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HEALTH AND SAFETY PROGRAM

INDUSTRIAL HYGIENE SURVEY OF

GULF SHIPBUILDING CORPORATION

CHICKASAW, ALABAMA

March 21, 22, 23, 25, 29, 1944

BY

KENNETH W. [illegible]

[illegible] (Ig) U.S.N.R. [illegible]

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LT. (Ig) R.N.V(S), USNR

NATIONAL HEALTH CONSULTANTS

DIVISION OF SHIPYARD LABOR RELATIONS

UNITED STATES MARITIME COMMISSION

RESTRICTED TO ADDRESSEE

Mr. Daniel S. King
Washington, D. C.

The following persons were interviewed or contacted during the course of this survey:

Mr. Harry Hill, Vice-President and General Manager
Captain M. E. Anthony, Assistant to the General Manager
Mr. Max Harrison, Personnel Director
Mr. Earle Smith, Safety Director
Mr. Clyde Walker, Day Shift Safety Supervisor
Commander V. M. Davis, USN, Assistant Supervisor of Shipbuilding, USN
Lt. (jg) J. K. Austin, USNR, Security Officer, USN
Mr. Ludwig, Sheet Metal Foreman
Mr. B. C. Posey, Sheet Metal Leaderman
Mr. Griffith, Electrical Superintendent
Mr. A. H. Townsend, Assistant Manager, Cafeteria

References: (a) Minimum Requirements for Safety and Industrial Health in Contract Shipyards, U. S. Navy Department - U. S. Maritime Commission; United States Government Printing Office, Washington, 1943.

(b) Industrial Health Survey by Dr. Philip Drinker, et al, August 12 - 15, 1942.

(c) Industrial Health Resurvey by Charles M. McGill, Surgeon, U. S. P. H. S., July 7, 8, 16, 1943.

The services of the Regional Health Consultant are available upon request to the Regional Construction Office, U. S. Maritime Commission, 548 Baronne Street, New Orleans 12, Louisiana.

The average number of employees for the month of February, 1944 was 9,590. The total number of man hours worked during the same month was 1,597,092.

The yard has three types of contracts. For the Navy, three destroyers and eleven minesweepers are being completed at the wet dock; four minesweepers are yet to be built. For the Maritime Commission, vessels of the C2-S-B1 type are being constructed - two are on the ways and two at wet dock. Under a Maritime Commission subsidy contract for the United Mail Line refrigerator ships of type R2-SU-AUI are being constructed - three are on the ways.

GENERAL RECOMMENDATIONS

(Section numbers refer to those in the body of this report and correspond with those in reference (a)).

1. Clean the toilets in the Plate Shop. Section H-9.2.

2. Provide wash basins, industrial skin cleanser, and towels at the various toilet rooms for men. (These need not be inside the buildings. They could be placed on flooring outside the buildings and covered by a roof.) Section H-9.2.

3. Supply hot water to the proposed cleaning basins for respirators and goggles in the Safety Store room. Section H-10.

4. Return all used respirators from the various tool rooms to the safety store for cleaning and sterilizing before re-issue. Section H-10.

5. In the interest of attaining more faithful use of respirators by scalers and buffers, make available to them a choice of several types of approved dust respirators. Section H-11.1.

6. Stricter enforcement by supervisors of the wearing of eye protection by those most exposed to eye hazards should be put into effect. Section H-13.2.

7. Show the sound-slide film, "Eyes for Victory" to all supervisory Personnel and to new hires. Section H-13.2.

8. Show the sound-slide film, "Welders - To Your Health", to welding department supervisors for the purpose of improving the use of local exhaust hoses by welders in con-

fined spaces. Section E-13.5.

9. In the pipe-covering shop, materials should be wetted before cutting whenever possible. Section E-13.7.

10. Good housekeeping should be observed in the pipe-covering shop and debris should not be allowed to accumulate. Section E-13.7.

11. Improve washing facilities in the Electric Shop and promote their use by electricians regularly working with heat and flame-resistant armored cable. Section E-13.8.

12. Additional blower equipment, as described in the body of this report, should be acquired. Section E-14.

N-9 Sanitary Facilities

9.1 Feeding

In January of this year, operation of the plant cafeteria was taken over by the shipyard management. Mr. V. Gadenhead, a former ship's steward and hotel manager was placed in charge. Under his direction, conditions have improved markedly, and the public health rating of the cafeteria, as given by inspectors from the State Health Department, has risen from 65 to 90. Members of the Health Department make inspections once or twice each month.

A survey of the cafeteria facilities disclosed no objectionable or insanitary conditions. At the present time the cafeteria compares favorably with the best observed in numerous shipyards, and the officials responsible for improving the operating conditions are to be commended for their actions.

9.2 Water supply, sewerage, and waste disposal

Water supply and sewerage disposal have been covered in references (b) and (c).

A resurvey of existing toilet facilities in the yard is being undertaken by management with a view toward revising the facilities both as to number and location. The continued employment of women and the shifting of concentrations of employees to different areas has made such a survey necessary.

A number of toilet buildings about the yard

were inspected and with the exception of the men's toilets in the Plate Shop, were found to be in fair condition. Commodes in the Plate Shop had evidently not been cleaned for some time. One was not in good repair and was in a filthy condition.

No washing facilities are provided at any of the general yard toilet locations. Washing facilities are provided in the large locker room outside the yard, but otherwise none is easily available for the large majority of yard workers. Thus few of them have an opportunity to wash up before taking lunch.

H-10 Respiratory Protective Equipment

MSA "Comfo" metal fume respirators are stocked in the safety store, the tool room of the Plate Shop, and in the supply room of the Paint Shop. The Paint Shop also stocks Sinks and American Optical Company chemical cartridge respirators, Sinks gauze masks, and "Tacco" Air-line hoods.

In the Plate Shop little attempt is made to clean and sterilize used respirators before they are re-issued. The Paint Shop issues equipment to individual painters who use the equipment until it is fouled up and discarded.

The cleaning and sterilizing procedures for used respirators are poor and do not satisfy Section H-12 of reference (a). Recently a work order has gone through for running water and a sink to be installed in the safety

store.

A supply of hot water to be used in cleaning the respiratory protective equipment was omitted from the proposed plans. Hot water is very essential for satisfactory cleaning of the equipment prior to sterilization. It is recommended that a source of hot water be installed in the safety store.

It is recommended, therefore, that all used respirators be returned from the various tool rooms to the safety store for cleaning and sterilizing by the store attendant according to approved methods outlined by section H-12 of the "Minimum Requirements ...". Properly sterilized and repaired equipment can then be assigned back to the tool rooms. It is also desirable to package the equipment after sterilization.

By proper handling, conservation and salvage of equipment may be attained, and the use of the equipment by workers is encouraged.

H-11 <u>Jobs requiring respiratory protective equipment</u>

11.1 Dust

Metal fume "Comfo" respirators are issued from the Paint Shop to workers doing scaling and buffing. Bureau of Mines Approved dust respirators would be sufficient and, because of their somewhat lower breathing resistance, might be used more faithfully by buffers and scalers. It is suggested that several types of approved dust respirators

be tried and the type preferred by the workers be procured for their use.

11.2 Metal fumes and smokes

Most use of the metal fumesre pirators is made by welders working under the shelter near the plate shop when their work involves galvanized steel. Few, if any, welders on the hulls appear to use respirators.

A considerable exposure of welders and brazers to zinc fumes is present in the Sheet Metal Shop. However, an exhaust system, consisting of two Sawyer blowers and one ILG blower and lengths of 6-inch flexible metal hose, provides and exhaust hose for each worker. The observed use of the exhaust hoses was very good, each welder or brazer being careful to keep the end of the "sucker" within a short distance from the source of fumes.

11.3 Solvent vapors

Spray painting is done to some extent in the Paint Shop and on a large scale near the pickling tanks and on the ships. Spray men use chemical cartridge respirators when their exposure to mists and vapors is minor. When working in heavily contaminated atmospheres or with red lead, Rinns gauze "respirators" are worn underneath the Tasco air-line hoods.

H-12 Sterilization of Respirators

See Section H-10 of this report.

H-13 Prevention of Industrial Diseases

13.2 Arc flash and foreign body eye injuries

Out of a total of 3348 first aid cases reported during February there were 493 arc "flashes" and 1134 cases of foreign bodies in the eye.

Eye cases thus constitute about 50% of the total new cases.

Most of these eye injuries are minor in character. It should be pointed out, however, that among them there are many potential cases of lost eyes, and certainly the time-loss from even minor eye injuries - in reporting to first aid for initial and re-treatments - is an item to be considered. Enforcement by supervisors of the wearing of eye protection by those most exposed to eye hazards is needed to reduce the incidence of eye injuries. It would be helpful also to show the sound-slide film "Eyes For Victory" to all supervisory personnel and to new hires. The film and record can be purchased from the National Safety Council.

13.3 Lead Poisoning

The spray painting with red lead presents a serious danger to those exposed to lead mists - not only to the painters themselves, but also to others in the immediate vicinity of spraying operations. Painters must wear the protective equipment provided, and the work should be segregated as much as possible. If it is necessary for others to be in the vicinity of spray work, they, too, should

wear protective equipment.

Exposure of welders and burners to lead fumes is effectively reduced by the practice of leaving a margin of four to six inches at the edge of plates free of red lead paint until welding has been completed.

13.4 Solvent vapors

See section H-11.3 of this report.

13.5 Zinc fume fever (Zinc chills or shakes)

There were 6 cases of metal fume fever reported to the first aid station during January, none during February.

On board the hulls it was noted that most welders working on galvanized steel were careful to use the local exhaust ventilation hoses within a short distance from their arcs. Continued supervision and instruction of welders about the proper use of exhaust ventilation will insure a low incidence of metal fume fever cases. The local exhaust hoses, if the openings are kept within 6 to 8 inches of the arc, will remove practically 100% of the fumes produced.

13.6 & 13.7 Fiberglas and Asbestos

No abuses in the use of Fiberglas were noted. An occasional case of dermatitis from the source is reported.

The pipe-covering shop was inspected for evidences of asbestos dust exposure. Amosite, which is about 80% asbestos, and asbestos cloth are the principal materials handled. Although the air of the shop was not particularly

dusty at the time of inspection, workmen reported that conditions became very bad at times, and the accumulations of dust on wiring and structural members of the building bore out their statement.

Prolonged inhalation of asbestos dust may result in a disabling lung condition known as asbestosis. The onset of the disease is slow, and its course resembles that of silicosis.

To control dust in the shop the following procedures are recommended:

1. Materials should be worked wet whenever possible. Small sprinkler bottles to be used by the workmen should be provided.

2. Good housekeeping should be observed, and debris should not be allowed to accumulate. Scrap material on the floor should be wetted down.

13.8 Silicosis

Sandblasting and zinc metallizing are done in the open in a remote section of the yard near the pickling tanks. Satisfactory protection is afforded the sandblaster by an approved supplied-air mask and an abrasive blasting hood. A supplied-air mask is worn by the metallizer also.

Helpers working near the metallizing operations should be cautioned against breathing the zinc fumes produced. If it is necessary for them to expose themselves, metal fume respirators should be worn. These respirators

are provided but negligence in their use was observed.

13.9 Dermatitis

Although a very few cases of dermatitis have occurred among the electricians, none has been of the chloracne type traceable to the handling of electrical cable containing chlorinated hydrocarbon synthetic waxes in the insulation.

Much of the heat and flame-resistant, multi-conductor cable for Navy vessels does contain synthetic waxes and the possibility of an outbreak of chloracne, especially during the hot weather to come, among electricians stripping and handling such cable is extremely good. Present washing facilities in the electric shop are inadequate. There are not enough taps, and no soap and paper towels are provided. It is recommended, therefore, that adequate washing facilities be provided and that the exposed men be cautioned to wash up thoroughly at the end of each half shift.

H-14 Ventilation Standards

14.2 The administration of the Ventilation Division is under the Sheet Metal Department, the foreman of which is Mr. Ludwig. It is under the direct supervision of a leadsman on each shift. The Safety Department takes an active interest in the maintenance of proper working conditions and cooperates with the Sheet Metal Department in the exchange of information on specific local conditions and

on ventilation procedures.

14.3 Personnel of department

A. In addition to one leadsrman on each shift the ventilation crew is composed of:

Day Shift		Night Shift	
White	18	White	8
Colored	8	Colored	5

At the present time a total of twenty-one vessels in various stages of construction require the use of blower equipment. Since this total includes three destroyers and seven large size cargo and refrigerator ships the demands for blower service are great. Increased demands in the coming hot weather are anticipated and, as is usually done, there will be a need for the appointment of more men to the ventilation crew, especially on the night shift, on which a large amount of production welding is done. Appointment of men to the crew now would give ample time for their training by the supervisors before the hot weather starts.

B. Ventilation men are trained by the supervisor on the job. This should be augmented by the showing of the sound-slide film "Welders - To Your Health", a copy of which is in the possession of the Training Director in the shipyard.

E-14.4 Type of Equipment

Number and description of fans on hand:

32 ILG centrifugal blowers; ILG Electric Ventilating Company, Chicago, Ill., 1 HP motor about 800 cfm capacity.

4 25 Sawyer "small Sawyer Masters"; Sawyer Electric Manufacturing Company; rated at 1200 cfm, 1 HP motor.

193 "Large" Sawyer Master Blowers 2½ HP motor, 1200 cfm.

2 American Blower Company propeller type fans axial flow 3 HP 30,000 cfm. No fans are on order at the present time. 30,000 feet of 3-inch flexible metal duct; an additional 10,000 feet are on order.

About fifteen 12-foot lengths of 8-inch diameter flexhaust duct has recently been obtained for use on board the hulls under construction.

It will be noted that, with the exception of the two large propeller type fans which are used, to supply air through the destroyers' permanent duct work, the fans are of small capacity and adapted particularly for local exhaust through short lengths of three-inch flexible metal tubing.

H-13.4 Ventilating Procedures

Local exhaust (the removal of fumes from their source, as distinguished from general ventilation, the supply of large volumes of air to dilute the contaminants) is the means generally relied upon in this yard. Men of the ventilation crew do a good job of providing welders in confined spaces with local exhaust hose and it was noted that discharge is always made to the open air.

Welders in this yard are above average in making proper use of the local exhaust hoses; there remains some room for improvement, however, as it was noted in several ships that some welders failed to hold the end of the exhaust hose to within six or eight inches of the arc.

Double bottom sections of the cargo and refrigerator ships are ventilated by exhausting air through a hole especially cut for the purpose in the tank top about midway between the two manholes. On one ship we observed that this method was supplemented by supply of air through three-inch hose to individual welders in the most remote sections of the double bottom tanks. It now requires three blowers to effectively exhaust from one tank section whereas, if larger blowers were provided, one would do the job, with a consequent saving of installation and maintenance of time.

Larger blowers, of sufficient pressure to deliver air through long lengths of duct to remote spaces, would be

needed also on the fore and after peaks, and machinery spaces of the cargo ships.

Centrifugal blowers, powered by 8 HP motors, capable of delivering about 8000 cubic feet of air per minute are recommended. About 10 such units, supplemented by sufficient flexible metal duct of five-inch diameter to complete the installation, are needed to make the recommended improvements in the ventilation procedures.