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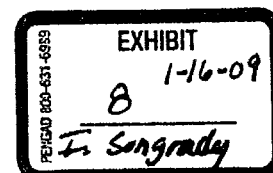
Proceedings of the

PACIFIC COAST ✓
SHIPYARD SAFETY CONFERENCE

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Puget Sound Chapter

PUGET SOUND SHIPBUILDERS ASSOCIATION



DECEMBER 13 and 14, 1945

New Washington Hotel

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B. J. W.
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Let us consider first the problem of exposure to asbestos. The dustiest operations experienced were those involving amosite - a long-fibered form of asbestos. This material is very dusty when handled dry, and comes in bulk, blanket, or rigid form. Operations in its use include hand cutting, cutting with band saw, sewing into mats, etc. Concentrations found were well over recommended allowable limit.

The exposures found seemed to be substantiated by apparent cases of asbestosis reported in occupational disease claims. Dr. Slyfield will probably have something to say about this problem in connection with the medical aspects of asbestos exposures. The dustiest operations from asbestos were not on board ships but in prefabricating shacks.

Since there has been so much discussion about fiberglass I feel that I must at least mention it although time will not permit any detailed discussion. Fiberglass particles, as reported in the literature, are too large to enter the small tissues of the lungs and thus we have not seen fit, because of limited time and facilities, to make extensive studies in connection with fiberglass. Although we believe that fiberglass dust is not a serious potential hazard to the lungs we do hope to investigate this problem further and regret that we have been unable to do so heretofore. I might say that we have had no reason to believe that anyone has been injured from the inhalation of the fiberglass dust.

The use of radium and x-ray in industry presents a very delicate and serious potential health problem. Radium salts are used at any stage of ship construction and at most any time or location within a yard. Due to the apparent insignificance of a small vial of radium salts, operators and other workers become careless in handling it. Serious exposures to radium and x-ray were found in our studies where they were least expected. Radium salts stored temporarily in shacks adjacent to ways offered unsuspected exposures to office workers. We also found that portable carrying cases do not always insure safe conditions in their immediate vicinity.

In conclusion I should like to point out that as a result of our combined efforts in determining the causes of occupational diseases and the effective use of ventilation and other control measures we have accomplished results which have been definitely reflected in the reduction of the number of occupational disease claims submitted by shipyard workers. In comparing the average monthly number of occupational disease claims filed by shipyard workers in 1943 with those for the first six months of 1945 a reduction in total occupational disease claims of over 75% was realized!

Practically all classifications of occupational diseases showed a reduction as I pointed out in my introductory remarks. The two largest contributors, namely, conjunctivitis and illnesses resulting from welding fume exposures were reduced almost entirely in the first case, and over 90% in claims filed believed to have resulted from welding fumes.

TYPICAL POTENTIAL HEALTH HAZARDS

IN SHIPYARD OPERATIONS

Operation	Potential Hazards	Recommended Allowable Limit	Maximum Found* in Shipyards	Method of Sampling
Welding, Burning and Brazing	Oxides of Nitrogen	25 ppm	29 ppm	Vacuum Flasks
	Zinc Oxide	150 mg/10 m ³	416 mg/10 m ³	Precipitator
	Lead	1.5 "	15.1 "	"
	Iron Oxide	300 "	245 "	"
	Arsenic (Trioxide)	1.5 "	0.13 "	"
	Cadmium	1.0 "	11.1 "	"
	Total Fume	300 "	---	"
	Fluorine	3 ppm	2.2 ppm	Precipitator, Absorber
	Ozone	1 "	---	Absorber
	Carbon Monoxide	100	---	CO indicator
Shrinking	Oxides of Nitrogen	25 ppm	480 ppm	Vacuum Flasks, Absorber
Painting	Aromatic Solvents	100 ppm	215 ppm	Benzene Indicator
	Lead	1.5 mg/10 m ³	---	Precipitator, absorber
	Zinc Chromate	1.0	---	"
Radium & X-Ray Photography	X (gamma)-rays	0.1 roentgens	in excess of 0.1 roentgens	Minometer
Sandblasting, Sealing, etc.	Silica	5 mppcf	---	Impinger, Monimeter
	Total Dust	50 "	640 mppcf	"
	Lead	1.5 mg/10 m ³	---	Precipitator
Tinning	Lead	1.5 mg/10 m ³	0.2 mg/10 m ³	Precipitator, Impinger
	Acrolein	1 ppm	---	Absorber
Galvanizing, Sherardizing	Zinc (oxide)	150 mg/10 m ³	---	Precipitator, Impinger
Electroplating, Cleaning, Bright Dipping etc.	Hydrochloric Acid	10 *ppm	6.5 ppm	Absorber
	Nitric Acid (Oxides of Nitrogen)	25 "	29 "	"
	Sulfuric Acid	10 "	2 "	"
	Cyanide	20 "	---	"
	Ammonia	100 "	---	"
	Formaldehyde	10 "	---	Absorber, Vacuum Flasks
	Chromic acid	1 mg/10 m ³	---	Absorber
Insulating	Asbestos	5 mppcf	45 mppcf	Impinger
Cable (Electrical) Welding & Installation	Chlorinated Naphthalene & Biphenyls	---	---	Absorber

Many of these Materials also are Capable of Causing Dermatitis

*From tests conducted by the State of Washington Department of Health.

mg/10 m³ - Milligrams per 10 cubic meters (approx. amount of air breathed per working day).

ppm - parts per million by volume in air.

mppcf - Million particles per cubic foot of air.

apparatus. All patients seen by us in this connection have been put through a routine examination consisting of the following: examination of nose, throat and sinuses; physical examination of the heart and lungs; B.P. reading; vital capacity; urinalysis; sedimentation rate; fluoroscopic and x-ray film of the chest. We have been impressed by the fact that in the large majority of cases nothing abnormal is found except minor things having no relation to industry, which may be found in the general population.

Many reports in the literature indicate that men who have had metal fume fever once or twice acquire a certain degree of immunity or resistance to it. I don't feel sure about this myself, as we have seen many men who tell us they get into trouble as soon as they smell the fumes again. This, perhaps, may be explained on the basis of fear. When a man has been acutely ill, even for a few hours and knows it was due to zinc welding fumes, he thinks he is going to be ill again as soon as he contacts the fumes. Yet some do have repeated attacks of metal fume fever and we have had the impression that certain men become sensitized to the fumes so that their only hope of avoiding trouble is to change their type of work and stay away from the fumes. Of course it is highly desirable that every effort be made to prevent the inhalation of smoke and fumes as well as undue exposure to all other occupational hazards.

Inhalation of asbestos dust may produce cough and shortness of breath and occasionally weakness and chest pains. Advanced disease may show blood streaked sputum, cyanosis, and clubbed fingers. It has been shown by many investigators, however, in this country and abroad, that a number of years' exposure is necessary to bring about the above situation.

Meriwether, describing conditions in English plants, showed that a minimum of seven years' exposure to high concentration of asbestos dust was necessary to produce a serious degree of reaction.

In asbestosis, the x-ray film presents a faint haziness throughout the lower lung fields and some evidence of chronic pleurisy is usually seen. In far advanced cases, which we very rarely see, the x-ray shows a diffuse shadow throughout the lung fields which has been compared to ground glass appearance, flecked mottling on a hazy background. Asbestosis does not lead to tuberculosis as silicosis is known to do, but of itself may be disabling or even lead to death. There is little the doctor can do beyond removing the patient from the asbestos atmosphere. Asbestosis fortunately does not show the silicosis tendency toward progressive fibrosis. With mild cases, generally symptoms subside after removal from the danger.

Fibrous glass, glass wool, foam glass and glass board: The first fibrous glass made in this country for commercial use was in Ohio in 1934. So our experience is limited as to time. However, it has been clearly shown by Dr. Gardner and other workers that no pneumoconiosis can arise from exposure to these products because fibrous glass is not inhalable. That is, it does not reach the lungs. The spicules of glass are caught in the upper respiratory passages and promptly carried out. In the state of Ohio where the Owens Corning Fiberglass Corporation is located and where fiber glass was first used commercially, there has not been a single claim for worker's compensation based on pulmonary disease attributable to fibrous glass. Many men have complained of skin irritation as a result of handling these glass products, and there can be no doubt such irritation is very uncomfortable, but no case is recorded in which any skin disease resulted. This skin irritation requires only several washings with soap

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