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Carroll S. Welte

University of Nebraska - Lincoln, cwelte1@unl.edu

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Testing Nebraska's Young Children for Lead

This NebGuide discusses why young children in Nebraska should be tested for lead poisoning. It explains sources of lead and ways parents can reduce children's exposure to lead.

Carroll Welte, Extension Educator

Introduction

Lead, a poison that affects virtually every system in the body, is a health issue for parents and caretakers of Nebraska children 6 years old and younger. Small amounts of lead in the body can do serious harm to the developing brain and nervous system of a young child. The risks associated with lead exposure are not assumed or based on laboratory animals, but documented from the studies of children themselves.

More children in Nebraska could be affected by lead poisoning than people realize. Before lead-based paint for household use was banned by the Consumer Product Safety Commission, it was used to cover household surfaces both inside and out.

Lead-based paint wasn't banned for household use until 1978. Seventy percent of all houses in Nebraska were built before that year. Close to 40 percent were built before 1950, when about half of all paint contained large amounts of lead.

The risk of lead poisoning is increased when children play near areas where deteriorating lead-based paint is present. Chalking, flaking or peeling lead-based paint can create lead — contaminated household dust. Friction and impact on lead-based paint also will create lead contaminated household dust.

Small children are more at risk for lead exposure than adults. Their bodies tend to absorb lead more easily. Also, they frequently put hands and toys into their mouths.

Since lead was added to paint to make it adhere better, lead-contaminated household dust and lead-based paint chips are inherently sticky. Small children ingest lead from contaminated household dust and paint chips that stick to hands, toys and other objects they put into their mouths.

The only way to determine if a child has been exposed to lead is to have his or her blood tested. Each year several hundred children in Nebraska suffer from elevated blood lead levels (667 in 1995, 516 in 1996 and 759 in 1997). Some children require hospitalization for lead poisoning.

According to officials within the Nebraska Health and Human Services System, *all children between the*

ages of 6 months and 6 years old, living in homes built before 1950, should be tested for elevated blood lead levels. Public health officials also recommend screening children living in or frequently visiting homes built before 1978 with ongoing or recent remodeling (within last six months).

Generally a simple fingerstick specimen is acceptable for blood lead testing. Testing can be performed in almost any medical facility in Nebraska.

Lead's Harmful Effects

Since the early '70s, the blood-lead level for children indicating lead poisoning has been lowered substantially.

With a blood lead level as low as 10 mcg/dL (micrograms per deciliter of blood), a child's learning and behavior may be affected. While scientists aren't positive, several studies support evidence that children exposed to lead poisoning have, as a result, lower IQ scores. Increased levels of lead in children also may cause hyperactivity, Attention Deficit Disorder and other behavior disorders.

Other effects that begin with low blood lead levels include anemia, decreased growth, impaired hearing and an inability to maintain a steady posture.

Moderate blood lead levels (35-50 mcg/dL) affect kidneys and blood cells. At very high levels (80 mcg/dL and greater) coma, convulsions and even death may result.

Symptoms of Lead Poisoning

Parents may not realize their child has been exposed to lead poisoning. In most cases there are no visible symptoms.

At moderate and high levels symptoms such as exhaustion, irritability, difficulty concentrating, tremors, headaches, abdominal pain, vomiting, weight loss or constipation, may occur. These symptoms generally are mistaken for other illnesses.

Sources of Lead Poisoning

Because the Consumer Product Safety Commission didn't ban lead-based paint for household use until 1978, people should assume all homes built prior to this contain lead-based paint. While it could have been applied in a variety of concentrations, in a variety of areas, lead-based paint is most often found on window sills and sashes and in window troughs.

Throughout pre-1950 homes, lead-based paint generally is found on kitchen and bathroom walls, porches, doors, windows and wooden trim. It is estimated that 90 percent of homes built before 1950 contain lead-based paint.

The majority of children in Nebraska diagnosed with elevated blood lead levels ingest lead in the form of lead-contaminated household dust created by deteriorating lead-based paint.

Lead may be found in soil where children play. It is generally a result of lead-based paint applied to the exterior surfaces of homes and outbuildings that have either weathered over the years or been scraped for repainting. Some soil also may be contaminated with lead from gasoline emissions prior to 1995. Because lead does not break down in soil, it becomes a long-term hazard. Children playing in soil around newer

homes built on old farmsteads also may be at risk for lead poisoning.

Exposure to lead also can come from a family member's workplace. Take-home exposures may result when workers wear work clothes home or launder them with other family members' clothes. Occupations that expose workers to lead include:

- smelting and refining of nonferrous metals
- plumbing fixture fittings and trim (brass goods)
- motor vehicle parts and accessories
- firing range workers
- bridge, tunnel and highway construction
- automotive repair shops

Hobbies that require materials containing lead, such as stained glass artwork, furniture refinishing, reloading bullets and automotive repair, also may expose children to lead. Other exposures can come from some plumbing fixtures, vinyl mini-blinds and dishes with lead glazes.

Testing Children for Lead

If a child lives in or regularly visits a home built before 1978, public health officials recommend having his or her blood lead level tested. It is also important to have children's blood lead levels tested if they live with an adult who works with materials containing lead or they live near a possible lead industry.

Children can be screened for lead during routine checkups at the doctor's office. Parents should not assume their physician is aware that a large percentage of homes in the community may have been built before 1978, and that lead poisoning may be a problem. Therefore, the parent should ask that their child be tested, if the process has not already been initiated by their doctor.

Blood lead level tests are fairly inexpensive and covered by most insurance companies. For children who qualify, Medicaid pays for blood-lead tests during routine checkups.

Usually fingersticks are used to collect the blood for measuring lead levels. The process includes cleaning the ball or pad of the finger; puncturing it with a sterile lancet; and filling a collection container with a few drops of blood. Children whose measurements range between 10-14 micrograms per deciliter of blood should receive follow-up testing within three months, using blood drawn from a vein.

To interpret the result of a blood lead test done on a child, refer to the *Table I*.

Table I. Interpreting blood lead levels in children.		
Very low	0-9 mcg/dL	Not considered lead poisoning. Repeat test every 6 months until the age of 2 years. After that, have the child tested once a year until age 6.
Low	10-14 mcg/dL	Rescreen every three to four months. Follow recommendations in section, <i>Protecting Your Child From Lead</i> .
Moderate	15-19 mcg/dL	Rescreen every three to four months. Healthcare professionals should provide dietary and lead prevention counseling. Identify and remove obvious lead hazards.
High	20-44 mcg/dL	Complete evaluation. Find and get rid of lead hazards in the child's environment (home, daycare, school, and play areas).
	45-69 mcg/dL	Medical treatment and inspection of environment within 48 hours.
Urgent	70 mcg/dL or above	Medical emergency. Immediate medical treatment and inspection of environment.
Source: Nebraska Health and Human Services System, Regulation and Licensure.		

Protecting Children from Lead

Parents can use several interventions to reduce children's exposure to lead.

In older homes which may have been painted with lead-based paint:

- make sure the child does not have access to peeling paint or surfaces with lead-based paint;
- unless using a high-efficiency particulate air-filtered (HEPA) vacuum, do not vacuum hard-surfaced floors, window sills, sashes, or troughs, since this will scatter dust;
- clean surfaces at least once a week, using damp mop cleaning methods and a solution of water and all-purpose cleaner.

Wash children's hands and faces before they eat and before bedtime. Wash toys and pacifiers frequently.

Soil around older homes is likely to be contaminated with lead. Plant bushes and grass around the outsides of houses, so that children are less apt to play in areas where soil may be contaminated.

Make sure children eat regular meals with plenty of iron (meat, beans and peanut butter) and calcium (milk, yogurt and cheese). When children have food in their system, less lead is absorbed. If a child does not have enough iron or calcium in his or her body, the body mistakes lead for these nutrients. Fatty foods should be avoided for children, since these allow the body to absorb lead faster.

People whose occupations expose them to lead should change clothes and remove shoes before entering their home after work. Work clothes should be contained away from other family members' clothes and washed separately.

Keep children and pregnant women away from areas of the home undergoing renovation, remodeling or repair. *Never sand, dry scrape or burn off above 700° F possible lead-based paint.* Lead contaminated household dust created from this kind of work is not only a hazard for children, but for adults as well. (Refer to NebGuide G98-1379, *Remodeling Nebraska Homes Containing Lead-Based Paint.*)

The Childhood Lead Poisoning Prevention Program, administered by the Nebraska Health and Human Services System (HHS), has successfully helped to lower many children's blood levels through education on lead hazards. For parents of children with elevated blood lead levels, it provides education and lead risk assessments of homes. When lead hazards are identified, HHS staff work with parents to remedy lead hazards to make the child's environment safer.

For more information about lead exposure and lead poisoning contact your local extension office, county health department, or staff working with the:

Childhood Lead Poisoning Prevention Program
Nebraska Health and Human Services System
Department of Regulation and Licensure
301 Centennial Mall South
P.O. Box 95007 Lincoln, NE 68509-5007
(402) 471-7764 or toll free, (888) 242-1100

Summary

Lead poisoning is a preventable health problem for children living in Nebraska.

Small children are at more risk for lead exposure, because they have more hand-to mouth activity and tend to play in areas where lead-based paint may be present. Lead is more easily absorbed into a child's body.

Small amounts of lead can damage a child's central nervous system, affecting learning and behavior. The most common source of exposure is from lead-contaminated household dust created by deteriorating lead-based paint.

Since lead was not banned in household paint until 1978, people should assume that all homes built prior to this contain lead-based paint. It is strongly recommended that children under 6 years old and pregnant women living in or frequently visiting these homes be tested for elevated blood lead levels. All children, 6 and under, and pregnant women living in or frequently visiting homes built before 1950 should be tested for elevated blood lead levels.

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