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No.

NAVY YARD, NEW YORK

MEDICAL DIVISION February 19, 1943

From: The Industrial Health Officer.
To: The Assistant Secretary of the Navy.
Via: (1) The Medical Officer of the Yard.
(2) The Commandant, Navy Yard, New York, N. Y.
(3) The Commandant, THIRD Naval District.
(4) The Chief of the Bureau of Medicine and Surgery.

Subject: Industrial Health Program -- Survey of Activities and Reporting of.

Reference: (a) SecNav's ltr SOSED-1D-LMB SO 114 1008 - P2-4 dated November 28, 1942.

Enclosure: (A) Report entitled "Industrial Hygiene Survey, Navy Yard, New York, N. Y.

1. Enclosure (A) is hereby respectfully submitted in accordance with instructions contained in reference (a).

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Industrial Hygiene Survey, Navy Yard, New York, N. Y.

Introduction

The information which forms the basis for this report has been derived from four main sources: (1) a study of the files of the Supply Officer to determine what potentially harmful materials are being requisitioned by the various shops; (2) inspections and surveys conducted in the shops; (3) analysis of the case histories of civilian employees who, because they were suspected of suffering from an occupational disease, were referred to the Industrial Health Officer for examination; (4) the results of periodic examinations of specific occupational groups.

The New York Navy Yard is one of the larger shore establishments. According to the records of the Accounting Officer the total civilians on the payroll as of December 30, 1942 numbered 64,479, of which about one fifth were clerical and four fifths labor. The distribution of these employees by trade is shown in Table I. The number of civilians employed was practically trebled during the year 1942 but the relative numbers in the various shops maintained a fairly constant ratio. In other words, most of the shops exhibited relatively the same rate of growth. In calculating some of the rates used in this report a uniform rate of growth has been assumed.

Location and Nature of Occupational Disease Hazards

This information can best be presented by enumerating the pertinent data shop by shop. Only those materials and processes considered to be of significance will be mentioned. A complete tabulation of potentially harmful substances is given in Appendix A.

1. Fuel Plant, Shop 01. Benzol, carbon tetrachloride, metallic mercury, caustic soda, cresol, various paints, lacquers and driers. These materials are handled and stored, but not actually used in the Fuel Plant. Leaking or ruptured drums and containers constitute a potential health hazard but one which has not become manifest.
2. Central tool Shop, Shop 06. Abrasive wheels constitute the principal potential health hazard.
3. Material Laboratory, Shop 09. Cutting oils, abrasive wheels, benzol and various paints, lacquers and thinners. Flame testing of cables and the handling of numerous materials for testing give rise to many health hazards.
4. Shipfitter Shop, Shop 11. Cutting oils, abrasive wheels, metallic mercury, cresol, various cements, lacquers, paints, thinners, varnishes and driers, welding electrodes of varied composition and with varied coatings, acetylene, hydrogen and other compressed gases. The health hazards associated with electric arc welding far overshadow any other occupational health problem at this Yard. Burns and eye

injuries (flashes) constitute a major part of the accidents and the inhalation of welding fumes is by far the greatest cause of occupational illness. As will be shown later, welding fumes affect not only the shipfitters and welders, but also many other trades and constitute the outstanding cause of occupational disease morbidity. Closely related is the hazard created by acetylene cutting and burning.

5. Sheetmetal Shop, Shop 17. Cutting oils, fibrous glass and asbestos insulating materials, abrasive wheels, solder and rubber cements.
6. Forge Shop, Shop 23. Excessive heat and variations in temperature are the main health hazards.
7. Machine Shop, Shop 31. Cutting oils, abrasive wheels, lead, benzol, carbon tetrachloride, paints, lacquers, thinners and driers. Oil dermatitis is the principal health hazard.
8. Ordnance Machine Shop, Shop 36. Same as Shop 31.
9. Outside Machine Shop, Shop 38. Same as Shop 31 and 36. The outside machinists are among the trades indirectly affected by welding fumes (See Shop 11).
10. Electric Shop, Shop 51. Cutting oils, cables, abrasive wheels, benzol, carbon tetrachloride, lacquers and varnishes. The principal health hazards arise from working adjacent to welders and from handling cable containing chlorinated naphthalenes and diphenyls.
11. Coppersmith Shop, Shop 53. Lead, abrasive compounds, acids.
12. Pipe Shop, Shop 56. Abrasive wheels, refrigerant gases, rubber cements, paints and lacquers.
13. Pipe Coverer and Insulating Shop, Shop 58. Asbestos, adhesives, fibrous glass and related insulating materials.
14. Joiner and Shipwright Shop, Shop 61. Exotic woods, abrasive wheels, carbon tetrachloride, rubber cements, paints, driers and paint removers, fibrous glass and adhesives. Fibrous glass dust, and fumes from xylol or carbon tetrachloride in the adhesives constitute the principal health hazards.
15. Paint Shop, Shop 71. Numerous paints, lacquers, thinners, driers, paint removers, fire and gas proofing compounds, insecticides.

16. Public Works, Shop 79. Cutting oils, lead, benzol, carbon tetrachloride, paints, lacquers, thinners, paint removers.
17. Foundry, Shops 82 and 85. Silica sand, parting compound, lime, abrasive wheels lead, magnesium, manganese, zinc. The principal hazards arise from dust and from metallic fumes.

The lists of materials obtainable through the central files of the Supply Officer do not cover all hazardous materials used in the Yard. Some of the shops procure proprietary and open purchase items, some of which have been found to be injurious to health. It is practically impossible to maintain a complete file on these materials.

Effects of Exposure on Health and on Production

- A. Information obtained in periodic examination of specific occupational groups.

The periodic examinations performed during the year 1942 on civilians engaged in potentially hazardous trades are shown in Table II. With the exception of two men employed at the Clothing Impregnation Plant and exposed to tetrachlorethane, nothing was found to indicate that any worker in any of these trades was suffering from the results of the specific exposure. These two men were found to have enlargement of the liver and were transferred to other work. At the present time a survey is being conducted among electricians who handle cable which is impregnated with chlorinated cyclic hydrocarbons. Early indications are that an appreciable number will be found to have the so-called halowax dermatitis or chloracne. Those so affected will be removed from this exposure.

- B. Analysis of cases sent to the Industrial Health Office because of suspected occupational disease.

Accurate records of all cases referred to the Industrial Health Office have been kept since September 1, 1941. From then until December 31, 1942 a total of 792 cases were seen. When these cases are classified as to type of hazard responsible it is found that a majority were due to one of five agents. The five principal causes of morbidity are given in Table III, along with the number of cases attributed to each. It will be noted that only 307 (38.8%) of the cases referred were considered by the Industrial Health Officer to be truly industrial in origin although all 792 were seen because the employee or a medical officer had thought that there was a possibility of occupational illness being present. In the non-industrial group there was a relatively large proportion of cases in which no definite health hazard could be held in suspicion. These cases ranged literally from Acne to Zoster.

An analysis of the 307 cases of industrial illness by occupation and type of hazard is given in Table IV. It can be clearly seen in Table III and IV that the greatest cause of morbidity has been welding fumes and that many trades besides welders are affected. The second most common cause of

