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Childhood Lead Poisoning Prevention: Getting the Job Done by 2010

Editor's note: NEHA strives to provide up-to-date and relevant information on environmental health and to build partnerships in the profession. In pursuit of these goals, we will feature a column from the Environmental Health Services Branch (EHSB) of the Centers for Disease Control and Prevention (CDC) in every issue of the Journal.

EHSB's objective is to strengthen the role of state, local, and national environmental health programs and professionals to anticipate, identify, and respond to adverse environmental exposures and the consequences of these exposures for human health. The services being developed through EHSB include access to topical, relevant, and scientific information; consultation; and assistance to environmental health specialists, sanitarians, and environmental health professionals and practitioners.

EHSB appreciates NEHA's invitation to provide monthly columns for the Journal. EHSB staff will be highlighting a variety of concerns, opportunities, challenges, and successes that we all share in environmental public health.

Lead is a potent, pervasive neurotoxicant that affects practically all systems in the human body (National Research Council, 1993). In children, increased lead exposure causes developmental delay, reduced IQ, and behavioral problems. Extensive use of lead, particularly during the most recent century, has caused widespread environmental lead contamination and human exposures.

In 1990, the Department of Health and Human Services and the Centers for Disease Control and Prevention (CDC) established the ambitious goal of eliminating elevated blood lead levels (BLLs) in children—BLLs ≥ 10 $\mu\text{g/dL}$ —by the year 2010, under the overarching goal of eliminating health disparities in the population (U.S. Department of Health and Human Services, 2000a, 2000b).

CDC's National Health and Nutrition Examination Surveys, conducted between 1976 and 2002, show a marked decrease in lead exposure of children in the United States. For example, the prevalence of BLLs ≥ 10 $\mu\text{g/dL}$ among children in the United States decreased from 8.6 percent in 1988–1991 to 1.6 percent in 1999–2002, an 81 percent decline. This decline, observed even in groups at high risk for lead poisoning, reflects the impact of strategies followed at the national, state, and local levels, including eliminating lead in gasoline, controlling lead paint hazards in housing, and improving screening of high-risk groups (CDC, 2005a). Disparities in lead exposure still exist, however, and areas of the U.S.

population with significant lead exposure remain (CDC 2002; Dignam et al., 2004; Geltman et al., 2001). In many communities where the risk of lead poisoning is disproportionately high, the 2010 goal will not be achieved if we continue to conduct business as usual. CDC has identified five steps that provide a clear path to achieving the 2010 goal.

- 1. Continue the intensive efforts to identify and provide services to children with elevated BLLs, while also expanding program activities into the area of primary prevention (i.e., strategies that control or eliminate sources of lead before children are poisoned).** A focus on primary prevention of lead exposure also is the most appropriate response both to recent research demonstrating adverse health effects for children at BLLs < 10 $\mu\text{g/dL}$ and to the lack of science-based interventions that can decrease already elevated BLLs or reduce the intellectual deficits resulting from elevated levels. Primary prevention requires that lead programs initiate and maintain active, productive collaborations with traditional and non-traditional partners. State and local plans to eliminate childhood lead poisoning can be found at www.cdc.gov/nceh/lead.
- 2. Target efforts to clearly identifiable areas where risk for lead exposure is disproportionately high.** In many urban areas, the prevalence of elevated BLLs is 10 to 15 times higher than the national average. In 2003, 46 percent of the children

Visit the Web site of the Lead Poisoning Prevention Branch (www.cdc.gov/nceh/lead) for

- data and surveillance resources,
- frequently asked questions,
- information on partnerships,
- information on policy and legislation,
- publications,
- a resource library, and
- information on state and local lead programs.

reported to CDC as having elevated blood lead levels lived in 10 cities. Within these cities, a small number of buildings, often 1 percent or less, account for a disproportionate number of cases, as children are successively identified with elevated blood lead levels in the same or adjacent apartments (Reyes et al., 2006). In some communities, 40 percent of this “repeat offender” housing receives a federal subsidy or is publicly owned.

3. **Provide resources to address lead in all geographic areas known or presumed to be high risk.** Census characteristics that are associated with risk for lead poisoning include a high percentage of pre-1950 housing, rental properties, African-American residents, and children living in poverty. These indicators for exposure can be distributed throughout a state in rural areas and very small towns. Addressing lead sources in remote areas will require creative and coordinated planning.
4. **Identify special-risk populations and control or eliminate exposure to both paint and nonpaint sources of lead.** Newly arrived immigrant and refugee populations often have high body burdens of lead when they come to the United States (CDC, 2005b). They may also be exposed to lead as a result of cultural practices and traditional medicines. Once here, most families are not familiar with the sources of lead, and thus their children are more likely to ingest lead paint or lead-contaminated house dust or soil.

5. **Test strategies for continued surveillance of children’s potential exposure to lead in the United States and develop cost-effective methods to ensure that the risk of exposure remains low once elimination of elevated BLLs is achieved.** Over the coming decade, many communities will put policies in place that ensure communities are lead-safe—for example, implementing a regulatory framework to address lead paint hazards in housing before children are exposed. Our experience with other public health conditions sounds a cautionary note: For the foreseeable future, lead will contaminate the environment. Even after the 2010 goal is achieved, primary prevention efforts that control or eliminate sources of lead must be maintained to ensure that children are not exposed, and surveillance systems must be in place to ensure that these efforts are effective. 🐷

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References

Centers for Disease Control and Prevention. (2005a). Blood lead levels—United States, 1999–2002. *Morbidity and Mortality Weekly Report*, 54, 513-516.

Centers for Disease Control and Prevention. (2005b). Elevated blood lead levels in refugee children—New Hampshire, 2003–2004. *Morbidity and Mortality Weekly Report*, 54, 42-46.

Centers for Disease Control and Prevention. (2002). Childhood lead poisoning associated with tamarind candy and folk remedies—California, 1999–2000. *Morbidity and Mortality Weekly Report*, 51, 684-686.

Dignam, T.A., Evens, A., Eduardo, E., Ramirez, S.M., Caldwell, K.L., Kilpatrick, N., Noonan, G.P., Flanders, W.D., Meyer, P.A., & McGeehin, M.A. (2004). High-intensity targeted screening for elevated blood lead levels among children living in 2 inner-city Chicago communities. *American Journal of Public Health*, 94, 1945-1951.

Geltman, P.L., Brown, M.J., & Cochran J. (2001). Lead poisoning among refugee children resettled in Massachusetts, 1995

to 1999. *Pediatrics*, 108,158-162.

National Research Council, Board on Environmental Studies and Toxicology. (1993). *Measuring lead exposure in infants, children, and other sensitive populations*. Washington, DC: National Academy Press.

Reyes, N.L., Wong, L.Y., MacRoy, P.M., Curtis, G., Meyer, P.A., Evens, A., & Brown, M.J. (2006). Identifying housing that poisons: A critical step in eliminating childhood lead poisoning. *Journal of Public Health Management Practice*, 12, 563-569.

U.S. Department of Health and Human Services. (2000a). *Healthy people 2010: Objectives for improving health* (Part A: Focus areas 1-14). Washington, DC: Author. Retrieved October 10, 2007, from <http://www.healthypeople.gov>.

U.S. Department of Health and Human Services. (2000b). *Healthy people 2010: understanding and improving health*. Washington, DC: Author. Retrieved October 10, 2007, from <http://www.healthypeople.gov>.

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