is linked to negative impacts and exposure is preventable.

Association for Psychological Science

[Variation in an Iron Metabolism Gene Moderates the Association Between Blood Lead Levels and Attention-Deficit/ Hyperactivity Disorder in Children](#)

By Joel Nigg, Alexis Elmore, Neil Natarajan, et al.

Attention-deficit/hyperactivity disorder (ADHD) can be passed down from parent to child. This research article explores other factors that contribute to ADHD, and specifically environmental

causes. Exposure to one specific neurotoxin, lead, affects brain development and is correlated with ADHD. Knowing that the presence of lead increases the likelihood of ADHD, these researchers set out to discover whether lead is specifically causing ADHD.

Lead poses a unique threat because normal behaviors can put both children and adults at risk. Children who stick their hands or toys in their mouths are at risk of ingesting lead and paint; aging pipes, toys, jewelry, and pollution create additional risks. Lead, once in the body, passes through the body's natural filter, called the blood-brain barrier, and lead can get to the brain and spinal cord. Even in small amounts, lead is significantly associated with ADHD, lower IQs, and conduct and learning problems.

For this study, researchers examined 386 children from Michigan. Children were evaluated for ADHD by clinicians, parents, and teachers. Then, participants' blood and DNA were sampled. The participants with ADHD had higher blood lead levels than those without ADHD. Blood lead levels were higher in participants from families with lower incomes. Ultimately, this study argued that lead may impact or worsen children's ADHD symptoms if they have a particular genetic makeup. Children who have a predisposition for ADHD may be more severely affected by lead exposure than their peers.

Discussion

1. How does your program initiate conversations with parents and caregivers about lead and other toxins? ([Click here](#) for state-by-state resources about lead!)
2. What educational materials are made available to staff, parents, and caregivers, and do they know how to assess their risk for lead exposure? Which tools above might be helpful additions?

For national and state-by-state information about Head Start and Early Head Start, visit www.nhsa.org/Facts.

Do you have questions, comments, or concerns? E-mail Cody Kornack (ckornack@nhsa.org).