Little Moccasins
A Lead Poisoning Prevention Manual for Tribal Day Cares and Families
Part of the United States Environmental Protection Agency's Region One's First Steps Program

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“Protecting the Most Valuable Natural Resource, OUR CHILDREN”

Brenda Commander, Tribal Chief, Houlton Band of Maliseet Indians

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INTRODUCTION

Our children are our future. They will carry on our traditions, our heritage, our values. Their health and well-being should be our most important priority. To continue to give our children the best care possible, we need to keep informed of the ever growing environmental threats to their well-being in our ever more complex world.

Lead is a toxic metal that can cause permanent damage to our children. Lead poisoning can damage young children’s brains. For many years, lead was taken from the Earth and was used to make products used in our daily environments. All of our automotive gasoline contained lead until 1986, when it began to be phased out. Even though it is no longer used, the lead in that gasoline remains today in the soil by the side of our roads. House paint contained lead until 1978. The lead in paint remains on the walls of about two thirds of our homes —about 64 million houses and apartments in this country. Lead is still present in hundreds of products in the average home environment. Some of the most common uses of lead are car batteries, gasoline for agricultural machinery, paint for commercial and marine uses, fishing sinkers and curtain weights, ammunition, ceramic glazes, leaded crystal, and many plastic products.

Children of lower income families, specifically those living in older housing that is not well maintained and who might not receive well-balanced diets, have the highest risk of lead poisoning. The risk is increased when such older housing is repaired or renovated without the proper precautions being taken.

Fortunately, however, lead poisoning is totally preventable. The key is awareness of its causes and how to control them. We can protect our children by learning about lead poisoning and taking action to prevent it.
Lead poisoning damages virtually every organ of the body. The most serious effect for young children is on the development of the brain. Sometimes lead enters the body by breathing in fine lead dust in the air, both indoors and outdoors. Usually children absorb lead by ingesting paint, soil or dust with lead in it.

Young children ingest more lead because they come into contact with dust and soil more often than older children or adults. Young children crawl and play on the floor, which might have lead dust on it. They play in the dirt, which might be contaminated with lead. They often put their hands and objects in their mouths, so the lead in the dust and dirt gets into their bodies.

Although some of the lead that enters a child’s body is eliminated, a significant percentage travels through the child’s blood and is deposited in the various organs of the body, including the brain. Since children's brains are still developing until the age of six, young children are the most vulnerable to lead poisoning.

Some of the lead is stored in the child’s bones. When the child grows up, that stored lead can be released back into the blood and throughout the body again, especially at times of increased demand, such as pregnancy.

Unborn children can also be hurt by lead. The lead that a pregnant woman is exposed to, as well as any lead released from the bones during pregnancy, is passed along to the fetus. This can cause premature births, low birth weights and still births. Pregnant women, therefore, need to be very careful about exposure to lead in the environment, just as young children do.

Very high levels of lead in a child’s blood can cause anemia, hearing problems and kidney damage. It can interfere with a child’s growth, and cause reduced intelligence, learning and behavioral problems. In unchecked cases lead poisoning can lead to coma or even death, though this is very rare.

Even at levels that are fairly common levels that were previously considered safe lead damages the brains of young children as they are developing. Childhood exposure to lead can lower intelligence and cause learning disabilities, hearing impairment, behavior problems, slower reaction time, and attention problems. Damage can be occurring inside the cells in a child’s body even though there are no apparent outward symptoms.

It is difficult to know just by looking whether a child is lead poisoned because there may be no obvious symptoms. Even when there are symptoms, the symptoms of lead poisoning are very similar to symptoms of other illnesses.
These symptoms may include:

- irritability
- stomach pains
- dizziness
- constipation
- vomiting
- lack of appetite
- muscle weakness
- difficulty sleeping
- very high or very low activity level
HEALTH EFFECTS OF LEAD ON CHILDREN & ADULTS

Lowest Observable Adverse Effect/Levels

Death → 150 → Coma/Seizures
Kidney damage → 100 → Frank Anemia
Stomach aches/cramps → 50 → Decreased ability to make red blood cells
Decreased ability to make red blood cells → 40 → Nerve problems, decreased sensation & ability to move quickly
Decreased ability to use Vitamin D → 30 → Increased blood pressure, Hearing loss
Nerves affected (slower reaction time, worsened sensation) → 20 → Interference in ability to make red blood cells
Interference in ability to make red blood cells → 20 → Interference in ability to make red blood cells (women)
Premature birth, reduced birth weight, difficulty maintaining steady posture → 10 → Hypertension (high blood pressure)
Possible decreased ability to use Vitamin D
Interference in brain cell development → IQ
10 → Hearing/Growth
Lead crosses the placenta and into the fetus

CHILDREN

ADULTS

Lead Concentration
(Micrograms of lead per deciliter of blood)

Based on data from CDC.
The only way to know whether a child is lead poisoned from being exposed to lead in his or her environment is to have the child’s blood tested by a professional. This is referred to as screening for lead poisoning. A small sample of blood is taken from the child’s finger (this is called a finger stick or capillary blood test) or from the arm (this is called a venous blood test).

The amount of lead in the blood is measured. The blood may be sent to a laboratory to be measured, in which case results come back a couple of weeks later. The lead can also be measured right in the office or clinic. A few drops of blood can be taken and analyzed by a machine called LeadCare® and the results are available in 10 minutes.

A child should be screened as part of a regular yearly check-up from the ages of six months through six years. The most important times to screen a child are at the ages of one and two, because those are the ages that a child is most likely to be lead poisoned. A child should also be screened at any time when he or she might be at high risk. A child is considered to be at high risk of lead poisoning if:

1. The child lives in or regularly visits a home or building built before 1960. The risk is even higher if it was built before 1950, or if paint from the Bureau of Indian Affairs was used.
2. The child lives in or regularly visits a home or building built before 1978 that has recently (within six months) undergone renovation or remodeling, or has been poorly maintained and has paint that is flaking or peeling (especially in the case of a BIA building).
3. The child has a sibling or playmate who has lead poisoning. (Discuss lead poisoning with friends and neighbors so that you will be aware of cases of such lead poisoning.)
4. A member of the child’s household comes in contact with lead in their work or hobby. (See the list of occupations and hobbies involving lead exposure in the section on Dust from Occupations, below.)

The amount of lead in the child’s blood, known as the blood lead level, tells the doctor or nurse whether the child is currently being exposed to lead and is at risk