



A story of Impact

Data into Action. NIOSH blood lead surveillance program contributes to a decline in national prevalence rates.

Occupational lead exposure is an important health problem in the United States. Lead exposure causes acute and chronic adverse effects in multiple organ systems ranging from subclinical changes in function to symptomatic life-threatening intoxication. Moreover, evidence indicates that lead exposure at low doses can lead to adverse cardiovascular and kidney effects, cognitive dysfunction, and adverse reproductive outcomes.¹⁻⁴

The National Institute for Occupational Safety and Health (NIOSH) established the Adult Blood Lead Epidemiology and Surveillance (ABLES) program with 4 states in 1987 to monitor occupational lead exposure. ABLES is a longstanding U.S. state-based surveillance effort that tracks lead exposures among adults currently in 41 states. NIOSH provides guidance, technical support, and funding to state health departments to build and maintain lead exposure surveillance capacity. NIOSH's contributions have strengthened state programs by providing a means for participating states to accurately measure trends

▲ Metal cutting using "burning bars."

Worker exposed to lead, arsenic, copper, and iron oxide. U.S. 2005. Photo by Joel P. Weddig

Relevant Information

In the United States, 95% of blood lead levels (BLLs) ≥ 25 $\mu\text{g}/\text{dL}$ in adults are work related.⁶

Occupational lead exposure occurs mainly in battery manufacturing, lead and zinc ore mining, and painting and paper hanging.⁶

Lead-exposed workers can take lead home on their clothing, bodies or in their cars and expose their children and others.⁷

In 2010, ABLES reported 31,459 adults in the United States with BLLs ≥ 10 $\mu\text{g}/\text{dL}$; among these, 1,388 had BLLs ≥ 40 $\mu\text{g}/\text{dL}$.⁵



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in adult lead exposures and effectively intervene to reduce lead exposure. NIOSH, the only federal funding source for adult lead exposure surveillance, provides a total of \$812,500 to 40 state ABLES programs each year. One additional state participates but receives no ABLES funding. In 2010, using a new elevated blood lead level (BLL) case definition, the ABLES program reported a rate of 26.4 adults with BLLs greater than or equal to 10 micrograms per deciliter ($\geq 10 \mu\text{g/dL}$) per 100,000 employed.⁵ These data indicate that lead remains a national occupational health problem, and that continued efforts to reduce lead exposures are needed.

Impact

ABLES is the only program conducting nationwide adult lead exposure surveillance and has provided the occupational safety and health (OSH) community with essential information for setting priorities for research and intervention. ABLES' impact is achieved by its longstanding strategic partnerships with state ABLES programs, federal agencies, and worker affiliated organizations. For example, in 2008, the Occupational Safety and Health Administration (OSHA) updated its "National Emphasis Program – Lead" to reduce occupational lead exposure by targeting unsafe conditions or high hazard industries.⁸ OSHA utilized ABLES data to identify industries where elevated BLLs indicate a need for increased focus⁸ and has agreements with state ABLES programs to share lead exposure data.⁵ Through its effective partnerships, ABLES contributed to a 50% reduction in lead exposure in the U.S. over 17 years.

In 2009, ABLES led the OSH community to accomplish a milestone by setting up a new case definition for an elevated BLL ($\geq 10 \mu\text{g/dL}$).⁵ The Council of State and Territorial Epidemiologists also recommended CDC to use this case definition.⁹ In 2010, for the first time in the history of public health, CDC included elevated BLL in the List of Nationally Notifiable Non-Infectious Conditions, using the ABLES case definition.¹⁰ DHHS Healthy People 2020 also adopted the ABLES case definition for its preventing elevated BLL objective.¹¹

Visit www.cdc.gov/niosh/topics/ABLES/ables.html for more information about research efforts to protect the safety and health of adults exposed to lead.

¹⁻¹¹ For a complete list of references, see www.cdc.gov/niosh/docs/2012-164/.

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