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Lead Industries Association

420 LEXINGTON AVENUE

NEW YORK, N. Y. (17)

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FELIX EDGAR WORMSER, SECRETARY AND
TREASURER

July 25, 1944

Dr. Robert A. Kehoe
University of Cincinnati
Kettering Laboratory of Applied Physiology
Eden Avenue
Cincinnati 19, Ohio

Dear Dr. Kehoe:

You probably remember that you and I had an interesting discussion about the use of the x-ray in diagnosing lead poisoning in children, when we met in St. Louis a short time ago. At that time, I pointed out to you that Dr. Edwards A. Park, of the Johns Hopkins Hospital who had done a large amount of study on this subject, apparently had made a serious error in his paper of August, 1933, in the "Journal of Pediatrics," making it appear that the "shadow" actually contained large amounts of lead. (He had confused milligrams for grams.)

I called on Dr. Parks a short time ago and had a most delightful discussion with him. He was frank to admit the error in the light of the evidence I presented, and promises to make a correction. He is, however, still adhering strongly to his views that the "shadow" is caused by lead and he is now of the opinion that although there may not be lead in the "shadow" itself, lead through alteration of the bone structure is the reason for its appearance.

That may be true, but the "shadow" is known to occur in rachitic children or in children who have absorbed other metals. It seems to me, therefore, that the x-ray is a most untrustworthy diagnostic tool. In fact, I was interested in reading one of the reports of the Queensland lead poisoning literature that you were kind enough to let me examine stating, I recall, that out of 19 children alleged to have had lead poisoning, 12 did not show any "shadow," which is one of the reasons why the use of the x-ray is apparently not held



KE 03453

Dr. Robert A. Kehoe

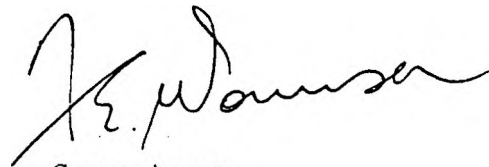
July 25, 1944

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in high regard among the Australian medical circles to
detect lead poisoning in children.

With kindest regards,

Very truly yours,


Secretary

VE 03454

*File with
6/10/44
J. J. Schaefer*

ETHYL CORPORATION

MANUFACTURING AND TRAFFIC DEPARTMENT

September 13, 1944

PLEASE ADDRESS REPLY TO
CHRYSLER BUILDING
405 LEXINGTON AVE., NEW YORK 17, N.Y.

Dr. R. A. Kehoe
College of Medicine
University of Cincinnati
Eden & Bethesda Avenues
Cincinnati 19, Ohio

Dear Dr. Kehoe:

Attached hereto for your information and files
is the "Lead Hygiene and Safety Bulletin No. 37" issued
by the Lead Industries Association.

Yours very truly

J. H. Schaefer

Per

J. J. Schaefer

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LEAD INDUSTRIES ASSOCIATION

420 LEXINGTON AVENUE

NEW YORK 17, N. Y.

JHS	JAC	103	NEW YORK
MR. WEBB			
REC'D. AUG 31 1944 MFG. DEPT.			
	COMMENT	DRAFT	
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August 30, 1944

LEAD HYGIENE AND SAFETY
BULLETIN NO. 37

SUBJECT: A STUDY OF OCCU-
PATIONAL LEAD POISONING AT
PERTH AMBOY, N. J.

To Members of the Lead Industries Association:

One of our members, the National Lead Company, has given much study to the control of lead poisoning at its Perth Amboy, N.J. plant, and the medical officer in charge, Dr. William C. Wilentz, has prepared a paper, as attached, on "Occupational Lead Poisoning" based upon his own experience and observation which I believe the entire lead industry will find of interest.

It is my hope that it will stimulate the preparation and exchange of similar data by other companies in the Association or the ultimate compilation of information which will be of help to the industry at large.

I shall deeply appreciate, and I know Dr. Wilentz will likewise, any comment and data you may care to submit after reading his article.

Very truly yours,

J. R. Wain
Secretary.



KE 03456

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NOT FOR PUBLICATION

OCCUPATIONAL LEAD POISONING

BY

Wm. C. Wilentz, M.D.

A STUDY OF CASES OF LEAD
ABSORPTION AND LEAD INTOXI-
CATION OBSERVED BY THE AUTHOR
AT THE NATIONAL LEAD COMPANY,
ATLANTIC BRANCH, PERTH AMBOY,
N. J. AND AT THE PERTH AMBOY
GENERAL HOSPITAL

It is not my intention in this report to present anything new or startling on this subject, since years of study and investigation by prominent members of the medical, chemical and engineering profession, have provided our libraries with a multitude of scientific material. It is my desire however, to present certain phases of this subject along with my own interpretation, to those persons who are interested in the effects of lead as it confronts us daily in industry.

My reason for stating it that way is the obvious fact that the lead industries have been on the defense far too long; and, with the aid of information obtained by a survey of studies at our plant, we hope to assist in neutralizing this attitude. This unfair and insidious propaganda has been permitted to permeate throughout the entire field of industry, government circles, courts of justice and has, therefore, placed us all in a very unfavorable position.

I can well recall that when I first undertook the responsibility over the health and welfare of the employees at this plant, I had great fear of what was to come, what to expect, what dreadful complications were sure to arise, what meager therapeutic agents we had at our disposal and such poor prognoses to expect. These fears had their origin in the talk and gossip amongst the people of this community where "everyone was familiar with all the bad effects from lead poisoning." As a matter of fact, the medical and legal fraternities held the same impressions, so that it is not surprising to learn that laymen felt the same way about things.

These fears and impressions may have been justified some years ago, but such cannot be the true condition today with industry spending huge amounts of capital to install the most modern protective equipment, as well as providing modern medical dispensaries to deal with anything that may arise in the course of employment.

Cases of lead absorption and intoxication should recover without any resulting disability. This statement is predicated on the belief and knowledge, that if sound medical observation and treatment are provided in conjunction with present-day cooperation from management, excellent results must be obtained. I will say, however, that without this cooperation anything could happen, will most certainly happen even today. Let no one misunderstand my thoughts about the toxicity of lead. I am thoroughly acquainted with the possibilities and probabilities of this toxic chemical, but I am perfectly satisfied to state frankly that I am no more frightened by its effects than I am about any other toxic substance. Let's not continue to consider lead absorption and intoxication as "an incurable disease." Let's put an end to this type of loose talk. We have facts to state and nothing to conceal. Let's do that and great benefits will result.

Exposures prevalent in our plant were from lead fumes and lead dust in combination with oxides, sulfates, hydroxides and antimony, the most prevalent exposure being from lead dust and primary manner of absorption being through the respiratory tract via inhalation of the dust.

TABLE 1

RESUME OF CASES WITH LEAD FACTORS

1939 - 1943

	1939	1940	1941	1942	1943
CASES SHOWING SUSCEPTIBILITY TO LEAD	68	80	75	58	51
CASES SHOWING SUSPICIOUS ABSORPTION	64	73	64	29	38
CASES PROGRESSING FROM SUSPICIOUS TO ABSORPTION	39	35	21	29	11
CASES REMAINING SUSPICIOUS OR IMPROVING	25	37	33	20	21
CASES OF ABSORPTION	39	43	43	29	30
CASES OF INTOXICATION	3	0	6	4	7
TOTAL EMPLOYMENT	426	379	490	557	525

Table 1 gives the over-all picture of the response to lead exposure by the entire group of employees, numbering 2377, over a period of 5 years, averaging 475 employees per year.

It can be seen that 14% of the group show some definite reaction to their exposure - this response is invariably demonstrated within the first month. Of the susceptible group, the above figures show that 55% eventually show absorption symptoms and that 6% become intoxication cases.

It is also apparent that in relation to the entire employment group, 14% show this reaction (as stated above) and that 8% show absorption symptoms and 1% will become intoxication cases.

In view of the care and observation that is provided these employees, it would appear that the above-stated figures should represent the average picture to be found in other plants of a similar nature.

TABLE 2

		AVERAGE						
AVERAGE AGE OF INTOXICATION CASES	(years)	32	0	33	32	36	-	33
AVERAGE EXPOSURE OF INTOXICATION CASES	(weeks)	10	0	7	14	11	-	11
AVERAGE TIME LOST FROM WORK	(days)	30	0	46	22	31	-	32
AGE OF YOUNGEST INTOXICATION CASE	(years)	29	0	23	23	24	-	25
AGE OF OLDEST INTOXICATION CASE	(years)	35	0	46	45	47	-	43
LENGTH OF EXPOSURE OF YOUNGEST CASE	(weeks)	8	0	3	16	4	-	8
LENGTH OF EXPOSURE OF OLDEST CASE	(weeks)	6	0	12	12	8	-	10
LENGTH OF SHORTEST EXPOSURE CASE	(days)	37	0	29	45	11	-	30
LENGTH OF LONGEST EXPOSURE CASE	(days)	42	0	9	12	16	-	20

Age Groups Studied:

- 7 Cases between 23 to 29 yrs.
- 9 Cases between 30 to 39 yrs.
- 4 Cases between 43 to 47 yrs.

Table 2 discloses the wide range of age groups that may become affected, as well, as, showing clearly a well known fact, viz., that the young and middle-aged men are primarily involved and most susceptible to the effects of lead exposure.

That is the reason why it is important that these younger men be given most careful pre-employment examinations.

The most serious cases encountered were two men who were employed in the capacity of dismantling an old building - one was 35 yrs. of age with a 16 week exposure while the other was 39 yrs. of age with a 7 week exposure - both were of Spanish descent. Dismantling has always been considered one of the most serious exposures.

It seems to me that average lost time from work of 32 days should compare favorably with other plant figures. We have never made it a policy of insisting upon quick return to work, but at the same time, as soon as the subjective symptoms subside or disappear, arrangements are made in providing other types of work. The blood picture guides us in this respect, but only as an aid in estimating the entire picture.

TABLE 3

FURTHER INTOXICATION CASE.

STUDIES

TOTAL NO. CASES FROM 1939-1943 (5 yrs.) - 20

Cases Hospitalized	-	14
Cases not Hospitalized-		6
TOTAL	-	20

HOSPITAL CASES STATISTICS (14 cases)

Shortest Hospital Stay	-	5 days
Longest Hospital Stay	-	34 days
Average Stay	-	14 days
Average Age of Patient	-	36 years (23 to 45)
Average Length of Exposure	-	8 weeks
Average Loss of Time of Case	-	42 days

NON-HOSPITAL CASE STATISTICS (6 cases)

Average Age of Patient	-	34 years (23 to 47)
Average Length of Exposure	-	14 weeks
Average Loss of Time of Case	-	16 days

Table 3 discloses some interesting facts relating to the hospitalization and ambulatory handling of these cases. It must be clearly understood that we were dealing with different degrees of intoxication, the most pronounced and seriously ill being hospitalized while the mild type cases were treated as ambulatory.

It is also worth noting that these studies clearly show that the average exposure for the most serious cases (hospital case) was 6 weeks shorter than the ambulatory case, indicating a more acute, fulminating, intense intoxication within a shorter period of time.

Early hospitalization pays dividends - do not hesitate or delay - patients will be grateful - funds will be saved - results will be excellent.

TABLE 4

PRE-EMPLOYMENT
STIPPLING STUDIES

TOTAL NO. PRE-EMPLOYMENT EXAM. (1939-1943)	1252
TOTAL NO. SHOWING STIPPLING PRIOR TO EMPLOYMENT	62 -(5%)
AVERAGE AGE OF STIPPLING CASES	32
NO. GROUPS STUDIES (FROM 16 yrs. - 55 yrs.)	28

AGE GROUPS SHOWING LARGEST NUMBER OF STIPPLING:

21 yrs.	-	7
20 yrs.	-	5
27 yrs.	-	5
31 yrs.	-	4

PRE-EMPLOYMENT OCCUPATIONS OF STIPPLING CASES:

- 1 STUDENT
- 2 TRUCK DRIVERS
- 1 TELEPHONE OPERATOR
- 1 ARMY DISCHARGE
- 2 TILE MANUFACTURERS
- 1 SILK MANUFACTURER
- 1 RAILROAD WORKER
- 1 FERTILIZER
- 1 JEWELER
- 1 IRON WORKER (UNDERWEIGHT)
- 1 CERAMIC WORKER
- 1 CARBORUNDUM (AND PYELITIS)
- 2 PLUSH MILL WORKERS
- 1 COAL MINER
- 2 BRICK WORKERS (AND PYELITIS) (1)
- 2 STEEL WORKERS (ONE SYPHILLITIC)
- 4 CABLE WORKERS
- 7 COPPER WORKERS (ONE WITH PYELITIS) (ONE WITH NEPHRITIS)
- 2 A. S. & R. WORKERS-SMELTERS (ONE WITH NEPHRITIS)
- 1 DETINING WORKER WITH TERRA COTTA BESIDES
- 1 PAINTER
- 12 LEAD WORKERS AND BRICK WORKERS (1) COPPER (1) PYELITIS (1)
TERRA COTTA (2) A.S.R.
SMELTERS (3)
- 7 NONE AS TO OCCUPATIONS, but FOLLOWING DISEASES WERE
FOUND ON PRE-EMPLOYMENT EXAMINATIONS IN ADDITION TO
THE ABOVE:
- 3 SYPHILLIS
- 1 NEPHRITIS AND UNDERWEIGHT
- 1 PITUITARY DYSFUNCTION
- 1 UNDERNOURISHMENT

Table 4 confirms what has always been known as a fact, namely that there are many conditions, other than lead exposure, that must be considered whenever this subject is discussed. This truth is still not clear to the general medical and legal professions.

It is interesting to observe that no man employed (who had shown pre-employment stippling) has up to the present time shown any inclination towards absorption or intoxication. This fact has greatly assisted us in our desperate employment problem which is common to all industry today, due to conditions beyond our control.

TREATMENT

We do not employ anything unusual in our treatment. We have nothing new to offer. We feel, however, that in view of the fact that during the past five years, we have had to treat twenty lead intoxications and that in no case so far has there resulted any disability, our procedure in handling such cases must have some merit. For that reason and only for that reason, do I even mention that fact. Does not this fact prove that these cases are curable? If we can get such results so can anyone else.

Anyone who wishes the best information on treatment should consult that most excellent pamphlet recently published by the American Public Health Association, entitled "Occupational Lead Exposure and Lead Poisoning." This pamphlet can be utilized as a guide to the fullest extent and maximum benefit to all concerned. I agree with all their suggestions, since I have utilized them generally in all my cases. I do feel that treatment in order to be satisfactory must be administered in a definite specific manner, otherwise it makes very little difference what you employ as therapeutic agents.

Our general routine is as follows:

DURING ACUTE PHASE:

1. HOSPITALIZE
2. BED REST (OR AMBULATORY, DEPENDING ON SEVERITY OF PAIN)
3. ONE OUNCE MAGNESIUM SULFATE EVERY MORNING ON ARISING
4. TEASPOONFUL TINCTURE BELLADONNA-PHENOBARBITAL MIXTURE Q.4.H. FOR PAIN
5. NARCOTICS SELDOM UTILIZED
6. 10 cc. 20% NEOCALGLUCONATE - INTRAVENOUSLY Q.4.H. (SLOWLY)
7. 15 GR. NEOCALGLUCONATE WAFERS OR BONE PHOSPHATE WAFERS ORALLY Q.4.H.
8. WARM WATER BAG OR ELECTRIC PAD FOR ABDOMINAL PAIN
9. DIET HIGH IN CALCIUM AND LOW IN PHOSPHATES
10. COMPLETE BLOOD COUNT AND STIPPLING FOLLOWED BY RED BLOOD COUNT HEMOGLOBIN AND STIPPLING COUNTS EVERY OTHER DAY
11. ESTIMATION OF LEAD IN URINE AND URINALYSIS, FOLLOWED BY OCCASIONAL URINALYSES

TREATMENT (Cont'd)

DURING CONVALESCENT PHASE:

1. REGULAR DIET PERMITTED
2. MILD LAXATIVES RECOMMENDED
3. CALCIUM OR BONE PHOSPHATE WAFERS PROVIDED
4. IRON AND VITAMIN B COMPLEX TABLETS PROVIDED FOR ANEMIA AND AS TONIC
5. WARN AGAINST OVERINDULGENCE OF ALCOHOLICS, EXPOSURE TO COLDS, ETC.
6. BIMONTHLY RED BLOOD COUNTS, HEMOGLOBIN, AND STIPPLING COUNTS
7. RETURN TO SOME WORK AS SOON AS FEASIBLE FOR PSYCHOLOGICAL REASONS
8. MAKE SURE COMPENSATION PAYMENTS ARE MADE ON TIME FOR SAME REASON
9. NO FURTHER EXPOSURE PERMITTED

REMARKS:

1. GLUCONATE INTRAVENOUSLY MUST BE CONTINUED FOR AT LEAST SEVERAL DAYS AFTER ALL SYMPTOMS OF COLIC SUBSIDE AS SAFETY MEASURE, OTHERWISE PAINS WILL RECUR AND YOU WILL HAVE TO START ALL OVER AGAIN.
2. GLUCONATE ORAL WAFERS DEPENDING ON CONVALESCENCE.
3. NO IRON PREPARATIONS DURING HOSPITAL STAY WILL NOT BE UTILIZED.
4. VITAMINS, MILK AND SPECIAL DIETS ARE QUESTIONABLE AS TO TRUE VALUE BUT CAN BE USED WITHOUT ANY ILL-EFFECTS IF ONE SO DESIRES.
5. DELEADING NOT ADVOCATED.

SUMMARY

1. DO NOT underestimate effects of lead exposure but frank attitude toward the entire problem on the part of management and medical department minimizes the hazard.
2. Physician-in-charge must examine all blood counts as completed within 24 hrs. - delay may be serious - thorough study must be made in each case and the following method is recommended:
 - A. When a blood count, or clinical signs, or both signify a "Suspicious" or "Absorption Case", a written order is immediately sent in triplicate to general superintendent, department head, and foreman, with designation of "Watch Case", meaning just what it states.
 - B. The same procedure is followed when an "Impending" or true "Intoxication Case" is present, but here we designate our order as "Keep-Out Case", meaning keep out of all exposure. An immediate telephone call to department head always precedes arrival of written order on same day.
 - C. These orders are again repeated in a Monthly Medical Report to same members of management, whose duty it is to see to it that all medical orders are carried out without delay. Where discussion of the case is requested by the management, a conference is always arranged but the original medical order stands unless there is unanimous approval of some other procedure. I would like to state at this point that compromise does not fit into this type of work and the medical department should adopt a fair but stern attitude due to the great

SUMMARY (Cont'd)

responsibilities involved.

- D. As soon as the condition of the employee changes to a satisfactory level, the Medical Department issues another order to that effect.
3. All cases must be in absolute control of plant physician or surgeon as the treating of those cases requires experience peculiar to this type of exposure. Best results will otherwise not be obtained.
 4. Early hospitalization important.
 5. Deleading not recommended.
 6. Monthly red blood counts, hemoglobin and stippling estimates. Monthly physical examinations. Quarterly urinalyses.
 7. No re-exposure permitted without consent of medical department.
 8. Employees must be impressed with importance of reporting all illnesses immediately to Medical Department, so that relationship to exposure be ascertained quickly. If the company has no arrangement to provide medical care to their employees, other than those conditions arising out of their employment, then I suggest that the plant physician visit home of the sick employee for the purpose of determining this relationship. If this policy is not adopted, it is easy to see what dangers are inherent.
 9. Employees must be educated to this hazard by intelligent means.
 10. Employees must be educated in the value of hygienic measures, such as cleanliness of hands and body, dental care, frequent change of working clothes, ingestion of sufficient and proper foods, sufficient sleep and rest, as well as reasonable abstinence from alcoholics.
 11. Central eating places should be established. Suggest providing employees with an extra ten minutes prior to eating time for purpose of "getting cleaned up." Suggest also that everyone be compelled to eat in this central cafeteria even if some are permitted to bring their own foods to plant for any special reason.

CONCLUSIONS

1. Lead absorption and intoxication cases should recover with no resulting disability.
2. No justification of "poison-fear-complex" in lead industry.
3. I sincerely hope that no one will misunderstand my remarks as to the dangers involved in dealing with this toxic metal, but I do believe that it is about time that the lead industry do something about the charges and implications that lead absorption and intoxication are "incurable diseases."
4. I am not desirous of underestimating its prevalence or effects, but on the other hand, I am most anxious to clear away many notions which are absolutely erroneous and false.

CONCLUSIONS (Cont'd)

5. However, this change in thought will only occur if and when universal good results are obtained in treating these cases. I would like to suggest that the Lead Industries Association check on results of their member companies and where assistance is needed, arrangements be made to provide this help with a study by competent medical technical consultants. I am familiar with the fact that frequent bulletins are published for the dissemination of information, but in my opinion, this procedure falls short of the goal to be achieved.
6. I would also like to suggest that those who are constantly engaged in the manufacture of lead and its by-products, as well as those that are entrusted with the duty of preserving the health of employees so engaged, make a concerted effort to present our views to all groups, lay and medical, so that this propaganda directed against this industry be successfully resisted on all fronts at every opportunity.
7. The public is entitled to know our views and it is our responsibility to them, as well as to the entire world, to see that they have access to these opinions.

DR. WIL. C. WILENTZ

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