

10th March, 1947.

Robert A. Kehoe, Esq., M.D.,
University of Cincinnati,
College of Medicine,
Kettering Laboratory of
Applied Physiology,
Eden Avenue,
Cincinnati, Ohio, U.S.A.

Dear Dr. Kehoe,

Very many thanks for your letter of March 1st, 1947.

My chief, (Professor Ferguson) and I were most interested in the opinion expressed by your colleague that the present risks of shipbreaking in the United States are potentially more dangerous than those encountered after the last war. In this country the electric arc has not yet come into use to any appreciable extent in shipbreaking. On the other hand the programme of our shipbreaking firms includes a variety of old Naval vessels on which the successive coats of paint have reached as much as a quarter of an inch in thickness.

As regards our responsibility in trying to protect the shipbreaking workers here, I agree that one should not be content to resort to more or less orthodox methods. We are fairly well informed about the extent of their exposure, the precise manner in which they do their work, and the fluctuant hazard to which they are exposed, although further information can be obtained with advantage on the hazard.

The outstanding problem lies in the consideration of preventive methods. It is tempting to imagine that the Institution of Blood Examinations would be helpful, but I feel that blood examination is of value for one purpose only, and that is, to assess group exposure. I am sure you would agree that it is virtually useless as a criterion of individual prognosis. In our experience an individual may be perfectly well one day, and may show a normal blood picture, whereas the following day as a result of sudden high exposure he may show symptoms of acute lead poisoning with or without significant blood changes. I agree with your comment that when a risk to men is serious enough one is justified in radical departures from current practice. Unfortunately I cannot see that this statement applies to medical supervision per se. I know of no improvement in current medical practice which could contribute usefully to the problem. I do agree, however, that should the risk be serious and we have every reason to believe that this may soon be so, that original departures in shipbreaking technique may well be forced on the ship-

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breaking firms. Here we have continued to explore new methods without notable success. We have considered the utilisation of strip explosives on a large scale, and although their effectiveness is manifest their use is quite uneconomical, and my friends among the explosives manufacturers indicate that no lowering of the cost of explosives is likely. With reference to respirators, I agree with you that air line respirators represent the only adequate protection. However, it is next to impossible to enjoin their use upon workmen, as they have a deep-rooted and justifiable fear that the air lines endanger their foothold when they are working at great heights on the interior of the ships.

At the moment I see no over-all solution to the hazard of shipbreaking, but we are keeping the process under close observation, and we hope that eventually we may be able to impose adequate control over the process.

Again very many thanks for your letter.

With kind regards,

Yours sincerely,

John M. Rogan

John M. Rogan, M.D.

March 1, 1947

Dr. John Rogan,
Sub-Department of Industrial Health,
Institute of Hygiene,
The University,
Glasgow, W2, England.

Dear Dr. Rogan:

I return to our correspondence of some months ago because of some additional information which has come to me concerning the problem of ship-breaking in your country and ours.

Following the receipt of your letter I communicated with one of my colleagues who has had much to do with the hygienic work for the U. S. Maritime Commission. His letter indicated that he has some anxiety on this score. To my surprise he expressed the opinion that procedures which would be used at the present time in outfitting up ships would be more dangerous than those employed after the last war. He certainly disabused me of the idea that the thin coat of paint used on American freighters would diminish the hazard, since in his opinion the speed of conduct of the work would offset any such advantage. It also appears that the chipping away of the paint in advance of the burning, while advantageous, is not sufficient to eliminate serious risks.

I am enclosing herewith a copy of a statement put out by the Industrial Hygiene Division of the U. S. Public Health Service, for your information. This will not give you much practical help, but it will illustrate something of the point of view which obtains among responsible people in this country.

I may say that if I had the responsibility of trying to protect these men, I would not be content to resort to more or less orthodox methods. I would want to know the extent of their exposure, to observe the precise manner in which they do their work, and to learn by these highly practical means what could be done to minimize the hazard, and how much has to be done in terms of the severity of the hazard. In other words, I should want some analytical data which would indicate the order of magnitude of the absorption of lead on the part of an individual or group of individuals who were working in a characteristic and representative fashion.

As you well know, there are a number of means which can be employed to prevent the exposure of men to lead compounds. The question always arises, as to how much one is justified in introducing

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See letter in file
from Phil Drach

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inconvenience, discomfort and the like into the men's work. This is also, always, the question of how much expense is justified. These things can only be determined and demonstrated somewhat in advance by knowing the magnitude of the problem which is to be faced. If the risk to men is serious enough, one is justified in radical departures from current practice. Otherwise one simply has to do the best he can, going along with current practice and perhaps current prejudices with as little difficulty as possible.

You will note the reference to the Public Health Service and the relatively unsatisfactory performance of the filter type and canister type of respirator and their advice that air-line respirators represent the only adequate protection. I call specific attention to this, because of what I said to you concerning the filter type of mask.

If there is any way in which I could be of any further assistance to you, please do not hesitate to let me know.

Cordially yours,

Robert A. Kehoe, M. D.

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Copy by Air Mail.

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HEALTH HAZARDS IN SHIP-SCRAPPING

The Industrial Hygiene Division, United States Public Health Service, in cooperation with the United States Maritime Commission, draws attention to the potential health hazard involved in the scrapping of ships offered for sale by the latter.

In those scrapping operations which involve cutting steel by means of oxy-acetylene torches or by the electric arc, a considerable amount of smoke or fume is released by the burning paint. This smoke may contain lead and zinc fume, and also mercury and arsenic fume, where the hull is coated with antifouling paints.

Numerous cases of lead poisoning have been reported from such activity in the past. Eighty-three cases of lead poisoning occurred at the Philadelphia Navy Yard from scrapping steel ships with oxy-acetylene torches following World War I. Some fifty cases of lead poisoning were reported in Scotland in 1934 among men engaged in ship-scrapping. A number of cases of lead poisoning were reported in 1946 among men engaged in dismantling and cutting up an elevated railroad structure.

In order to utilize scrap steel it is necessary to reduce it to small enough chunks to enter the open hearth furnace for re-melting. Obviously in reducing a large ship to marketable scrap many acetylene torches are in use cutting out rivets and in cutting steel plates. During certain stages of the work inside the vessel and particularly in confined spaces, the concentration of metal fume can reach high proportions. At the temperature of the oxy-acetylene flame, which is about 3,600°F., and at the much higher temperature of the electric arc, lead is readily volatilized from the painted metal. Even though pneumatic chippers are employed to cut away the paint from the metal before the actual flame or arc cutting occurs, the residual paint, or paint on the opposite surface, causes a certain amount of smoke or fume.

The inhalation of lead, mercury, or arsenic fume is a serious hazard, since it is the quickest and most certain means of causing metal poisoning. It should be made very clear that protective measures must be adopted by the workers so exposed.

Experience with the cutting of steel coated with red lead paint has shown that, even when workers have been supplied with filter-type and canister-type respirators and have worn these faithfully, the lead hazard is still high. The only adequate protection at present against fume in operations of this type is the air-line respirator. Furthermore, careful instruction should be given regarding the danger of even short exposures to such fume, as for example in making minor adjustments of the mask. The workers must be assured an ample supply of fresh, clean air at all times.

January, 1947