

A Medical View of the Lead Problem

WILLIAM C. WILENTZ, M.D.

PERTH AMBOY, NEW JERSEY

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9 DESPITE A PROGRESSIVE decline in the incidence of fatal lead poisoning in the last 40 years, there are still many cases of temporary disability and a need not only for a re-evaluation of the problem but an insistence on measures of control which are available.

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THERE have been some of us, but far too few, who have in recent years dared to speak up about the lead problem. The reaction to this new approach has met with genuine approval from all parties involved—for instance the Lead Industries Association which represents most lead processing companies in this country. This association has given us sincere and honest support by word and deed, and is naturally vitally interested in this problem for many reasons, although their main objective has always been to learn more and more about the toxicology of lead and to make the results freely available to the public, to the health authorities and to industry. Other examples are the state health authorities. Their investigations disclose to them the over-all picture of this problem; they are naturally interested from a public health aspect and justly so.

There has been an acute need for re-evaluation of this entire problem in view of the fact that most of the information available in the literature today has been repeated for years with very little, if any, changes at all discernible, yet many of us who have had experience in this field know that many changes have occurred during the past ten years.

In the not far past lead poisonings were responsible for great numbers of cases of temporary and permanent disability as well as deaths. This situation was recognized by the leaders in the industry, but the medical and associated professions were ignorant of the causes and unfamiliar with the methods of treatment. Today, although there are still many cases of temporary disability, there are fewer and fewer cases of permanent disability and rarely a death.

Statistics show that there has been a progressive decline in the incidence of fatal lead poisonings in the United States for more than 46 years, that the more hazardous types of occupational lead exposure have been brought under a great deal of control. This

tremendous decrease has taken place regardless of the fact that the use of lead in lead processing industries has considerably increased in recent years.

This is a practical demonstration that sincere efforts have been made and are being made to diminish and eliminate this hazard, and the results are very gratifying. These things just don't happen—they are the result of careful planning.

THE EMPLOYER FACTOR

The responsibility of providing a healthful working environment rests upon the employer. It must therefore be perfectly obvious that financial backing is paramount. Without this, no hope for success can be achieved. Legal and financial factors have in the past occupied the dominant position in the administration of industrial health services, while medical factors, which should have been one of the primary considerations, were given only incidental attention. Fortunately, this situation has been changing and the reason for this change is that health and safety services in industrial plants have proved profitable to management in the long run.

It is also an acknowledgment that the health of the workers is as much an asset to management as is the care of equipment, and that it is necessary to give as much attention to the effect of industrial materials and processes on the health of workers as to the problems of production pricing the quality of the products.

When change in process or equipment is made to lessen employee exposure, manufacturing costs are reduced due to the installation of this more modern equipment.

The problem in smaller plants is urgent and begs for a solution. It has been stated that industrial medicine in small plants is still in the stage of discussion rather than of action. This is a serious charge and probably is true. You must not forget that one-half the nation's workers are employed in small plants—this magnifies the problem tremendously.

Sixty per cent greater costs are paid by smaller industrial organizations for medical services and compensation, indicating that they have not yet fully real-

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ized that it is cheaper to pay for prevention measures through organized and efficient medical and safety service than for emergency repair service and compensation. (A. C. S.)

Why is all this important? Because the over-all statistics of lead throughout the nation cannot help but affect every company handling this product. The over-all picture is what is important, and it is suggested that something be done about presenting it through suitable existing organizations (e.g., see footnote page one).

THE EMPLOYEE FACTOR

It is apparent to me that unless the employee is educated to the hazards as well as to the technical aspect of his job, no real success can be achieved in diminishing this problem. The employee must be (1) instructed as to hazards (toxic and accident); (2) disciplined and punished for non-adherence to rules and regulations; (3) instructed as to matters relating to personal hygiene and cleanliness; (4) advised as to proper food and dietary regimens, by means of posters, etc., in restaurants, assembly halls, rest and recreation rooms; and (5) led to develop a genuine interest in the results of routine blood and physical examinations.

I know that some men will say that you are dealing with a segment of the population which is illiterate and cannot be educated to these factors—perhaps there is some truth in this, but in spite of this we must continue by every means at our command to protect these individuals; it is a moral obligation on our part to do so.

I am convinced that practically every individual who is exposed to lead dusts and fumes will absorb some lead. I am also convinced that lead absorption and intoxication cases will continue to be present from time to time for one reason or other. I am further convinced that the fear or dread of lead exposure is out of proportion to the true realities of the situation, so much so that I was prompted in 1946 to write a paper on this subject, which I called "Plumbo-phobia." This was published for the purpose of stating objection to the constant barrage of poorly advised articles and speeches on the general subject of lead exposure. In this paper I stated in part as follows:

"Unfair and insidious propaganda concerning lead has been permitted to permeate throughout the entire field of industry, government circles, and courts of justice and has, therefore, placed the entire industry in a very unfavorable position. This is due primarily to the fact that too many men have written and

are now writing too many books and articles about lead of which they know too little from a practical standpoint. These men, either innocently or by intent, are responsible for this condition which I term 'Plumbo-phobia,' meaning 'Fear of Lead.'

"My trepidation had its origin in the talk and gossip among the people of the community, where 'everyone is familiar with the bad effects from lead poisoning.' As a matter of fact, the medical and legal fraternities held similar impressions, so that it is not surprising to learn laymen felt the same way.

"Such fears and impressions, generally encountered, may have been justified some years ago, but they are not justifiable on any basis today. Industry is spending huge amounts of capital to install the most modern protective equipment, as well as providing the service of well trained physicians and modern medical dispensaries to deal with anything that may arise in the course of employment, including the effects, such as they may be, from exposure to lead.

"It is my belief that cases of lead absorption, and intoxication should recover without any resulting disability. This is predicated on the fact that if sound medical observation and treatment are provided in conjunction with present-day co-operation from management, excellent results can be obtained. I will say, however, that without this co-operation anything could happen, and 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 metal, but I am perfectly satisfied to state that I am no more frightened by its effects than I am about other toxic substances. Let's not continue to consider lead absorption and intoxication as an 'incurable disease'—you and I know that this is not the truth."

This paper told the story of 37 lead intoxication cases in which *not one* employee had any permanent disability resulting from his exposure. This doesn't mean that we didn't have to make some financial compensatory settlement with a few of these individuals due to claims. However, from a medical point of view, no disability of a permanent nature resulted.

I published another study, several months ago, on the same subject. In this article I related our experience of observing the effects of lead exposure upon 67 Jamaican Negroes who were employed by our company during a critical period in the last war. They remained with us for a period of eight months, during which time they were under great exposure. It is again very significant that not one man developed any temporary or permanent disability.

I am sure that if information such as I have just stated were presented to the medical fraternity and to the community at large in some legitimate and fair manner, this "Plumbo-phobia" phenomenon would eventually disappear, and instead of it a wholesome new attitude towards this industry would make itself manifest.

I can only say again that this sort of a situation can be attributed only to irresponsible utterances by men who should know better.

THE COMMUNITY FACTOR

Drinker has stated that lead poisoning among the population is rare. Wormser confirms this statement in his masterful paper presented in Boston in 1946. Kehoe states it this way: "the idea has existed over a considerable period of time that lead accumulates in the body irrespective of the rate of daily absorption as long as some exposure and absorption occur. The evidence of our experimental work has been such as to indicate that under the conditions of the normal and incidental lead exposure which characterizes modern life generally, no such accumulation occurs, or is so slight as to be insignificant in the course of a lifetime."

This must be so, otherwise we would all be sick. To further implement these findings, I recently investigated our records on 93 men in the so-called white collar class, men working in our plant as clerks, guards, supervisors, etc., and having no contact with any exposure. The average age of these men was 40, average length of service, 14 years. Our check showed that no man in this group had ever been treated or shown any evidence of illness which could in any way be associated with his proximity to the manufacturing of lead and its products. This would seem to show that lead dusts and fumes under modern engineering technics are not a danger to a community.

It has been stated that lead can be found all over the universe, in all oceans and water, all soil, air, foods, plants, vegetables and animal products. It is therefore understandable that the average individual in a modern community continually ingests and inhales small amounts of lead. Fortunately, however, the metabolic processes of our bodies produce an equilibrium of intake and output, and therefore no illness results.

I would like to say a few words about another aspect, the "life insurance problem." I am told that life insurance companies associate occupational with nonoccupational disease rates in establishing rates for group health insurance plans. These companies re-

serve the right to fix specific additional charges to basic premium rates for the groups to be insured but there are some additional charges which are fairly standard for certain group of workers, such as a 15 per cent additional charge for men employed in hot metal industries, smelting and refining companies.

This to me is an important community problem, since insurance is such an essential commodity and necessity to every family, rich or poor. However, the solution for this problem is to be found in your hands, as you must achieve results in your health programs to convince the insurance companies that their rates are exorbitant.

I shall terminate my remarks on the community factor by stating that an appreciation of the importance of the need for attention to community health is not yet accepted by all industrialists. It is imperative that all nuisances from smoke, dust and fumes be kept within normally accepted safe limits in all communities. Where possible, these nuisances should be eliminated completely without waiting for legal action, because it makes a serious and poor impression upon the citizenry. So far as I am concerned, I believe that it is your moral duty to see that these things are taken care of.

THE TREATMENT FACTOR

I recently noted the following statement in one of our leading periodicals: "The literature of the study of this disease is voluminous and yet neither the methods of diagnosis nor those of treatment are entirely satisfactory."

It is my humble opinion that this very statement is not "entirely satisfactory" and lends itself to misunderstanding and misinterpretation.

The diagnosis of lead intoxication is usually quite simple, because we have at our disposal numerous measures, such as history of exposure, various blood and urinary tests and our clinical studies from physical examination and observation. I know of no disease which presents a more classical symptomatology or hematologic syndrome. I am fully aware of the occasional case which presents a diagnostic problem, but that is understandable—it happens in every disease at one time or other but that does not alter my opinion.

The method of treating the acute phase of lead intoxication has been well established and its rationale universally accepted. However, the type of treatment that should be instituted following the subsidence of the acute symptoms is a controversial issue. It would be incorrect, however, if the impression were given that there is no satisfactory therapy to deal with this

disease in this latter stage. The problem here centers about whether or not one should attempt to de-lead these individuals. Many authorities advocate this procedure but many other physicians, including myself, are opposed to its usage from a practical point-of-view.

The argument used by the advocates of de-leading centers principally on the assumption that acute toxic lead episodes occur during metabolic upsets. It has been our experience, while treating many intoxication cases and hundreds of absorption cases, that not one case has presented itself in ten years where any metabolic upset produced any liberation of stored lead to such a degree as to incapacitate the individual. Admittedly, some conditions can produce and do produce some free, circulating lead in the blood stream, but the results are negligible and the individuals are symptom-free as far as lead is concerned.

It would seem obvious that the entire therapeutic regimen should be directed towards (1) overcoming the intestinal colic, (2) correcting the resultant anemia, (3) making the patient symptom-free with no disability and (4) returning the individual to a remunerative job as soon as possible.

All these requirements can be fulfilled by a calcium immobilization regimen which is simple and safe, shortens hospitalization, shortens length of disability and provides results which are certain.

CONCLUSIONS

1. It is not believed possible at present to eliminate all the toxic effects of lead dusts and other forms, but it is felt that it is possible to alter a process so as to

lessen the employee exposure and therefore the hazard.

2. Practically every type of lead material utilized in or resulting from industrial processes can be handled and controlled with safety, if proper and adequate controls are provided and used for the protection of the health of the industrial worker.

3. Industries must continue to provide ample funds willingly so as to insure the purchase of safety and modern equipment.

4. When available knowledge is utilized, it makes substantial contributions to the health and human welfare and at the same time increases profits and managerial efficiency.

5. Medical supervision is as necessary as ever and must be extended to include every person who works with lead.

6. The lead industry must seek the services of the best medical nursing and safety talent—not just the best-available. The job is too important; the responsibility too great.

7. Medical orders relating to exposure of employees must take preference over all others.

8. Lead absorption and intoxication cases should recover with no resulting disability, due to modern methods of therapy.

9. Production methods, engineering technics and medical knowledge for control of lead poisoning have developed to the point where one can hope for absolutely satisfactory control in the not too-distant future. We now know what to do; it only remains for us to apply what we know. This hope can be realized and must be realized.

Care of the Skin Following Ileostomy and Colostomy

Care of the skin following ileostomy and colostomy is a most distressing problem. There is a persistent antagonism between the acid and base radicals because the intestinal contents are alkaline and the skin is normally acid in reaction. Jejunal secretion is slightly acid. Low in the bowel the secretion becomes increasingly more alkaline. In order to correct this disturbance either the intestinal contents should be made acid or the skin changed to alkaline.

The care of the skin begins at the operating table. No alkaline antiseptic should be

used because they remove keratin from the protective skin layer. After the surgical procedure the skin about the stoma is painted with 1% salicylic acid solution in compound tincture of benzoin. When the ileostomy or colostomy is functioning, the area is cleansed with 10% solution of sodium hexametaphosphate and the skin is painted with tincture of benzoin. This procedure is followed whenever the colostomy dressing is changed. —B. J. Ficarra, M.D., *American Journal of Surgery*, March, 79: 353, 1950.

TAJ:CBH