

# **Tribal Lead Education and Outreach Program**

Reducing Exposure of  
Lead Sources to  
American Indian  
Children

# Inter Tribal Council of Arizona, Inc Lead Program - Background

- EPA Region 9 funded ITCA to conduct lead education and outreach program for tribal communities in Arizona (2010-2012).
- Lead Program Includes:
  - *One Hour presentation*
  - *Train-the-trainer workshop*
  - *Tribal appropriate brochures and posters*
  - *Technical support and information*

# Tribal Lead Education and Outreach Program – Main Topics

- Lead as a poison
- Sources of Lead
- Effects of Lead exposure on the body
- Families with Children: solutions to exposure
- Workers and Family: solutions to exposure
- New EPA Lead Renovation, Repair & Painting Rule
- Lead testing kits – show and tell

*PRODUCING A HEALTHY AND LEAD FREE ENVIRONMENT  
FOR OUR CHILDREN*

# Lead Hazard Facts

- People can get lead in their bodies by breathing or swallowing lead dust, or by eating soil or paint chips containing lead.
- Even children who seem healthy can have high levels of lead in their bodies.
- Lead exposure can harm your children and babies even before they are born.
- Removing lead-based paint improperly can increase the danger to your family.
- People have many options for reducing lead hazards. In most cases, lead-based paint that is in “good condition” is not a hazard.
- 80% of childhood lead poisonings occur at home!

*This presentation will provide some simple steps to protect your family!*

# Lead – A History of Use

- Romans, Lead pipes and wine additives. The vast Roman network of water pipes were made of lead; wine preservative; ingredient for cups, plates and pitchers, pots and pans; last Roman emperors had pattern of mental incompetence most likely caused by lead; Nero with his lead breast plate, fiddled and sang while Rome burned in 64AD.
- Middle ages and Lead-type print machines. Mass printing using movable type was invented in Germany in 1390. The movable letters were made of lead. Lead-containing products were everywhere.
- Queen Elizabeth I - She used lead-based makeup that hurt her health and probably hastened/caused her death in 1603. Face makeup!!
- New World and Lead mining industry. As early as 1621, lead was being mined and forged in Virginia – low melting temperatures of lead made it easily workable – lead was used in making bullets, cups and window frames.

# Lead – A History of Use

- Modern times – United States became world wide leader as lead producer and consumer of refined lead – 40% of the world's lead. The use and dependence on lead-containing products was nearly ten times that of the ancient Romans!
- Beethoven died from lead poisoning. Beethoven's decades of poor health ended in a long and painful death in 1827 at age 56. High concentrations of lead were confirmed in his hair and bone.
- US President Andrew Jackson suffered from a form of lead poisoning called plumbilism (Latin for lead) and died 1847.
- Leaded gasoline in 1921– The key to high-power and high compression gasoline engines was tetraethyl lead – helped American auto making become number one in the world. Achieves highest levels of lead poisoning!
- Worker Protection Regulations. Lead exposure occurs in at least 120 different occupations (OSHA).
- Today - Imported lead-containing products. Consumer Product Safety Commission (CPSC) continue to find imported products with lead paint: Jo-Ann Stores importing “Robbie Ducky” toys coated with lead paint, fined \$50,000 for violation in April 2010.

# What is Lead Poisoning?

- Lead is a soft metal used in paint, solder, bullets, pottery glaze, and jewelry making.
- Lead can be a powerful toxin when introduced to young bodies.
- Lead interferes with the development and functioning of all body organs, particularly the kidneys, red blood cells, brain cells and central nervous system.
- In young children, lead can impede the development of the central nervous system and brain.

Why? The body absorbs lead because it recognizes **lead** as **calcium!**

# What is Lead Poisoning?

- **Unsafe Exposure Level is 10 micrograms per deciliter of blood.**

Visualize – show and tell:

- A deciliter is about  $\frac{1}{2}$  of a cup.
- A packet of sweetener (either the pink or blue stuff) is one gram.
- There is one million micrograms in a gram.
- So, divide the stuff from one packet into one million piles (Pretend!).
- Now, discard 999,990 of those “piles.”
- Take the remaining 10 piles and mix them into half of cup of liquid.
- PRESTO! 10 micrograms per deciliter of blood.
- Pretty small amount!



# Definition of Exposure

- Short Term (acute) overexposure. A single exposure to a toxic or otherwise dangerous substance which may result in severe biological harm or death. Acute exposures are usually characterized as lasting no longer than a day.
- Long Term (chronic) overexposure. Contact with a substance that occurs over a long time (more than 1 year). Usually referring to long term exposure of relatively low intensity.

# Sources of Lead Exposure

**Today almost everyone is exposed to environmental lead.**

- Exposure to lead may occur in several ways:
  - By being exposed to renovation, remodeling, repair with lead sources.
  - By spending time in areas where lead paints have been used and are deteriorating.
  - By working in jobs where lead is used.
  - By eating foods or drinking water that contain lead.
  - By using health-care products or folk remedies that contain lead.
  - By having hobbies in which lead may be used - such as making jewelry, stained glass, and making and loading ammunition.

# Sources of Lead Exposure

- **At Home exposures:**
  - Most commonly, kids get lead poisoning from lead-based paint in older buildings.
  - Contaminated soils near busy streets.
  - Water that flows through old lead pipes or faucets.
  - Food stored in bowls glazed or painted with lead.
  - Some toys, jewelry, hobby – like stained glass, ink, paint, and plaster.
- Today, 80% of poisonings are caused by lead paint in homes and apartments built before 1978.

# Sources of Lead Exposure

- **At Work Exposures:**

Exposure to lead occurs in at least 120 different occupations! These include:

- Auto manufacturing, gas station attendants, radiator repair shops, auto repair and painting.
  - Residential renovation and demolition, construction industry, building maintenance, pottery and ceramics shops.
  - Maintaining process equipment or exhaust duct work, or lead paint removal work.
- Most adults are poisoned by lead at work!

# Effects of Lead Exposure

Most human exposure to lead occurs through ingestion or inhalation.

- *Ingestion:* Lead exposure to adults and children occurs primarily through ingestion. Lead paint is the major source of lead exposure for children.
- *Inhalation:* May be the primary route of lead exposure for workers who are exposed to lead on the job and those who are do-it-yourself home renovators.

# How Does Lead Effect the Body?

- Your body does not change lead into any other form. Lead that is not stored in your bones exits your body through your body waste (urine or feces).
- About **99 percent** of the amount of lead taken into the body of an **adult** will exit through the waste in a couple of weeks.
- Only about **32 percent** of the lead taken into the body of a **child** will exit through the waste.
- Lead not eliminated by the body may result in an accumulation of lead in body tissue and bone.

# How Does Lead Effect the Body?

## Children's Reaction to Lead (micrograms per deci-liter)

### Blood Lead Level: Possible Health Effects:

< 10	Increasing awareness of problem - slight loss in IQ; hearing and growth problems, hyperactivity, poor attention span, puberty delay.
10-20	Developmental effects - moderate loss in IQ; difficulty learning; language and speech problems; slower reflexes.
20-50	Effects on nerve conduction (electrical impulse along nerve fiber) - poor bone and muscle development; clumsiness; lack of coordination; early anemia; fewer red blood cells to carry oxygen and iron.
50-100	Brain diseases, kidney diseases and anemia – destruction of red blood cells.
100 to 150	Swelling of the brain; seizures; coma; death.

(U.S. EPA 2010)

# Overall Goal on Lead

**Since no safe lower level of lead is known, the goal is to achieve blood lead levels in the Tribal Community that are as low as possible, with emphasis on preventing exposure.**



# Lead in the body

- Once lead is absorbed into the bloodstream, it circulates throughout the body and is stored in various organs and body tissue.
- Most lead ends up in the bones, where it causes even more problems. Lead can interfere with the production of blood cells and the absorption of calcium. Calcium is essential for strong bones and teeth, muscle contraction, and nerve and blood vessel function.
- Lead can cause harm wherever it lands in the body.

# Treatment

- Treatment for lead poisoning varies depending on how much lead is in the blood.
- Small amounts can be treated rather easily; the most important part of therapy is reduction of lead exposure.
- Small amounts gradually decrease, as the body naturally eliminates the lead, the level of lead in the blood will decrease.

# Treatment

- Kids with severe cases and extremely high lead levels in their blood will be hospitalized to receive a medication called a “chelating agent” which chemically binds to lead, making it weaker so the body can get rid of it naturally.
- Lead stays in the blood about **3 weeks**. Most is excreted and the rest goes into the bones. So, a blood test will show only recent exposure.

# Families with Children: Solutions to Exposure

- *The good news is that you can protect your family from lead poisoning!!*
- Have your kids tested for lead exposure, especially if they are between 6 months and 3 years old. As you know, kids spend a lot of time on the floor and put things in their mouths.

# Families with Children: Solutions to Exposure

- Ensure that iron and calcium are in your diets. If kids are exposed to lead, good nutrition can reduce the amount that is absorbed by their bodies. Eating regular meals is helpful because lead is absorbed more during periods of fasting.
- Know where your kids play. Keep them away from busy roads and underside of bridges.
- Be aware of old plumbing. They may be lined with lead. If you think you may have old pipes with lead, run cold water for 30 seconds before drinking it – don't use hot water for cooking because it absorbs more lead than cold water.

# Families with Children: Solutions to Exposure

- Wash away lead dust!
  - Keep your home and your family clean.
  - Wash children's toys and pacifiers often.
  - Wash away lead dust, if you live in a home built before 1978.
  - Only a tiny amount of lead is needed to harm a young, growing child.

# Families with Children: Solutions to Exposure

- Certain foods can protect children from lead! Serve foods rich in calcium, iron and vitamin C, to help protect children from lead.

Foods with calcium include milk, cheese, yogurt, and spinach. Foods with iron include beans, meat, peas, spinach, eggs and cereal. Food with vitamin C include oranges, orange juice, grapefruits, tomatoes, and green peppers.

# Mothers and Children: Solutions to Exposure

## Are nursing babies at risk?

- Reducing your exposure to lead and continuing to breastfeed is the best way to limit your baby's exposure to lead. If you have been exposed to high levels of lead for a long time, ask your health care provider about the safety of breastfeeding your baby.



# Workers and Family: Solutions to Exposure

## Don't bring lead into your home!

- If there is a possible exposure to lead at work - *Use these end of day procedures, if you think you're exposed:*
  - Place disposable coveralls and shoe covers with lead-containing waste in a closed container.
  - Put lead-contaminated clothes – including work shoes and protective equipment – in a closed container for laundering or cleaning at the job site.
  - Change into clean street clothes and shoes.
  - Prevent all contaminated clothing and equipment from reaching your home or vehicle.
  - Leave dust at work! Protect your household.

# Workers and Family: Solutions to Exposure

- The most common lead exposure source for children is lead in dust and soil. Make sure you are not a lead exposure source for your children. Leave possible lead-containing dust at work.
- If you work in facility maintenance, remember that any house or structure built before 1978 may contain lead-based paint. About 70-80% of homes built before 1960 contain lead-based paint.
- Lead used in ammunition is the second largest source of lead, next to the lead containing battery.
- Lead can be harmful in very small amounts. If you think you might be exposed to lead at work, talk to your doctor about getting your blood lead level and your children's blood lead level measured.

# TSCA 402(c)(3): EPA's Renovation, Repair & Painting Rule

Beginning April 22, 2010, any contractor being compensated for renovation, repair or painting activities at pre-1978 housing or childcare facilities must be trained and certified in lead-safe work practices. For work in Indian Country, they must be certified by EPA regional office.

Rule applies to builders, painters, plumbers, electricians and ***any business receiving compensation for renovation work*** (including hardware stores that sub-contract for installation).

Rule applies where greater than 6 sq. feet of lead-based paint disturbed in a room or where 20 square feet of lead-based paint disturbed on exterior.



# TSCA 402(c)(3): EPA's Renovation, Repair & Painting Rule

Rule applies where greater than 6 sq. feet of lead-based paint disturbed in room or where 20 sq. feet of lead-based paint disturbed on exterior.

Trained contractors must:

- post warning signs;
  - restrict occupants from work areas;
  - contain work areas to prevent dust and debris from spreading;
  - provide on-site training in lead-safe work practices to uncertified workers (only one worker on each site needs to be certified);
  - conduct a thorough cleanup and verify that the cleanup was effective;
  - keep required records.
- For more information on requirements, or possible violations - contact EPA.  
David Tomsovic. 415-972-3858. Email: [tomsovic.david@epa.gov](mailto:tomsovic.david@epa.gov)

# Lead Testing Kits

## Can I use a do-it-yourself testing kit?

- You can, but you should know that HUD and EPA do **not** permit the use of chemical spot test kits as an *official* evaluation method. Evaluations must be performed by EPA certified and state licensed lead inspectors and risk assessors.
- The EPA says these kits may give unreliable results. One of the reasons is that lead paint is usually buried under layers of newer non-lead paint.
- *However, the kits are a good way to test pottery, toys and other household items for lead content.*
- *Ask questions*

# Lead Containing Products - Best Web Sites -

- Wisconsin Department of Health Services.  
[http://www.dhs.wisconsin.gov/lead/LSources\\_Products.HTM](http://www.dhs.wisconsin.gov/lead/LSources_Products.HTM)
- U.S. Consumer Product Safety Commission.  
<http://www.cpsc.gov/>
- EPA Lead in Dust, Paint and Soil Web Site  
<http://www.epa.gov/lead/index.html>

# Summary Points

- Blood lead levels are decreasing but there are still many children in Tribal Communities with blood levels showing exposure.
- Lead has detrimental effects, at lower levels.
- Exposure is cumulative; need to reduce exposures from all potential sources.
- Prevention of exposure is the most important thing!

*Ask questions – and thank you!!*

# ITCA Lead Program Contacts

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