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[guides](#)
[current issue](#)
[calendar](#)
[parent resources](#)
[ad info](#)
[faq's](#)
[about us](#)
[contact us](#)

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Blood-Lead Level Basics What You Really Need to Know

by Julie Bloss Kelsey

National Lead Poisoning Prevention Week
is October 22-28.

Last summer, my 4-year-old son had a routine physical before starting preschool. Afterward, his doctor assured me that his test results were normal. But I fixated on one in particular: the blood-lead test. Although in the normal range, lead was detected in my son's blood sample.

My mind went into overdrive. Where did the lead come from? Were his levels of lead increasing? And the most troubling question: Should I be concerned?

A History of Lead in the United States

Historically, lead has been used in just about everything, including pesticides, pipes, gasoline, ammunition, paint and batteries. But two sources — leaded gasoline and lead-based paint — account for most of the exposure risk remaining in the United States today.

Car exhaust released lead into the environment until 1996, when the U.S. government's ban on leaded gasoline in motor vehicles went into full effect. But lead-based paint was banned from residential use in this country nearly 30 years ago. Why is it still a concern?

"Lead in gasoline was an important source of lead, but paint is a much greater problem," says Dr. Muriel Wolf, Senior Pediatrician at the Child Health Center of the Children's National Medical Center in Washington, D.C. She is also an Associate Professor in Pediatrics at the George Washington University School of Medicine.

"Fifty-eight percent of houses in the District have lead in them," says Wolf. "Parents need to be aware that there's a potential problem and know how to handle it."

If your home was built before 1978, it is likely that lead is contained in the paint. Wolf stresses that "if there is lead in the environment, not all lead needs to be removed." Paint that is chipping and peeling is the problem, as this releases lead dust.

Removing lead paint is problematic. Traditional techniques, such as dry sanding, are not advised. Once released, lead dust can spread throughout your house,

contaminating everything.

(What if you have already completed a home renovation without realizing the danger? Don't panic. There are things you can do to minimize your family's exposure to residual lead dust. Refer to "Maintain your home" and check the sidebars for more information.)

The Impact of Lead on Human Health

Unfortunately, our bodies mistake lead for the beneficial (and chemically similar) elements of calcium and iron. The human body will store lead in bones and teeth in place of calcium. Lead can be found in the bloodstream, substituting for iron. The effects of lead on the human body are most pronounced in the central nervous system.

The more lead in your system, the greater your risk for having adverse health effects. Wolf says that children with relatively low amounts of blood-lead (10-20 micrograms per deciliter — $\mu\text{g}/\text{dL}$) may have a small drop in IQ. At levels of 20 $\mu\text{g}/\text{dL}$, you might see stomach upset, intellectual impairment and learning disabilities. At the highest levels (greater than 60 $\mu\text{g}/\text{dL}$), a child may experience tremendous irritability or seizures.

Children are more affected by lead than adults. This effect can be pronounced in unborn children. "Women will pass up to 50 percent of their blood-lead into their fetuses," says Ruth Ann Norton, Executive Director of the Coalition to End Childhood Lead Poisoning. "Pregnant women that are exposed to lead are more likely to have low birth weight babies, stillbirths and miscarriages."

"Kids poisoned by lead are seven times more likely to drop out of school," adds Norton. She notes that recent studies also link lead poisoning to criminal behavior. The worst thing, says Norton, is that a child's potential is diminished. "We don't know the real loss until a child is 12 or 15. Lead poisoning may not show effects for 5, 10 or 15 years."

How Is Lead Poisoning Treated?

Wolf says that a child will not be treated for lead poisoning until he is removed from the lead-contaminated environment. Once this occurs, treatment will depend upon the severity of the problem. For the highest levels of blood-lead (greater than 60 $\mu\text{g}/\text{dL}$), hospitalization may be necessary. With slightly lower levels, the child will be treated on an out-patient basis. For blood-lead levels of 10-20 $\mu\text{g}/\text{dL}$, Wolf says the child will be monitored and the parents educated about how to eliminate possible sources of lead.

What about children with very low blood-lead levels? The Chief of the Lead Poisoning Prevention Branch at the Centers for Disease Control and Prevention (CDC) recently stated that there is no safe level of lead. However, current CDC guidelines do not address blood-lead levels between 0-9 $\mu\text{g}/\text{dL}$. Wolf would retest the child in the next three to six months to make sure that their levels weren't increasing. She notes that some recent studies indicate that persistent lead levels in the range of 5-9 $\mu\text{g}/\text{dL}$ might cause a slight drop in IQ. Norton goes further, citing a recent study by Dr. Bruce Lanphear that shows long-term cognitive impact at blood-lead levels as low as 2.5 $\mu\text{g}/\text{dL}$.

Reducing your child's exposure to lead is always a good idea. "There is no productive use for lead in the human body," says Norton. She stresses that lead is a poison. "If you know your child is ingesting a poison, you need to do something about it. Parents need to become investigators if lead comes up," she says, so they can identify and remove the source.

What Can I Do To Protect My Family?

- **Have your children tested**

The CDC currently recommends that children be tested for lead exposure at one and two years of age. Between three to six years of age, the CDC recommends that children be tested if they have not been tested previously or if they are in a high-risk category for lead exposure.

Norton is more conservative. She recommends yearly testing until the child is six or seven years old. "After six or seven," she says, "there is less brain development going on."

- **Eat healthy**

"A diet low in fat, high in vitamin C, iron and calcium puts nutrition in place that helps block the absorption of lead," says Norton.

Wolf echoes this statement. "Make sure your children have an adequate amount of iron in their diet." She also recommends your child eat foods high in calcium, since calcium prevents lead from getting absorbed in the body.

- **Maintain your home**

Wolf recommends that you keep your house in good repair. Window sills are particularly susceptible to flaking paint from frequent raising and lowering of windows. Doorjambs and doorways are also commonly affected.

If you know or suspect your home contains lead-based paint, Norton suggests that you clean these areas weekly by wet wiping, then using a HEPA-filter equipped vacuum, following up with another round of wet wiping. Using a dry cloth can make the problem worse by spreading the dust around.

- **Be aware of other sources of lead**

Unfortunately, lead-based products continue to enter the U.S. market. Costume jewelry, Venetian blinds and foreign-made pottery are examples of items recently banned due to lead contamination.

Water supplies can become contaminated with lead from old pipes. To minimize this risk, run your water for several minutes before use and always use cold water for drinking or cooking. A filtration system or bottled water might be advised. Wolf notes that previous problems with lead in the District's drinking water have been resolved.

If you are concerned about lead in your soil, remove your shoes when you enter the house and wipe the feet of your pets before they come indoors. Good hygiene, like washing your hands before eating, will reduce your risk of lead

exposure.

- **Take heart**

The effects of lead are more profound the longer you are exposed to it. Taking proactive steps to reduce your children's exposure to lead is a wonderful investment in their future.

Julie Bloss Kelsey holds a Master of Environmental Management degree. She lives in Germantown with her husband and two young sons.

Could you or your child have elevated levels of blood-lead? Your risks are higher if:

- You live in a home built before 1978 (the older the home, the greater the risk).
- Your older home is undergoing renovation or has deteriorating paint.
- You suffer from poor nutrition.
- You are exposed to lead through a job or hobby (i.e. working with lead solder, making glazed pottery).

Symptoms of lead poisoning include:

- Irritability
- Poor concentration
- Headaches
- Hearing problems

If you have concerns about whether your child has been exposed to lead, talk with your pediatrician. She can order a blood-lead test to put your mind at ease. Fortunately, the test is noninvasive, involving a simple finger prick or blood draw.

Thinking of renovating?

If your house was built before 1978, you probably have lead paint in your home. Be sure to relocate pregnant women and children before you begin the work. If you hire a contractor, find one who is certified to handle lead dust. If you are completing the work yourself, make sure that you know how to minimize the risk of releasing lead dust throughout your home. Proper training is essential. Organizations such as the Coalition to End Childhood Lead Poisoning can help you ensure a safe job. Call them for information about homeowner training or to locate certified contractors.

The D.C. Department of Housing and Community Development offers grants for free lead hazard reduction work in the homes of children under the age of six. The program is targeted at low- to moderate-income families. Call 202-442-7180 for more information.

In Maryland, contact the Maryland Department of Housing and Community Development at 410-514-7565 for information about Lead Hazard Reduction Grant and Loan Programs.

There are no similar grants offered in northern Virginia at this time.

For more information:

Coalition to End Childhood Lead Poisoning

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800-370-5323

National Lead Information Center

800-424-LEAD

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