What to Know About Lead Poisoning

Lead poisoning is a danger that's overlooked by parents and pediatricians alike, and it's continuing to silently endanger our children. Learn about the effects and the sources of lead poisoning.

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Baby Care Basics: What Is Lead Poisoning?

Whenever I hear someone talking about purchasing an older home or renovating a house, I find myself turning into one of those parents who spews frightening statistics and unsolicited advice. I do this because I'm sure that if I had known someone whose child was lead poisoned, I would have been a lot more cautious when renovating our home -- and my son wouldn't have become sick himself.

But raising concerns about lead can make people roll their eyes. On Urbanbaby.com, one parent dismissed a query about the dangers of lead with the frequently made argument that "Everyone born

before 1975 grew up in a lead-painted home. We all survived." Even my own pediatrician made me feel as if I was overreacting when I asked at my son's 6-month well visit about the risks of lead paint in the home we'd just bought, which was built in the 1870s. She told me not to worry, saying that my son would be tested for lead at his 1-year visit, and if there was any exposure, we'd catch it.

Looking back on this exchange, it's hard to reconcile such a blasé reaction with the facts: Like nerve gas and snake venom, lead is a neurotoxic chemical. Exposure to it can cause long-term damage to a child's developing brain. In young children, elevated levels have been linked to lower IQ, limited attention span, behavioral problems, and the inability to concentrate. Both children and pregnant women are at the highest risk of health problems. Even at the lowest levels of exposure, lead causes brain injury in children, according to *Parents* advisor Philip Landrigan, M.D., director of the Children's Environmental Health Center at the Icahn School of Medicine at Mount Sinai, in New York City. It was Dr. Landrigan's groundbreaking study of kids living near a lead-smelting factory in Texas that helped convince the government to ban lead from gas in 1975 and from household paint in 1978. One in three American homes still contains lead-based paint. Most of these are in the Northeast and Midwest, but any home built before 1978 is potentially hazardous.

Frighteningly, once a child has been exposed, it's too late to reverse the effects. Despite my doctor's promise that we'd "catch it," there is no treatment or medical solution. As lead-poisoned children get older, they exhibit higher rates of dyslexia and other learning disabilities, as well as increased dropout rates; as teenagers, they're more likely to commit crimes.

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A Numbers Game

Even though lead poisoning has been a threat for decades, experts are actually more concerned about it than ever. Over the years, the Centers for Disease Control and Prevention (CDC) has repeatedly lowered the "blood level of concern" because studies have found risk at levels lower than previously thought. The level is now 5 micrograms of lead per deciliter of blood, but it was 10 until 2012. Roughly 2.6 percent of children ages 1 to 5 have a level of 5 or higher, according to a 2013 U.S. National Health and Nutrition Examination Survey. Still, this isn't a full picture of how many children are impacted, because it doesn't account for all of the affected babies younger than 1 or children older than 5. It also doesn't include the kids whose levels are now normal but who still suffer damage. (You can lower blood-lead levels, but that only prevents additional damage.)

However, there are signs of progress -- or at least increased awareness. Though Congress had slashed the funding for the CDC's Childhood Lead Poisoning Prevention Program (CLPPP) from $29 million to $2.5 million right around the time the levels of concern were last lowered, the budget was restored in January to $15 million (a big jump but still half what the program has historically received). "It's just enough money for states to do surveillance to find out how many kids are exposed and where they're located. But it's too little to fund important follow-up work, such as

inspecting homes and preventing future poisonings," explains Rebecca Morley, executive director of the nonprofit National Center for Healthy Housing, in Columbia, Maryland. In December 2013, a California judge ordered three current or former paint companies to pay $1.1 billion to remove lead-based paint from homes in the state, finding them liable for exposing children to a known poison. And later this year, lead poisoning will be the focus of the documentary *MisLEAD: America's Secret Epidemic*, from filmmaker Tamara Rubin, who has four children, two of whom have neurological issues and behavioral problems from lead poisoning. "We need parent awareness on a major scale. We've screened the movie all over the country and parents say, 'I can't believe I didn't know about this,'" says Rubin. "They've since been testing their homes and their children and are helping to spread the word."

The Testing Issue

Blood-test requirements for children vary from state to state and also depend on the age of the child's home and how likely it is to contain lead. Children who are covered by insurance and see a private pediatrician are routinely tested at age 1, and again at age 2. But due to the reduced funding, children in low-income families who are covered by Medicaid are no longer universally screened. These kids are particularly vulnerable because they are often living in older, badly maintained buildings with flaking paint. Before the cuts to CLPPP, a child with high levels of lead would have automatically triggered the local health department to help reduce his lead level, working with parents and/or landlords to identify and safely eliminate the source of exposure.

An Invisible Poison

I never felt like a worse parent than on the day our pediatrician called to say that our 1-year-old son's blood-lead test showed that he had 18 micrograms per deciliter of blood -- far above 10, the level of concern back then, although not high enough to require hospitalization. Our 4-year-old daughter's test result found that she had only 4.6 micrograms.

I tortured myself with the thought that for the sake of saving a little money during our renovation, we'd exposed our son to irreversible brain injury. Out of necessity, we had cut some corners. One thing we'd skipped was an optional inspection of the house's lead content. Given the house's age, we assumed there was lead-based paint, and so we decided to put the $1,000 for the inspection toward covering the old paint with a high-quality primer and latex paint to prevent it from releasing chips or dust. This method, which is known as paint stabilization, can be safer than removing the paint because it doesn't generate as much debris. It's also far less costly. Between this preventive measure and a thorough cleaning before we moved in, we thought we'd done enough to protect our children.

As soon as we found out about our children's test results, we hired Steven Rosenbaum, a lead inspector who is certified by the Environmental Protection Agency (EPA). He used an X-ray fluorescence gun to analyze surfaces and conducted dust-wipe tests, in which dust is sent to an EPA-approved lab for analysis. My son's exposure was traced to the bedroom window near his crib. Rosenbaum found a lead level on the floor beneath the crib of 500 micrograms per square foot. The acceptable federal limit for floors is 40.

We can only assume that by opening and closing our son's window -- which we were doing a lot during the warm late spring and early summer -- we dislodged some loose paint on the frame of the window outside, as well as on the windowsill. (No one had suggested we treat the exterior of our house.) That paint was then ground up into particles small enough to blow through the screen onto the slats of our son's crib, which exposed him to it. Thinking back on all the times I had peeked in on my baby and smiled to see him contentedly sucking his thumb in his sleep, I shudder to imagine that tiny thumb covered with poisonous lead dust.

I had been regularly vacuuming and wet-mopping our house since we moved in. But it turns out that several areas still registered above the federal guidelines for safe levels of lead dust. This is why it's so important to identify the source of lead and either remove it or control any more exposure. But as I'd learn, this is easier said than done.

When Zephir O'Meara and his partner, Raina, moved to Oakland, California, they never suspected that the home they rented, albeit an old Victorian house, could poison their sons, who were then 1 and 3. Because the O'Mearas are part of a farming coop that used their property, their soil had been checked for lead and other hazards (and deemed safe) before they planted their garden. But after their routine finger-stick tests came back elevated for lead, a follow-up determined that both kids had lead poisoning, with the younger child testing at 28 micrograms and the older at 24 micrograms. Once the children's levels were reported, a lead inspector was sent by the county health department, and he turned up pockets of lead levels in the backyard that were above the federal limit.

O'Meara suspects that when their landlord replaced windows in the house, he wasn't careful about containing the work area, so lead paint from the outside window frames may have mixed with the soil. The boys could have been exposed by playing in the dirt outside their home and inhaling the particles.

Working with the county, the landlord contained any flaking paint. He also covered the loose soil with wood chips, so it wouldn't be tracked into the house. To be safe, the O'Mearas stopped going into the backyard and instituted a strict hand-washing regime. Within a year, the boys' levels dropped to around 10; their most recent levels were 6 and 4. This makes sense, says Dr. Landrigan: Once the source is identified and remediated, levels should decrease by 30 to 35 percent every six months. "But if the levels don't drop, that means there's still an undiscovered source," he adds.

Getting Rid of Lead

The process of eliminating exposure to lead-based paint is called abatement. It can involve stabilizing the paint, as we had originally done; encapsulating it with a special coating warranted to last for 20 years; or removing the paint altogether. Abatement requires specific work practices outlined by the EPA to minimize the disturbance of lead, such as using a wet stripper rather than a heat gun to remove old paint. The area must be contained with plastic and tape to prevent dust and debris from entering the rest of the house; the process ends with specific cleaning and post-cleaning procedures. Professional abatement can be expensive, but homeowners shouldn't tackle it themselves. They often end up creating more lead contamination, says Rosenbaum.

However, lead-based paint doesn't always need to be abated. If it isn't chipping or flaking, it doesn't pose a problem, he says. The exception to this is if the surface can't withstand potential impact or friction. For example, while some of our walls contained lead-based paint, we could leave them alone because the paint was intact. But our baseboards presented a hazard since they could easily be nicked by a chair or a ride-on toy, and a dislodged chip could be crushed under someone's heel and mixed into household dust. Our windows and doors were the most dangerous, since simply opening and closing them created dust.

The Road Ahead

After weeks of paperwork and pleading, we secured a $50,000 home-equity line of credit. We hired a contractor certified in lead-safe practices, per the EPA's Renovation, Repair, and Painting Rule, put into place in 2010 (and not in effect when we hired our first contractor.) All but two of the windows in our house and one door needed to be replaced, the surfaces of other doors and numerous

doorjambs had to be treated with a wet-stripping method in order to prevent more contamination, and any flaking paint had to be encapsulated.

Despite having hired people legally required to follow EPA abatement guidelines, I still had to hover over them. I'd remind them not to walk in and out of the work area because they'd track the lead dust through the house. I also had to tell them to sufficiently cover the front yard in plastic to make sure that any dislodged paint chips could be wrapped up and carted away. Even though it's required by the EPA rule, only one of three companies we used brought a vacuum that was equipped with a HEPA filter, made to capture tiny dust particles. After each workday, my husband would keep our kids at the park or a friend's house for hours, while I vacuumed (with our new $600 HEPA vacuum) and wet-mopped the house twice over. A year and a half later (after visits to the doctor every three months during which my son would start crying the minute he understood that he was getting his blood drawn again) he finally tested at 5. This level still wasn't normal -- but it was a vast improvement. His most recent level was 3.9.

We won't know for a few more years what the long-term effect on his behavior and cognitive skills will be. So far he seems to be on track, or even ahead of the learning curve. At 4 1/2, he is sounding out words, can add single-digit numbers, and is a formidable opponent in the Zingo! matching game. But when he has a meltdown because his Lego structure won't stay connected, I find myself wondering whether I can chalk up his over-the-top response to his age or to his lead exposure.

I try hard not to be a paranoid parent, especially when my son wants to climb the ladder to the slide "by myself!" or when I leave my daughter at her first drop-off birthday party. But I deeply regret not having been paranoid enough when we bought our home. And so I will continue trying to scare other parents, in the hope that I can prevent them from making the same mistake we did.

It's Not Just Paint

A child's blood-lead level should be tested at age 1 and again at age 2 if he lives in an older home or if he lives with an adult whose occupation is one of the following:

- Construction worker
- Painter
- Auto repairer
- Steel welder
- Firing-range instructor
- Remodeler and refinisher
- Scrap-metal recycler
- Cable splicer

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