

MMWR

MORBIDITY AND MORTALITY WEEKLY REPORT

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Epidemiologic Notes and Reports

Lead Poisoning — Tennessee

In November 1975, symptoms and signs of lead toxicity were seen in workers in a secondary lead smelter in Memphis, Tennessee. Evidence of excessive lead absorption was also found in 50 of 102 workers' children, the parent's contaminated clothing apparently being the source of exposure. Seven children required hospitalization and chelation therapy. In January 1976, the plant was temporarily closed and efforts begun to reduce exposure to workers and their families.

Fifty-three (68%) of 78 workers tested had blood lead levels $\geq 60\mu\text{g}/100\text{ml}$, the range considered by the National Institute for Occupational Safety and Health (NIOSH) to represent unacceptable lead absorption posing a risk to health (1). Thirty workers (36%) had 2 or more symptoms of lead poisoning, including abdominal pain, gastrointestinal dysfunction, muscular weakness, tremor, anorexia, joint pains, and fatigue. Peripheral neuropathy, indicated by weakness of wrist extensors, was seen in 10 workers. Anemia, defined as a hemoglobin level below $14\text{gm}/100\text{ml}$, was seen in 11 workers. Anemic workers had significantly higher blood lead and erythrocyte protoporphyrin (EP) levels than nonanemic workers, thus identifying the anemia as lead-related (2). Elevations in blood urea nitrogen (BUN) above $20\text{mg}/100\text{ml}$ were seen in 6 employees (range, 22–40mg/100ml).

Arsenic levels in urine were elevated ($\geq 100\mu\text{g}/\text{liter}$ when corrected to a specific gravity of 1.024) in 10 of 72 workers. Highest levels were seen in workers in the casting area where arsenic is added to molten lead.

Fifty of 102 (49%) smelter workers' children had lead levels $\geq 30\mu\text{g}/100\text{ml}$.^{*} Seven of these 50 were hospitalized for chelation therapy because of lead levels $\geq 80\mu\text{g}/100\text{ml}$ and/or EP levels $\geq 190\mu\text{g}/100\text{ml}$. Two infant children of smelter employees, both 4-month-old boys, had blood lead levels of 50 and $52\mu\text{g}/100\text{ml}$, with EP values of 92 and $185\mu\text{g}/100\text{ml}$, respectively.

^{*}A lead level $\geq 30\mu\text{g}/100\text{ml}$ in children is indicative of excessive absorption; a lead level $\geq 80\mu\text{g}/100\text{ml}$ or an EP level $\geq 190\mu\text{g}/100\text{ml}$ blood represents excessive absorption which necessitates immediate medical attention (3).

This frequency of elevated blood lead levels differs strikingly from levels in children elsewhere in the Memphis area, as determined by the Memphis-Shelby County Health Department's Childhood Lead Screening Program. In the census tract adjacent to the smelter, 13 (6%) of 228 children 1-5 years old had blood lead levels $\geq 30\mu\text{g}/100\text{ml}$. In another socioeconomically similar industrial area of Memphis having no lead production facility, 38 (12%) of 307 children had lead levels $\geq 30\mu\text{g}/100\text{ml}$.

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Editorial Note: Members of workers' families associated with industries other than those dealing with lead have been known to become ill following exposure to toxic materials transported from factory to home on work clothing. Asbestosis (4), berylliosis (5), and chloracne (6) are examples of other occupational diseases transmitted in this fashion.

Such reports emphasize the importance of improved work practices and engineering controls not only in safeguarding worker health, but also in shielding families of workers from contact with toxic industrial materials.

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