



PROTECT CHILDREN FROM LEAD POISONING

In 1995, more than 1,200 children in Kansas were found to have elevated levels of lead in their blood. Lead poisoning is second only to chicken pox in the number of Kansas children with a reportable disease. The Centers for Disease Control has described lead poisoning as the most common and societally devastating environmental disease of young children. This publication explains what lead poisoning is, what the sources of lead are, how children take lead into their bodies, and what can be done to reduce the risks.

What is lead poisoning?

Lead is an element with no known useful function in the body. Once thought to be harmless, small amounts of ingested lead can cause serious damage, especially in young children, without any evident symptoms. In children, small doses affect the developing nervous system and cause delayed development, lowered IQ, reading and learning problems, hyperactivity and discipline problems. Larger doses cause problems such as high blood pressure, anemia, kidney problems and reproductive disorders. Convulsions and death also can occur, but these are rare. Lead tends to accumulate in the body, and its harmful effects are almost irreversible.

Of the Kansas children diagnosed with elevated levels of lead in their blood in 1995, the majority had levels associated with developmental problems.

What are sources of lead in the home environment?

- **Lead paint**-- Because lead has been used in home products for decades, there are many sources of lead in the environment. For most households, and for most children, the major source of lead is contaminated dust. The most prevalent sources of leaded dust are from old paint and leaded gasoline.

Prior to 1950, paint contained as much as 50 percent lead. This was reduced in later years, and lead paint was banned from residential use in 1978.

However, many homes built before the 1970s have old layers of lead paint on the walls and woodwork. Leaded paint in good condition poses little risk, but friction surfaces such as windows, doors, floors and stairs are a concern. As the paint deteriorates, it

creates dust particles that settle on the floor, window ledges and other surfaces. Dust on surfaces can be picked up by toys, clothing, shoes, and hands and feet that come in contact with it. As a general rule, the older a home is, the greater the likelihood of lead paint. "Chewable" surfaces such as child-accessible window sills, moldings, painted knobs and handles, baby crib rails, and high-chair parts pose a risk if lead paint has been used. New paint over the leaded paint surface does not reduce its original toxicity.

- **Lead-contaminated soil**-- The scientific element lead does not decompose over the years, but stays in place. Near major traffic ways, such as freeways and interstate highways, soil may be contaminated from the historic use of leaded gas. Some soil contains high levels of lead due to nearby lead mining. If contaminated soil is tracked into the house, it also becomes an important health hazard. Or, if children play on bare soil and get it on skin, clothes and toys, it presents a health risk. There is a small risk of contaminating vegetables grown in lead-contaminated soil.
- **Water**-- Water can be another potential source of lead. This is usually from lead in solder, fixtures and piping in the home. Overall, the United States Environmental Protection Agency (EPA) estimates that about 10 percent of the total lead intake is from water. Water that is naturally soft is more likely to extract lead from the home's plumbing than hard water. Consequently, hot water leaches more lead from pipes than cold water.

How does lead get into the body?

Risk of lead exposure is especially high in young children (up to about 6 years old), and there are several reasons why. Perhaps the most important factor is the **vulnerability** of the body's systems to the effects of toxins during the early years of rapid growth and development. Another explanation is that a child's digestive tract absorbs a higher proportion of lead in comparison to **absorption** in an adult.

Daily actions also influence the risk of lead poisoning. The frequent **hand-to-mouth activities** of

young children provide an unintentional, yet destructive, pathway for ingestion of lead dust. Toys and pacifiers that are contaminated with lead dust and then put into the mouth can increase the possibilities of lead contamination, as can chewing on lead-contaminated surfaces.

Lead dust suspended in the air can enter into the body's respiratory system as the child breathes. The measures discussed in the next section for controlling lead dust help reduce lead concentrations in the air.

Yet another route for lead to enter into the body is through ingestion of **lead-contaminated water**. Children's drinks that are mixed with water, including formula, can be hazardous if the water in the home contains lead.

How can we reduce children's exposure to lead?

The EPA recommends the following procedures if you think your home has high levels of lead:

- Get young children tested for lead, even if they seem healthy. Children younger than 6 years of age are particularly vulnerable.
- Frequently wash children's hands, bottles, pacifiers and toys. This is particularly important before they eat and before naptime and bedtime.
- Keep children from chewing on window sills or other painted surfaces.
- Make sure children eat healthy, low-fat foods. Good foods help protect children from absorbing lead to which they are exposed.
- Regularly clean floors, window sills and other surfaces. Use a wet sponge or mop with a detergent or trisodiumphosphate (TSP) to clean up lead dust. TSP can be purchased from local hardware stores.
- Wipe soil off shoes before entering the house. When lead is known to be in the soil outside the house, shoes should be removed as residents enter the house.
- Take precautions to avoid exposure to lead dust when remodeling or renovating.

Homeowners concerned about lead paint may be considering removal of the paint from their homes.

However, the paint should be tested before starting the job. There are home test kits available for purchase from hardware, paint and building supply stores. Read the label on the product to determine if the kit is appropriate for testing the materials in your home, and follow the instructions on the selected test kit. In general, paint containing lead will color the test swab—indicating the presence of lead.

Instead of using a kit, you can also have paint, dust, soil or drinking water samples tested by a laboratory. Call an environmental laboratory listed in the phone book, or call the state health department for the names of laboratories. The lab will tell you how to take the sample, how much material to collect, and how to store it before bringing or sending it to the lab. A lab analysis will provide more information about how much lead is in the paint than a home test kit, but it will also be more expensive and can take several days to get results.

Most methods used to remove paint in the home can actually increase the risk of lead exposure to children. Don't use a belt-sander, propane torch, dry scraper or dry sandpaper on painted surfaces that may contain lead. These methods can release the lead from paint and dust into the air, increasing exposure to family members and workers in the home. Temporarily move family members, especially children and pregnant women, from the home until the work is done and the area is properly cleaned. If you can't move your family, at least completely seal off the work area. Call 1-800-424-LEAD for guidelines on safe removal of lead paint.

REFERENCES

- Protect Your Family From Lead In Your Home*, EPA 747-K-94-001, May 1995.
- Removing and Covering Interior Paint*, Minnesota Department of Health.
- Reducing Lead Hazards When Remodeling Your Home*, EPA 747-R-94-002, April 1994.
- Healthy Indoor Air for America's Homes* (Instructional module: Lead in the Home), Joseph T. Ponessa.

Author: Marilyn Bode, Extension Housing Specialist, K-State Research and Extension.

Publications from Kansas State University are available on the World Wide Web at: <http://www.oznet.ksu.edu>

Contents of this publication may be freely reproduced for educational purposes. All other rights reserved. In each case, credit Marilyn Bode, "Protect Children from Lead Poisoning," Kansas State University, September 1997.

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

MF-2276

September 1997

It is the policy of Kansas State University Agricultural Experiment Station and Cooperative Extension Service that all persons shall have equal opportunity and access to its educational programs, services, activities, and materials without regard to race, color, religion, national origin, sex, age or disability. Kansas State University is an equal opportunity organization. Issued in furtherance of Cooperative Extension Work, Acts of May 8 and June 30, 1914, as amended. Kansas State University, County Extension Councils, Extension Districts, and United States Department of Agriculture Cooperating, Marc A. Johnson, Director.

File code: Family Resource Management-3