

LEAD POISONING AMONG CHILDREN OF MEXICAN ORIGIN

The Issue

Lead poisoning is a serious environmental risk for children under the age of six. Even low levels of lead exposure at this age can cause permanent cognitive and behavioral problems. Both Mexico-born and U.S.-born children of Mexican origin are at increased risk for elevated blood lead levels compared to other vulnerable groups and white children.^{1,2}

Lead Toxicity

Lead in paint, pottery glaze, and some food products are common sources of exposure. While acute lead toxicity has become a rare event, chronic low-level exposure is common. It is estimated that approximately 3% of all U.S. children aged 1 to 5 years have blood lead levels that exceed the reference level; this percentage is substantially higher in children of minority racial and ethnic groups.³ Children are at higher risk due to ingestion of dust and dirt and are more susceptible to the effects of toxicity due to their developing nervous systems.⁴

Signs and symptoms of lead poisoning in children may include:⁵

- Irritability
- Loss of appetite
- Weight loss
- Sluggishness and fatigue
- Abdominal pain
- Vomiting
- Constipation
- Learning difficulties

Transfer of lead to the fetus during pregnancy prepose infants. Babies who are exposed to lead before birth may demonstrate:

- Learning difficulties
- Slowed growth

Long-term effects of lead toxicity:

- Decreased IQ
- Shortened attention span
- Decreased hearing and growth
- Aggressive, violent behavior

Lowered cognition persists long after exposure. Treatment of elevated blood lead levels does not improve cognitive outcomes later in life.⁶

Increased Risk Factors among children of Mexican origin

Country of origin exposure

- The use of lead-based gasoline began declining in Mexico during the 1990s but is still in use today.⁷ This has resulted in high levels of lead-contaminated soil especially near roadways.⁸
- Many paints in Mexico contain levels of lead that exceed World Health Organization recommendations and U.S. regulatory levels.⁹

Exposure in the U.S.

- Children of Mexican origin are more likely than white children to live in homes that contain lead-based paint. Children are exposed by inhaling dust and consuming paint chips.¹⁰
- Although lead was banned from gasoline in the United States in 1978, leaded car exhaust persists in soils. Consumption of lead-contaminated dirt is a major hazard for children living in housing near freeways.
- Mexican-origin adults in the U.S. are disproportionately likely to be exposed to lead in the workplace.¹¹ Children of these workers are likely to demonstrate elevated blood lead levels.¹²

Exposure from Food, Water, and Medicine

- Contamination of drinking water can occur through leaded plumbing; lead piping was used in construction until the 1980s.¹³ Laws regarding landlords' disclosure responsibilities are rarely enforced, and tenants may not be aware of either their rights or the dangers of lead exposure.¹⁴

- Children and adults ingest lead from food stored in lead-glazed pots from Mexico. Acidic foods, such as salsas, release lead from the glaze.¹⁵
- Over 15% of lead poisoning cases are linked to lead-contaminated candy from Mexico, and lead is also found in some candy packaging.¹⁶
- Among Mexican immigrants, use of folk remedies imported from Mexico is common. Greta, a powder given to children for upset stomach, is over 14% lead by weight.¹⁷ Litargirio, used as a deodorant, is 79% lead.¹⁸

Educational, medical, and cultural barriers

- Immigrant parents may not be aware of the dangers of lead toxicity or have access to educational resources that are culturally and linguistically appropriate.
- Children of Mexican origin are more likely to not regularly visit a pediatrician. Furthermore, medical professionals may not screen for blood-lead levels.
- Anti-lead campaigns may not be culturally or linguistically appropriate.

Public Policy recommendations

- Improve blood-lead level testing for children and women during their child-bearing years
- Promote awareness of lead toxicity in the U.S. and Mexico
- Develop linguistically and culturally appropriate educational materials
- Promote international legislation to assure lead-free products

Reference

1. Morales LS, Gutierrez P, Escarce JJ. Demographic and socioeconomic factors associated with blood lead levels among Mexican-American children and adolescents in the United States. *Public Health Reports*. 2005;120(4):448–454.
2. Hopkins RS, Quimbo R, Watkins SM. Elevated blood lead prevalence in Florida two-year-olds. *Journal of Florida Medical Association*. 1995;82:193–197.
3. Centers for Disease Control and Prevention. Blood lead levels in children aged 1-5 years - United States, 1999-2010. *MMWR Morb Mortal Wkly Rep*. 2013 Apr 5;62(13):245-8.
4. Centers for Disease Control and Prevention. Blood lead levels—United States, 1999–2002. *MMWR Morb Mortal Wkly Rep*. 2005;54:513–6.
5. Min JY, Min KB, Cho SI, Kim R, Sakong J, Paek D. Neurobehavioral function in children with low blood lead concentrations. *Neurotoxicology*. 2007;28:421–5.

6. Brown RW, Longoria T. Multiple risk factors for lead poisoning in Hispanic sub-populations: a review. *J Immigr Minor Health*. 2010 Oct;12(5):715-25.
7. Pimentel, R. L., W. A. Gámiz, S. R. Olvera, and R. R. Silva. Panorama epidemiológico de las intoxicaciones en México. *Med Int Mex* 2005; 21:123-32.
8. Morton-Bermea, O. Metales Pesados en Suelos Superficiales de la Ciudad De México. *Revista Especializada en Ciencias Químico-Biológicas*. 2006; 9(1):45-47.
9. International Persistent Organic Pollutant Elimination Network. Niños en riesgo por alto contenido de plomo en pinturas de esmalte. 8 Dec 2009, accessed Apr 2013. http://www.ipen.org/ipenweb/documents/work%20documents/leadpaint_press_spanish.pdf
10. Centers for Disease Control and Prevention. Blood lead levels—United States, 1999–2002. *MMWR Morb Mortal Wkly Rep*. 2005;54:513–6.
11. Morales LS, Gutierrez P, Escarce JJ. Demographic and socioeconomic factors associated with blood lead levels among Mexican-American children and adolescents in the United States. *Public Health Rep*. 2005;120:448–54.
12. Emory E, Ansari Z, Pattillo R, Archinbold E, Chevalier J. Maternal blood lead effects on infant intelligence at age 7 months. *Am J Obstet Gynecol*. 2003;188:S26–32.
13. Morales LS, Gutierrez P, Escarce JJ. Demographic and socioeconomic factors associated with blood lead levels among Mexican-American children and adolescents in the United States. *Public Health Rep*. 2005 Jul-Aug;120(4):448-54.
14. Laws and Regulations about Lead. Alameda County Lead Poisoning Prevention Program. <http://www.aclppp.org/index.htm>
15. Barber, B. Getting the Lead out of Mexico's Pottery. *Huffington Post*. 31 May 2012. Accessed Apr 2013. http://www.huffingtonpost.com/ben-barber/getting-toxic-lead-out-of_b_1553171.html
16. Centers for Disease Control and Prevention. Childhood lead poisoning associated with tamarind candy and folk remedies—California, 1999–2000. *MMWR Morb Mortal Wkly Rep*. 2002; 51:684–6.
17. Cabb EE, Gorospe EC, Rothweiler AM, Gerstenberger SL. Toxic remedy: A case of a 3-year-old child with lead colic treated with lead monoxide (greta). *Clin Pediatr*. 2007;47:77–9.
18. Centers for Disease Control and Prevention. Lead poisoning associated with use of litargirio—Rhode Island, 2003. *MMWR Morb Mortal Wkly Rep*. 2005;54:227–9.

Author Information

Emma Smith, MPH, MD Candidate, University of Southern California

Sylvia Guendelman, PhD., M.S.W, Professor of Community Health and Human Development, UC Berkeley School of Public Health

Xochitl Castañeda, Director, Health Initiative of the Americas, UC Berkeley School of Public Health

Acknowledgements

This factsheet was reviewed and edited by Rachel Wexler, Caroline Dickinson, and Stefany España from Health Initiative of the Americas.

Suggested Citation

Smith, E , Guendelman, S, Castañeda, X. (2013) *Lead Poisoning Among Children of Mexican Origin*. (Fact Sheet) Health Initiative of the Americas. University of California Berkeley, School of Public Health.