State of New Jersey
DEPARTMENT OF HEALTH
CN 360
TRENTON, N.J. 08625-0360

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Richard W. Niemeier, Ph.D.
Director
Division of Standards Development
and Technology Transfer
NIOSH-CDC
4676 Columbia Parkway
Cincinnati, OH 45226-1990

Dear Dr. Niemeier:

Your request to the Commissioner of Health for data on contamination of workers' homes, which will be used for a report by NIOSH as mandated by the Workers Family Protection Act (29USC 671a), has been referred to me for response.

The Occupational Health Service, New Jersey Department of Health, recently completed a pilot project to assess possible exposure of children to lead brought home on clothing of parents occupationally exposed to lead. A brief summary of that project is enclosed. I hope our findings are useful to NIOSH.

Please call me at (609) 984-1863, if you have any questions or need additional information.

Sincerely,

Martha Stanbury

Martha Stanbury, Program Manager
Surveillance Program
Occupational Health Service

ko
Enclosure
c. Leonard Fishman
Acting Commissioner of Health

Take-Home Lead:

A Pilot Study by the New Jersey Department of Health

Over the years there have been a series of reports about workers in specific companies or industries and commentaries documenting episodes of childhood lead poisoning where exposure was through lead dust contaminated work clothing worn home by an occupationally exposed adult (so called "take-home lead"). The magnitude of this problem remains unknown.

The New Jersey Department of Health (NJDOH), which has maintained a register of adults with occupational lead toxicity since 1985, has conducted a pilot study of the potential health effects of take-home lead in cooperation with the University of Medicine and Dentistry, New Jersey. In June 1992, letters were sent to 98 individuals in the occupational lead register who had been reported with blood lead levels $\geq$ 40 micrograms per deciliter (ug/dl), who were known from interviews to have children at home. The letters informed them of the risk to their children from lead dust brought home by them on their work clothes and encouraged them to have their children tested for lead toxicity. Free testing was offered at a university occupational and environmental health clinic. Results of the testing were requested from the participants by mail and by subsequent telephone interviews. The telephone interview also asked about the age of the family's home and about information on occupationally related factors that were likely to increase the possibility of take-home exposure (e.g., washing work clothes at home; not showering at work).

Forty five (46%) of the 98 workers were interviewed, 35 (36%) declined participation, and 18 individuals could not be contacted. Blood lead test results were obtained on 28 children from the families of 15 workers. The Table that follows lists the children's blood lead levels and associated factors. The mean age of the children was 7 years with a range from > 1 to 16 years. Fifteen (54%) of the children were male, and eleven (39%) of the children were of race/ethnic origin other than white. The nine parents of 13 (46%) children were exposed to lead in the construction industry, and three parents of seven children worked at a battery manufacturing plant. Eight (29%) of the children had blood lead levels between 10 and 19 ug/dl. These levels are considered by the Centers for Disease Control and Prevention (CDC) to be cause for concern for children's health and to require monitoring by physicians.(1) One of the children had a blood lead level of 26 ug/dl; CDC recommends, and the New Jersey Department of Health requires, environmental evaluation for children who have blood lead levels $\geq$ 20 ug/dl. Parents of the nine children with blood lead levels $\geq$ 10 ug/dl were advised to see their pediatricians for retesting and evaluation.

Nine (41%) of the 22 children whose parents washed work clothes at home had blood lead levels $\geq$ 10 ug/dl whereas, none of the six children with blood lead levels below 10 ug/dl had parents who brought home dirty work clothing to be laundered. There was little difference in the children's blood lead levels in relation to whether their parents showered at work, drove while wearing work clothes, or spent time at home in work clothes. The age of the home was known for 19 children. Five (42%) of the 12 children who lived in homes built before 1960 had blood lead levels $\geq$ 10 ug/dl, whereas two (28%) of the seven

children whose homes were built after 1960 had blood lead levels ≥ 10 ug/dl. There was no correlation between increasing blood lead levels of parents and their children.

This was a pilot study. These data may not be representative because of the small study group and the response rate. No current population-based data were available for comparison. In addition, there were no concurrent environmental exposure data such as lead dust, soil, or water contamination data from the children's homes.

Thirty two percent of the children tested in this pilot study are considered by CDC criteria to be at potential risk of adverse health effects from lead. Elevated blood lead levels appear to be associated with parents bringing home dirty work clothing to be washed. Living in homes built before 1960, when lead paint was used extensively, may have contributed directly to lead exposure or may be a marker for the potential association of income status and risk of carrying lead home. The disproportionate number of children tested who were minorities, relative to the population in New Jersey, may be due to the over-representation of minorities in occupations where there is exposure to lead.

The NJDOH includes information about take-home lead hazards in its educational mailings to workers reported to the occupational lead register. The NJDOH is planning a collaborative study of take-home lead with the National Institute for Occupational Safety and Health that will include collection of environmental exposure data and blood lead levels on all family members.

References

1. United States Department of Health and Human Services (1991): Preventing lead poisoning in young children: A statement by the Centers for Disease Control - October 1991.

TABLE

Children's Blood Lead Levels and Associated Factors

Child's Blood Lead Level (ug/dl)	Child's Age	Parent's Blood Lead Level (ug/dl)	# Months Between Parent's and Child's Test	Industry Where Parent Expose to Lead	Year Child's Home Built
0	4	55	1	Construction	1982
0	3	55	1	Construction	1982
1	12	42	1	Manufacturing	
2	10	42	1	Manufacturing	
3	10	37	5	Manufacturing	1900
3	6	37	5	Manufacturing	1900
3	8	42	1	Manufacturing	
3	2	27	21	Construction	
5	1	62	7	Construction	1991
5	13	40	10	Construction	
5	5	51	3	Construction	1980
5	11	42	1	Manufacturing	1942
5	8	42	1	Manufacturing	1942
7	16	36	1	Battery Plant	1952
8	2	55	1	Construction	
9	4	62	6	Construction	1986
9	4	48	1	Battery Plant	1918
9	2	42	24	Construction	
9	14	29	1	Battery Plant	1950
10	1	51	3	Construction	1980
10	14	36	1	Battery Plant	1952
10	12	29	1	Battery Plant	1950
11	11	36	1	Battery Plant	1952
14	4	29	1	Construction	
16	8	36	1	Battery Plant	1952
17	1	62	6	Construction	1986
19	7	37	5	Manufacturing	1900
26	1	55	1	Construction	