"Plumbo-Phobia": Recent Trend in Frequency of Industrial Lead Poisoning

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Progress in the prevention of diseases arising in industry point the way to prevention of types of disease not so related.

"PLUMBO-PHOBIA": RECENT TREND IN FREQUENCY OF INDUSTRIAL LEAD POISONING *

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SEVERAL years ago, one of us wrote a paper[1] regarding the widespread misunderstanding and fear of lead exposure in our industries. The title of the paper was *Plumbo-phobia*. This term was used to emphasize a strange misunderstanding on the part of the medical, legal and industrial groups concerning the prevalence of lead poisoning in industry.

In order to determine whether or not a similar misunderstanding exists as to the actual prevalence of industrial lead poisoning, a comprehensive survey was made covering (1) our own experience at the National Lead Company; (2) statistics from our own state agencies, and (3) statistics from the rest of the states in the country.

Before presenting these facts, it might be worthwhile to remind you of the tremendous continued usage of lead. It has been reported that there are about one and one-half million to two million workers exposed to the lead manufacturing processes in the United States. About one and one-fourth million tons of lead are processed yearly. This is a lot of men and a lot of lead.

Felix Wormser, in his brilliant paper *Facts and Fallacies Concerning Exposure to Lead*,[2] states that the following industries utilize lead to the greatest extent: storage battery manufacturing, the sheathing of telephone and power cables, manufacturing of paint pigments and the manufacturing of tetraethyl lead for use in gasoline. It is also known that there are only a few industries that do not use lead or one of its alloys in some form. In 1940, the United States Public Health Service reported[3] that there were 16,805 plants in 15 states, and that 54 per cent of the one and one-half million workers in these plants were handling lead or its compounds. These facts clearly demonstrate the tremendous utilization and importance of this valuable metal in our industrial life.

We shall now proceed with our survey at the National Lead Company, which covers the period from 1939 to and including 1953 (15 years). The employment during that period varied from 450 to 650 men. The total number of cases treated for lead poisoning was 85 (Table I). Of this group, 43 were hospitalized and 42 were treated as ambulant patients. The largest number of cases treated during any one year was 19 in 1948. Of this group, nine were hospitalized and ten were ambulatory. During the past five years, only nine cases have been treated, with only two requiring hospitalization.

We are very happy to inform you that no cases of lead poisoning have occurred during the past three years in our plant. To accomplish this has been no easy task. It required the sincere and close co-operation of the executive, engineering, production, personnel and medical departments, working as a unit. Nothing else could have brought about this significant downward trend to realization.

In the state of New Jersey, it has been estimated[4] that about 20,000 men are employed in the various lead industries. Table II shows that from the year

TABLE I.—*Resume of Lead Intoxication Cases: National Lead Co., Perth Amboy, N. J.* (1939–1953)

YEAR	AMBULATORY	HOSPITAL
1939	1	2
1940	0	0
1941	1	5
1942	2	2
1943	2	5
1944	6	3
1945	4	4
1946	4	3
1947	6	7
1948	9	10
1949	5	0
1950	2	2
1951	0	0
1952	0	0
1953	0	0
Totals	42	43

* Read at Tri-State Joint Conference, American Industrial Hygiene Assn., Newark, N. J., December 4, 1953.

TABLE II.—*Industrial Lead Poisoning Cases: New Jersey* (1941–1952)

YEAR	TOTAL	FATAL OR TOTAL PERMANENT DISABILITY	PERMANENT PARTIAL DISABILITY	TEMPORARY DISABILITY
1941	49	1	20	28
1942	94	4	63	27
1943	78	1	47	30
1944	80	0	34	46
1945	86	0	43	43
1946	66	0	38	28
1947	59	0	26	33
1948	51	1	28	22
1949	43	0	35	8
1950	22	1	16	5
1951	31	1	14	16
1952	30	1	20	9
Total	689	10	384	295

1941 to 1952 inclusive (12 years), 689 cases were reported to our state agencies. A breakdown as to the type of cases involved in this group should be of some interest. Ten cases were awarded total permanent disability, 384 cases were given permanent partial awards, and 295 cases were given temporary disability by the compensation bureau. The largest number of cases reported during any one year was 94 in 1942, and the smallest group was 22 in 1950.

It is interesting to note that there has been a decided downward trend during the past six years, as evidenced by the following statistics: in the period from 1941 to 1946, 453 cases were reported, while from 1947 to 1952 there were 236.

Although the yearly average for the past six years has been about 40 cases, it is significant that only 22 cases were reported in 1950, 31 cases in 1951, and 30 cases in 1952. These facts by themselves tell the story of the great progress being made in this state.

Our survey throughout the country (Table III) was made by personal communications with the various state agencies, such as the health departments in some states, and compensation commissions and bureaus in others. The period covered by our questionnaire was from 1948 through 1952 (five years). Thirty-eight states reported their findings. Seven states (Delaware, Louisiana, North Dakota, Oklahoma, Oregon, Vermont and West Virginia) informed us that this disease was not reportable in their states (Louisiana did, however, report one fatal case). Three states (Iowa, Rhode Island and Texas) had no available statistics,

TABLE III.—*Industrial Lead Poisoning Cases (USA)* (1948–1952)

STATE		CASES REPORTED	PERMANENT TOTAL OR FATAL	PERMANENT PARTIAL DIS.	TEMPORARY DISABILITY
Alabama		2 (2)	2 (F)		
Arizona		0 (5)			
Arkansas		8 (2)			8
California		208 (4)	1 (F)		207
Colorado		57 (3)		5	46
Connecticut		9 (5)		1	8
Delaware	NR				
Florida		13 (5)			13
Georgia		44 (5)		2	42
Idaho		29 (5)			29
Illinois		137 (5)	2 (F)	35	71
Indiana		21 (5)			21
Iowa	X				
Kansas		3 (5)	2		1
Kentucky		17 (5)	1 (F)	1	15
Louisiana	NR	1 (5)	1 (F)		
Maine		12 (5)		7	5
Maryland		45 (5)	2	10	33
Massachusetts		131 (4)			131
Michigan		31 (5)	8		23
Minnesota		162 (5)	4 (F)	1	157
Mississippi		0 (5)			
Missouri		8 (4)			8
Montana		7 (3)			7
Nebraska		46 (5)			46
Nevada		3 (5)		1	2
New Hampshire		1 (5)			1
New Jersey		177 (5)	4	113	60
New York		166 (4)	13 (9F)	5	148
New Mexico		3 (5)		1	2
North Carolina		72 (5)		23	49
North Dakota	NR				
Ohio		332 (5)			332
Oklahoma	NR				
Oregon	NR				
Pennsylvania		419 (5)	5		414
Rhode Island	X				
South Carolina					
South Dakota		0 (5)			
Tennessee		0 (5)			
Texas	X				
Utah		20 (5)			20
Vermont	NR				
Virginia		87 (5)		1	86
Washington		29 (5)		1	28
West Virginia	NR				
Wisconsin		43 (4)		2	41
Wyoming		0 (5)			
Totals		2337	45 (20F)	209	2083

NR—Not reportable in those states.
X—Information not available.
F—Fatal cases.
( )—Numbers within parentheses—years tabulated.

although the condition is reportable by law. One state (South Carolina) completely ignored our questionnaire.

The ten states reporting the largest number of cases were as follows: Pennsylvania, 419 (five years); Ohio, 332 (five years); California, 208 (four years); New Jersey, 177 (five years); New York, 166 (four years); Minnesota, 162 (five years); Illinois, 137 (five years); Massachusetts, 131 (four years); Virginia, 87 (five years) and North Carolina, 72 (five years). Thus we see that in these ten states, 1891 cases (80 per cent) out of a total of 2337 throughout the country, were reported.

Our survey also shows that there has been a decided drop in the over-all mortality rate from this disease. Only 20 deaths have been reported throughout the country during the past five years. Of the deaths reported, nine occurred in New York and the remaining 11 cases were distributed in six different states. This is in sharp contrast to past records as given by Hoffman,[5] which show that in 1936, 152 deaths occurred; 71 in 1942, and 47 in 1943.

CONCLUSIONS

It is generally agreed that it is quite impossible to obtain absolute and reliable information regarding the incidence of industrial lead poisoning in many states. This unhappy situation is the result of several factors such as: (1) failure on the part of some companies to report their cases, (2) non-mandatory laws for the reporting of these cases in some states, (3) where reportable, cases not always checked for reliability, (4) lack of sufficient personnel in the agencies of some states, (5) listing and classification of cases improperly catalogued and (6) listing of only cases of death in some states. Fortunately for us, our New Jersey agencies are devoid of these deficiencies and are doing an outstanding job.

We are convinced that the term "Plumbo-phobia" is applicable to this aspect of the subject in that there are considerably fewer cases of lead poisoning today than one would be apt to believe from reading some books and periodicals which are clearly outdated. We feel that there is some justification for stating that there has been and is continuing to be a definite and decided downward trend in the frequency of industrial lead poisoning throughout the nation.

Our investigation clearly discloses that lead poisoning is becoming less and less frequent, and that lead poisoning in the fatal form will be a rare occurrence even though lead and its compounds are being used in greater quantities today than ever before. Credit for this great progress can be given to (1) the lead industries: they are cognizant of their responsibility and have continued to provide the necessary capital to install the most modern protective equipment, as well as providing the services of competent medical officials; (2) to the state health and compensation departments, which provide essential aid and assistance wherever and whenever requested; (3) to such organizations as the Lead Industries Association and the American Industrial Hygiene Association, of which your local organization is an integral part.

We sincerely hope that our survey will serve a useful purpose in providing us all for the first time with substantial, comprehensive statistical data which hitherto have not been available from any one source.

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Industrial Dermatitis

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THE MEDICAL CRITERIA in the diagnosis of industrial dermatitis due to sensitizers are: (1) the disease appears during, or within a few weeks after, the time the worker begins handling sensitizers. A delayed onset does not rule out the sensitization factor in some cases; (2) amelioration of the eruption after cessation of work—a period of weeks or months. Sensitization to other substances may prolong the course of the disease. Added bacterial infection, or the retention of causal substances may prolong or change the course of the disease; (3) recurrence of dermatitis if the worker is returned to identical sensitizers in his industrial work; (4) sensitization dermatitis begins in the areas of maximum exposure, and this is usually the hands; (5) fellow employees show similar cutaneous disease, or the disease is known from previous experience to be caused by exposure to the sensitizer.