

The Lowe Brothers Company Report

The following is a report of the physical examinations, x-ray studies and analytical data obtained from our study of twenty men employed in various parts of your paint and lacquer plants. These men were selected by you as representative samples of those groups employed in each of the several processes in the manufacture of your products. Our study has been concerned chiefly with the general health of these men, and specifically with the quantity of exposure to hazardous amounts of lead and silica.

I

We can dispose of this latter item briefly by saying that in no instance was there evidence of silicosis in the fifteen men whose chests were x-rayed by us. These men were employed as follows:

8 mixers	paint plant	6-32 years (average 15 years)
1 mixer	lacquer plant	2-1/2 years
3 laborers	receiving dept.	5 years
1 thinner	lacquer plant	9 years
1 rolling mill employe	rolling mill	6 months
1 stone dresser	lacquer plant	4 years (1/2 time)

The figures in the right-hand column indicate the years continuously employed at the occupation stated.

The only instance in which one might expect a real silica hazard, and in which duration of exposure has not been

adequate to produce silicosis even though the amount of silica be high, is the stone dresser. He is protected in this occupation by good forced ventilation in the room in which he works. He is also supplied with a mask but admits that he uses it infrequently.

The average exposure to silica-containing dust among the men in the receiving department was five years. It is possible for an individual to be exposed to hazardous amounts of silica for this period of time without showing the disease. However, since the type of dust differs not at all from that to which the men in the mixing department of the paint plant are exposed, we may use the exposures of these latter men as a criterion of what is likely to happen in the receiving group, with the proviso that if further dust studies showed much greater quantities (concentration) of silica dust in box cars even though the type of material be identical the analogy may not hold. Our survey of your factory impels us to suggest that in spite of the fact that silicosis has not developed in any of the men examined by us, that the stone dressers and the receivers (while working in the confined and very dusty atmosphere of box cars) should be required to wear masks for their own protection against silica.

II

The general health of the men examined by us as indicated by detailed history, physical examination, urinalysis and blood counts, showed them as a group to be in good health and fit for continued employment. In no instance did we find sufficient physical disability to necessitate a recommendation for cessation of employment.

In some instances we have been able to uncover certain minor disorders, which I shall enumerate below.

Paint plant mixers

(1) [REDACTED] - age 40. This man appears somewhat undernourished. He has some blurring of vision and needs glasses. He is in need of much dental care. There are extensive varicose veins on both legs which may cause him trouble in the future. He should see his private doctors about these matters. We shall say more about this man subsequently.

(2) [REDACTED] - age 48. No comment.

(3) [REDACTED] age 65. In spite of a vigorous and none too temperate life this man is amazingly well preserved. He is, however, beginning to show some of the ravages of the aging processes. He has a moderate elevation in blood pressure, some hardening of his arteries, and his heart, though still doing an excellent job, has a somewhat limited reserve. We suggest that he make periodic visits to his private physician for a checkup. There is nothing alarming in his physical status now.

(4) [REDACTED] - age 66. This man, concerning whom Mr. Clark asked for our medical advice, presented three problems. First, chronic constipation; dizziness upon arising in the morning; and third, a rather morose attitude toward his work, home and fellow men. We were unable to find adequate physical reason for these ailments. He is a Pole

whose adjustments to American life have never been complete. He had a long and unhappy siege with his first wife before she died of cancer. He has recently remarried. He is not entirely happy in his work, though he refuses to make specific complaints about it. We suggest that he be permitted to continue his present occupation for a few months to see whether or not the adjustments of a more satisfactory home life may not improve his general attitude. If after this time he is still a problem to you, he should be seen by a competent physician and psychiatrist for the purpose of studying his mental apparatus.

(5) [REDACTED] - age 56. This man shows evidence of plumbism. He will be discussed in detail later.

(6) [REDACTED] - age 65. This man is badly in need of dental care and shows some evidence of plumbism. He will be discussed later.

(7) [REDACTED] - age 43. He is badly in need of dental care.

(8) [REDACTED] - age 66. A well-preserved but old man who retains considerable vigor.

Mixers of the lacquer and varnish plant

(1) [REDACTED] - age 29. We are still studying this man. His only difficulty is with his eyes and as yet the cause of his ocular trouble is undetermined. We will report on him at a future date.

(2) [REDACTED] - age 27. No comment.

Receiving department

- (1) [REDACTED] - age 33. No comment.
- (2) [REDACTED] age 34. This man needs dental care.
- (3) [REDACTED] - age 47. No comment.
- (4) [REDACTED] age 26. No comment.

Paint advertising department

- (1) [REDACTED] - age 27. No comment.
- (2) [REDACTED] age 27. This man has chronic sinusitis of which he is aware and is caring for it adequately.

Others

- (1) [REDACTED] - age 42. No comment.
- (2) [REDACTED] - age 53. This man has mild abdominal symptoms for which he should see his doctor periodically. We cannot make a definite diagnosis at the present time, but believe that his gall bladder should be carefully watched.
- (3) [REDACTED] - age 25. No comment.
- (4) [REDACTED] - age 77. This old boy is doing ok.

III

The analytical data showing the lead content of the blood, urine and feces of these men indicate that the overall exposure of these men as a group to lead is definitely abnormal but not great. Except for a scattered few high figures the results are at the lower levels of hygienic

significance. Much depends upon whether these results characterize the exposure as a whole. This group may not be an adequate sample of the exposure of individuals or of the entire plant population. However, assuming that this group is representative, exposures of your men to lead while definitely abnormal is not of sufficient magnitude to represent a serious hygienic problem. When the men are grouped according to their occupations it becomes evident that the magnitude of exposure in the mixers in the paint plant is greater than for the group as a whole. Occasional men in other departments, particularly the receiving department, also show levels somewhat above the mean values for the group as a whole.

Two individuals, [REDACTED] and [REDACTED], showed definite lead lines in the mouth, moderate anemia and significant stippling of the red cells. The lead levels of these men, particularly Modras, were dangerously high. A third man, Poppe, also a mixer, showed no clinical evidence of lead intoxication, but his blood, urine and stool levels showed evidence of definitely hazardous exposure.

These three men have at the present time definite evidence of extensive and dangerous exposure to lead. On the first two a diagnosis of low-grade, chronic plumbism can be made.

Five other men, [REDACTED], [REDACTED], [REDACTED], [REDACTED] and [REDACTED], showed evidence of moderate exposure

which is still within the limits of reasonable safety. The last of these, [REDACTED] also showed a moderate amount of red cell stippling.

Careful investigation of [REDACTED] and [REDACTED] should be made at once to determine why their exposure is greater than that of their co-workers in similar occupations. It may be the materials they handle, ventilation in the parts of the room in which they work, or carelessness on the part of these individuals. Their personal hygiene may be particularly bad, allowing them to ingest more lead via dirty hands than their fellows. They may be men who refuse to take the ordinary precautions available. This information can be obtained only from careful observation of these men at their work. If nothing abnormal is found here, their environment will have to be studied in detail, and the source of their excessive exposure eliminated at once. Providing their exposure is immediately lowered to non-dangerous levels, I think no specific therapy will be necessary for these men.

In summary, our study of your men has indicated no evidence of silicosis. The significant features of the physical reports of each man are outlined and suggestions made where we deemed such desirable. The general magnitude of lead exposure in this group as a whole is abnormal, but not dangerously so. The magnitude of exposure to lead in the

KE 0003875

- 8 -

mixers of the paint plant is definitely and significantly greater than that of the whole group. There are two cases of plumbism and a third whose exposure has been of dangerous magnitude. A copy of the analytical data has been appended showing the concentrations of lead found in the specimens examined. The normal figures are also given. The only suggestion about their working conditions made by any of the groups of men was that the mixers in general considered the ventilation in the mixing room of the paint plant unsatisfactory, particularly during the winter months.

ROBERT A. KENOE, M.D.

BY

W. F. Ashe M.D.
William F. Ashe, M.D.

November 6, 1940

RE 0003876

Lead Studies on Blood and Urine from Employees of
Lowe Bros., Dayton, Ohio

Date	Name	URINE			BLOOD		
		Analysis Number	Volume ml	lbs Pb/liter	Analysis Number	Spectrum rms	M
8-15-40	[REDACTED]	LOA-2766	60	0.035	LOA-2769	10.2	
8-15-40 x	[REDACTED]	LOA-2770	50	0.060	LOA-2771	9.8	
8-15-40 x	[REDACTED]	LOA-2772	70	0.075	LOA-2773	9.8	
8-15-40	⁰ [REDACTED]	LOA-2774	73	0.075	LOA-2775	9.6	
8-20-40 x	²⁻⁵⁻⁵ [REDACTED]	LOA-2815	90	0.080	LOA-2816	10.5	
8-20-40	[REDACTED]	LOA-2817	60	0.020	LOA-2818	8.5	
8-20-40 x	¹⁻²⁻² [REDACTED]	LOA-2819	63	0.200- 0.230	LOA-2820	10.2	
8-20-40	⁰ [REDACTED]	LOA-2821	34	0.020	LOA-2822	10.0	
8-21-40	[REDACTED]	LOA-2847	50	0.035	LOA-2846	10.8	
8-21-40	⁰ [REDACTED]	LOA-2848	100	0.065	LOA-2849	10.2	
✓ 8-21-40	[REDACTED]	LOA-2850	100	0.045	LOA-2851	10.8	
8-21-40 x	[REDACTED]	LOA-2852	75	0.060	LOA-2853	10.4	
8-23-40 x	[REDACTED]	LOA-2881	65	0.055	LOA-2882	11.1	
8-23-40	⁰ [REDACTED]	LOA-2885	67	0.065	LOA-2886	10.4	
8-23-40	[REDACTED]	LOA-2887	80	0.060	LOA-2888	11.1	
8-23-40 x	[REDACTED]	LOA-2889	41	0.065	LOA-2890	10.4	

Date	Name	URINE			BLOOD		
		Analysis Number	Volume ml	Mgs Pb/liter	Analysis Number	Spectrograms	Mgs 100
8-27-40	[REDACTED]	40A-2936	97	0.090	40A-2937	9.7	0.0
8-27-40	[REDACTED]	40A-2938	62	0.075	40A-2939	9.0	0.0
8-27-40	[REDACTED]	40A-2940	73	0.070	40A-2941	8.9	0.0
8-27-40	[REDACTED]	40A-2942	70	0.045	40A-2943	10.9	0.0

Mean

0.067

0.0

Probable Error

+0.0055

+0.0

Standard Deviation

+0.037

+0.0

*The mean for nineteen results only.

Samples reported: Sep

Normal
moderate Exposure
Hazardous

0.035
0.050 to 0.10
above 0.10

0.
0.
0.

Lead Studies on Blood and Urine from Employees of
Lowe Bros., Dayton, Ohio

Date	Name	URINE			BLOOD		
		Analysis Number	Volume ml	Pb/liter	Analysis Number	Spectrograph	Mg
8-15-40	[REDACTED]	40A-2768	89	0.035	40A-2769	10.2	0
8-15-40	[REDACTED]	40A-2770	50	0.060	40A-2771	9.8	0
8-15-40	[REDACTED]	40A-2772	70	0.075	40A-2773	9.8	0
8-15-40	[REDACTED]	40A-2774	73	0.075	40A-2775	9.6	0
8-20-40	[REDACTED]	40A-2815	90	0.080	40A-2816	10.5	0
8-20-40	[REDACTED]	40A-2817	60	0.020	40A-2818	8.5	0
8-20-40	[REDACTED]	40A-2819	63	0.200- 0.230	40A-2820	10.2	0
8-20-40	[REDACTED]	40A-2821	34	0.020	40A-2822	10.0	0
8-21-40	[REDACTED]	40A-2847	50	0.035	40A-2846	10.8	0
8-21-40	[REDACTED]	40A-2848	100	0.065	40A-2849	10.2	0
8-21-40	[REDACTED]	40A-2850	100	0.045	40A-2851	10.8	0
8-21-40	[REDACTED]	40A-2852	75	0.060	40A-2853	10.4	0
8-23-40	[REDACTED]	40A-2881	65	0.055	40A-2882	11.1	0
8-23-40	[REDACTED]	40A-2885	67	0.065	40A-2886	10.4	0
8-23-40	[REDACTED]	40A-2887	66	0.060	40A-2888	11.1	0
8-23-40	[REDACTED]	40A-2889	61	0.065	40A-2890	10.4	0

Date	Name	URINE			BLOOD		
		Analysis Number	Volume ml	mg Pb/liter	Analysis Number	Spectrophotometric	mg Pb/100 gm
8-27-40	[REDACTED]	40A-2936	97	0.090	40A-2937	9.7	0.045
8-27-40	[REDACTED]	40A-2938	62	0.075	40A-2939	9.0	0.047
8-27-40	[REDACTED]	40A-2940	73	0.070	40A-2941	8.9	0.090
8-27-40	[REDACTED]	40A-2942	70	0.045	40A-2943	10.9	0.035

Mean
Probable Error
Standard Deviation

0.067
+0.0055
+0.037

0.048
+0.002
+0.015

*The mean for nineteen results only.

Samples reported: Septe

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KE 0003881

UNIT						TENS					
Analysis	Number	lbs lb	found	lbs lb/	liter	Analysis	Number	lbs lb	found	lbs lb/	ash of sample
10A-2869	0	0.14	0.05	0.06	+	10A-2870	0	0.12	0.36	0.13	
10A-2871	0	0.26	0.10	0.23	-	10A-2872	0	0.60	0.07	0.30	
10A-2933	0	0.25	0.03	0.03	+	10A-2934	0	0.79	1.37	0.12	
10A-2873	0	0.12	0.04	0.04	+	10A-2874	0	1.68	5.45	0.41	
10A-2875	0	0.15	0.20	-	-	10A-2876	0	2.50	6.04	0.69	
10A-2877	0	0.17	0.05	-	-	10A-2879	0	2.00	5.11	0.37	
10A-2923	0	0.23	0.07	-	-	10A-2977	0	0.28	0.69	0.04	+
10A-2928	0	0.21	0.03	-	-	10A-2930	0	0.31	1.46	0.08	
10A-2921	0	0.25	0.09	-	-	10A-2922	0	0.29	1.04	0.26	
10A-2924	0	0.13	0.07	-	-	10A-2925	0	0.78	2.35	0.19	
10A-2929	0	0.09	0.04	+	+	10A-2930	0	0.45	0.20	0.09	+
10A-2919	0	0.17	0.07	+	+	10A-2920	0	0.46	1.03	0.09	
10A-2917	0	0.09	0.02	+	+	10A-2918	0	0.38	1.00	0.08	-
10A-2926	0	0.12	0.02	-	-	10A-2927	0	0.25	0.74	0.06	-

Name	UPPER				LOWER			
	Date	Analysis Number	Mgs Pb Found	Mgs Pb/Liter	Date	Analysis Number	Mgs Pb Found	Mgs Pb/Liter
[REDACTED]	9-9-40	40A-3084	0.18	0.06 +	9-9-40	40A-3085	0.59	
[REDACTED]	9-9-40	40A-3080	0.21	0.07 +	9-9-40	40A-3081	0.34	
[REDACTED]	9-9-40	40A-3078	0.44	0.16	9-9-40	40A-3079	1.70	
[REDACTED]	9-9-40	40A-3082	0.18	0.07 -	9-9-40	40A-3083	0.25	

Mean

0.074 $\pm$ 0.006

Probable Error

$\pm$ 0.006

Standard Deviation

$\pm$ 0.042

Samples reported: Sept