

**THE ACTIVITIES IN INDUSTRIAL HYGIENE AT THE HARVARD MEDICAL SCHOOL
AND THE HARVARD SCHOOL OF PUBLIC HEALTH FROM 1918-1929**

In the spring of 1918 Harvard University received gifts, largely from New England manufacturers, in order to develop the subject of health in industry. Subscribers to this fund understood that the University would employ the money for research, for health education, and for the training of industrial physicians and others directly connected with health work in industry. The work accomplished may be divided into three classes:

1. Special Problems
2. General Problems
3. Education

SPECIAL PROBLEMS

1. Investigation in the Jute Industry:

A large manufacturer of jute products, in the neighborhood of Boston, requested a thorough examination of dust conditions in the industry, together with a report to settle the question as to whether work upon jute products caused chronic fibrotic changes in the lungs. A dust survey was carried out by Dr. G. K. Reiman and Mr. R. M. Thomson. Medical and x-ray studies were made by Doctors Wright, Tobey and Holmes. It was established that dust conditions in the mills in question do produce a slowly developing type of lung fibrosis. Methods for dust removal and physical examination of employees were recommended, which could be relied upon to alleviate the hazard. Besides immediate utility to the

industry the study was an appropriate one for the University to enter, since it dealt with a much debated question - namely, whether a simple organic dust can produce lung damage. The findings in this case, to a certain degree, supported the idea that organic dust is not harmless, but, owing to contamination with crystalline material, dirt, et cetera, collected during packing, the results cannot be considered conclusive.

2. Manganese Poisoning.

As a result of new pressure in manufacturing, the New Jersey Zinc Company, in May 1918, was compelled to ask the assistance of the industrial hygiene enterprise in order to deal with a rare industrial disease which had occurred at Franklin, N. J. The men affected were examined clinically by Dr. C. K. Drinker. Thorough dust surveys were made at this time, and repeated at regular intervals subsequently, by Dr. C. K. Reiman, Mr. E. M. Thompson, and Mr. Philip Drinker. (The large knowledge of the mills now possessed by our department makes it possible to use them as a very excellent field station for testing new dust measuring devices.) Prolonged laboratory investigations of manganese poisoning in animals were carried out, which eventually gave a complete picture of the action of the poison; it being shown in collaboration with the Department of Neurology that manganese affects certain of the basal ganglia specifically.

It has proved possible to make recommendations to the New Jersey Zinc Company which have completely abolished the incidence of the disease in all their properties.

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As a result of this work, Dr. C. E. Drinker sees practically all cases of manganese poisoning occurring in the country, and has been instrumental in the National Carbon Company in recommending plant changes to abolish the hazard.

The whole experience in connection with manganese poisoning illustrates the need of continued relations in dealing with any of the health problems in industry. Time is required not only to find out the nature of the hazard but to gain the complete trust and cooperation of the authorities in carrying out the changes necessary.

3. Tetrachloroethane Investigation:

A single establishment near Boston had a severe hazard in tetrachloroethane used as a solvent for cellulose acetate. The instance is rather a unique one because of the speed with which Doctors Minot, Parmenter, and Smith succeeded in making the operation safe. The plant in question was too small to lead the workers into studies of other solvents, a logical continuance of the work so well started.

4. Lead Investigation:

In 1931 the American Institute of Lead Manufacturers made a grant of \$51,000, which was used for a period of three years by Doctors Aub, Anne S. Minot, Fairhall and their associates, in an extensive analysis of lead poisoning. A large volume of published work resulted, and the facts brought out have had much to do with changing the point of view in treating lead poisoning and in fully understanding the pathogenesis of the condition.

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Two years ago, while in Europe, I was much gratified to find that this lead work really dominated all that was being thought in connection with lead poisoning or the use of lead as a therapeutic agent.

The investigation resulted in an intimate relation with the lead industry, most profitable both to the manufacturers and to medical science.

The lead researches were practically wholly of a laboratory and hospital type. They did not deal with the problem of lead poisoning prevention and field work in general. Much might be done upon these two latter lines.

5. Zinc Investigation:

In 1923 an opportunity similar to that provided by the lead industry was presented by the zinc industry under the auspices of the New Jersey Zinc Company, with large resources to investigate the hygienic and medical significance of zinc and define the conditions of industrial poisoning of the material if they existed. This work occupied the full time of Dr. Lawrence T. Fairhall, Dr. Katherine B. Drinker, and several associates during two years, and required the fairly constant cooperation of Mr. Philip Drinker and his engineering associates in connection with problems of dust measurement of a particularly difficult type. Owing to the fact that zinc is a relatively innocuous material, the immediate medical importance of the findings was not so great as in the lead investigation, but the experimental work was of high grade and has resulted in a far better realization of the importance of zinc in biological processes than we have had in the past. Indeed the results of the work were of more importance for general biology than for industry unless, as is the case,