

Industrial Hygiene Education Materials

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WAYS TO USE INDUSTRIAL HYGIENE EDUCATION MATERIALS

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PHOTOGRAPHS.

Supply glossy copies of photographs to editors of newspapers and journals, for publication in picture sections or for illustrating feature stories or articles prepared by members of industrial hygiene staffs. Use photos to illustrate talks when slides or motion pictures cannot be shown. Make a display of photographs to "dress up" the conference room, meeting hall, or speakers platform. (Specifications for an inexpensive portable display panel available from the U. S. Public Health Service, Bethesda Station, Washington, D. C.)

The Public Health Service will lend glossy copies, size 8 x 10", of the photographs listed in this catalog to responsible agencies. Give the serial numbers in ordering. Photographs must be returned within 30 days. If published, the photographs should carry the credit line: "U. S. Public Health Service Photo."

PAMPHLETS.

The pamphlets prepared by the Public Health Service deal with specific health problems of industrial workers. Distribute these at the close of meetings or discussion groups. Place a few copies in racks in the dispensary, union halls, recreation rooms, etc. Mail to the homes of workers so that the entire family may have an opportunity to read them. Provide pamphlets for workers waiting for physical examinations. Use pamphlets as a "follow-up" for personal interviews with patients in the dispensary. With large audiences, it is more economical to distribute pamphlets individually at the close of the meeting than to leave large stacks of them on a table.

Pamphlets may be purchased in quantities through the Superintendent of Documents, Washington, D. C. Give name of pamphlet and series number.

POSTERS.

Posters attract attention, serve as reminders, and are excellent "dressing" for large meetings. Display posters in workshops, rest rooms, wash rooms, hallways, employment offices, union halls. Change posters frequently. It is better to show one subject in many different places at the same time than to show several subjects. To keep the poster story fresh, appoint some one person in the plant, the union, or study group to be responsible for their effective display.

Posters may be purchased in quantities through the Superintendent of Documents, Washington, D. C. Give name of poster and series number.

FILMS.

Although the Public Health Service has few films on industrial hygiene, others are available which deal with diseases of particular importance in industrial health conservation. Use films at mass meetings and large health classes. Select short films and if the audience is large, show the motion picture at the close of the program. Select a film on the most important subject discussed at the meeting. If a film is to be shown as part of a health lecture, cut short the talk and the question period. Health meetings should not last longer than one hour.

RADIO.

Transcribed radio dramas on industrial hygiene and on specific health problems may be borrowed from the Public Health Service. State and local agencies may arrange to have these broadcast over local radio stations. The transcriptions are also useful adjuncts in small discussion groups.

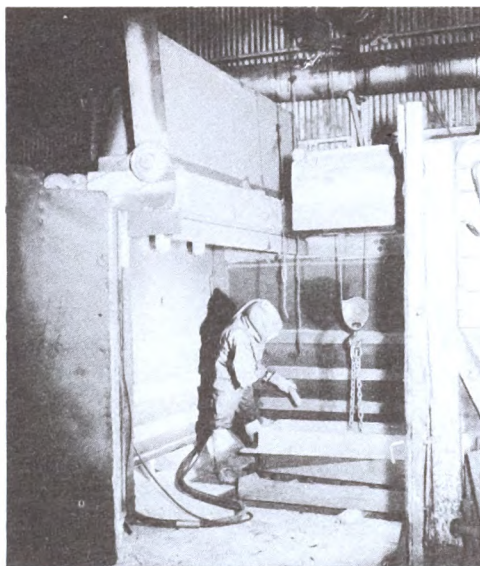
PHOTOGRAPHS

FOUNDRY HAZARDS

Sand and silica dust are serious health hazards in foundries. Nearly one-fourth of the workers employed in iron and steel industries are exposed to silica and silicate dusts. Engineering and mechanical controls such as air filtering arrangements, dust traps, water sprays or other wetting down methods, and enclosure of abrasive processes are the best protection against these hazards. Preliminary and periodic physical and X-ray examinations of employees should be given.



PH 3036-E. When the "heat comes off" in an iron foundry. The face of the furnace has been painted black to reduce glare.



PH 3196-D. Sand blasting in a foundry where large parts are made, requires special safety equipment. An enclosed chamber with exhaust ventilation special lighting, and an air line respirator for the worker.



PH 3204-D. The above special enclosed sand-blasting chamber is not only equipped to protect the worker inside, but to prevent dangerous silica dusts from clouding the surrounding atmosphere.



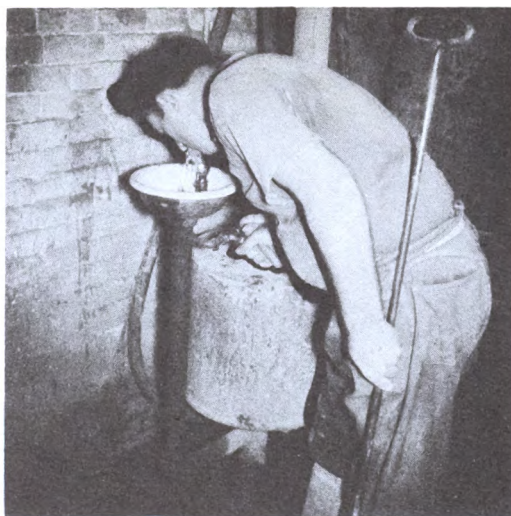
PH 3201-D. Not a man from Mars, but an American war worker wearing a modern approved air-line respirator, gloves, leggings, and special steel-reinforced shoes.



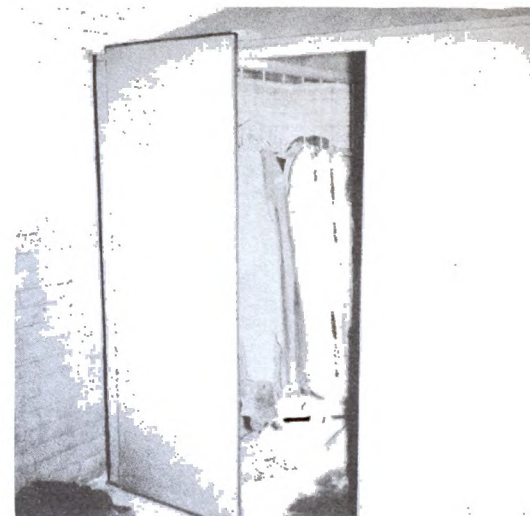
PH 3059-E. The safety leggings of chrome leather, reinforced with steel can be removed with one swift jerk in case the molten metal splashes the pourer's leg.



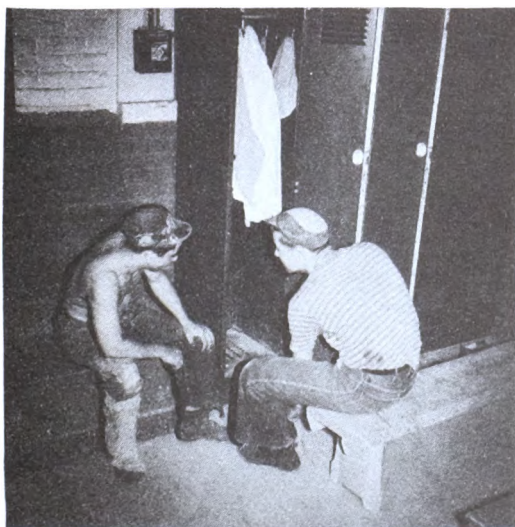
PH 3056-E. Salt tablets and drinking water, kept close to the job, are needed by all workers whose jobs expose them to high temperatures.



PH 3026-E. An approved type of bubble fountain proves a welcome drink for the foundry worker.



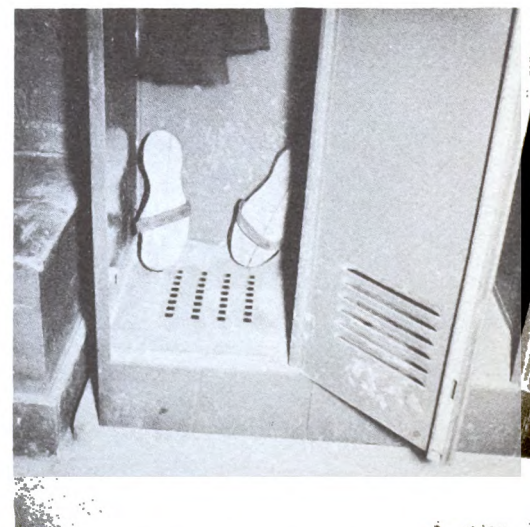
PH 3049-E. The men's work clothes may be washed and dried overnight in this foundry drying room which provides hot air.



PH 3039-E. Ventilated, individual lockers for foundry workers add to their comfort and reduce the chance of sickness.



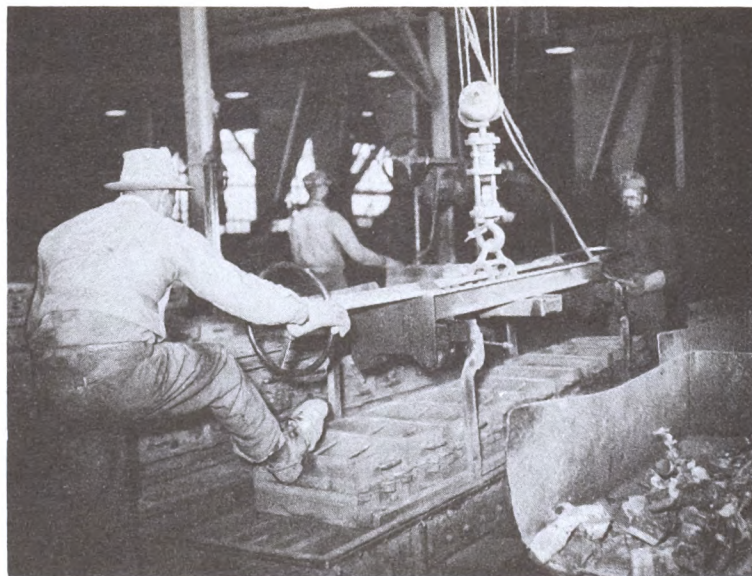
PH 3040-E. Clean fresh air provided by the ventilation system removes grit and dries the workers' clothes.



PH 3041-E. Ventilation is provided through the grilled floor of this foundry worker's locker. Note the bath sandals to prevent athlete's foot.



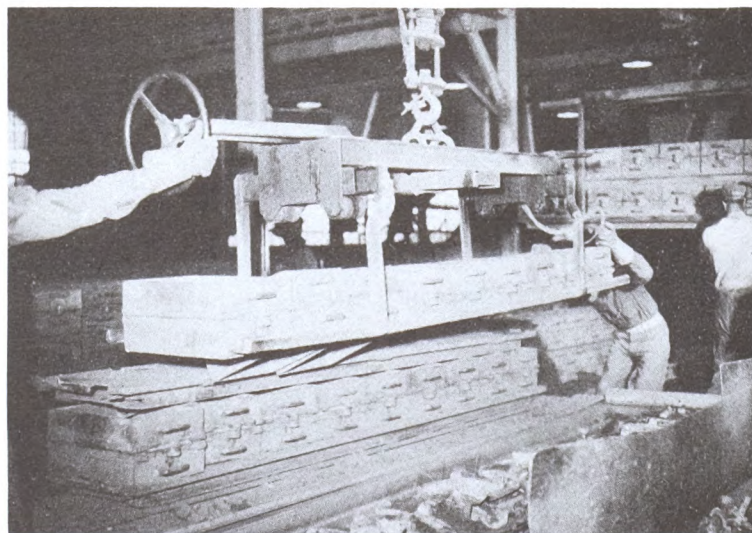
PH 3020-C. This unusually well-lighted and well-ventilated foundry has a concrete floor which is vacuum-cleaned each day, taking up every bit of sand and dust.



PH 3205-D. Note the steel toe-cap on this foundry worker's shoe in the foreground to prevent foot injuries from falling heavy objects.



PH 3197-D. Some jobs in a foundry cannot be protected by special ventilation equipment. In operating a portable electric grinder the approved type of mask and goggles give adequate protection.



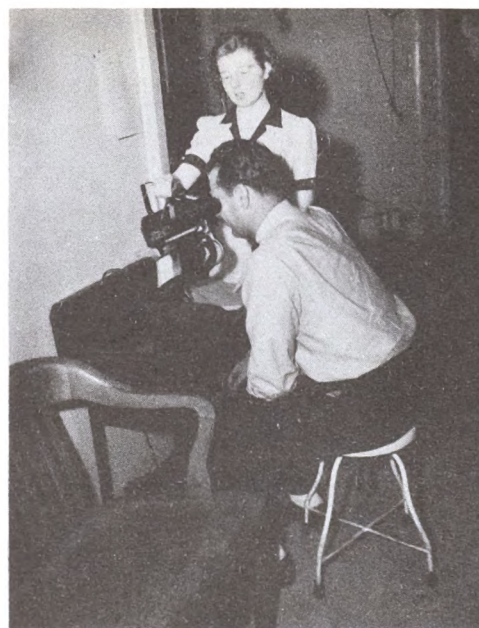
PH 3202-D. An automatic shake-out with down draft ventilation. Without this special ventilation, this picture would show nothing but a cloud of dust.

PRE-PLACEMENT EXAMINATION

The purpose of the pre-placement examination is to utilize every available worker, placing him in a job which he can do safely and efficiently without endangering himself and his fellow-workers. Physician, placement manager, and safety engineer together determine the job in which each new worker can achieve peak production. The pre-placement examination includes: complete medical and occupational history, physical examination, test of eyesight, blood pressure reading, laboratory analysis of urine, blood count, blood test for syphilis, and X-ray picture of the chest.



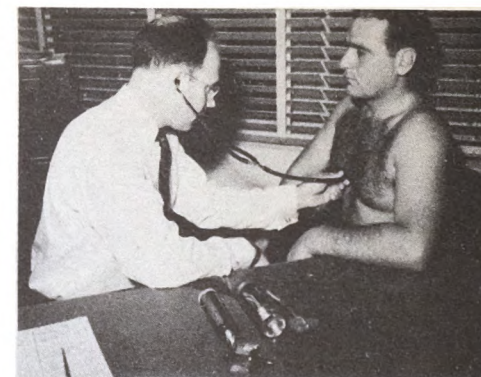
PH 2978-D. The first and last requirement in industrial medical service is good record keeping. The record of each worker is kept by the medical department and the findings remain confidential.



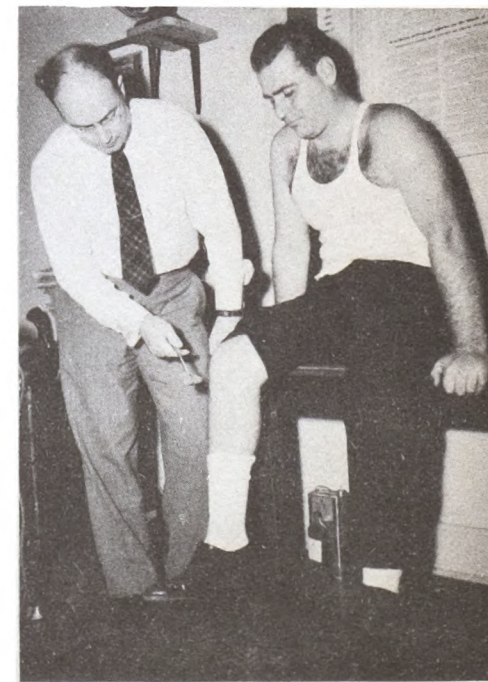
PH 3004-C. The test of vision is important so that visual defects may be corrected by proper glasses.



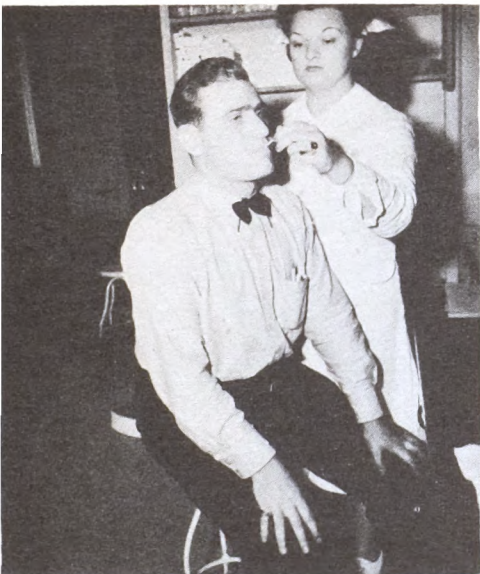
PH 3010-C. Recording the blood pressure is an important step in the physical examination.



PH 2944-C. The physician gives the applicant a thorough physical examination including an examination of the heart.



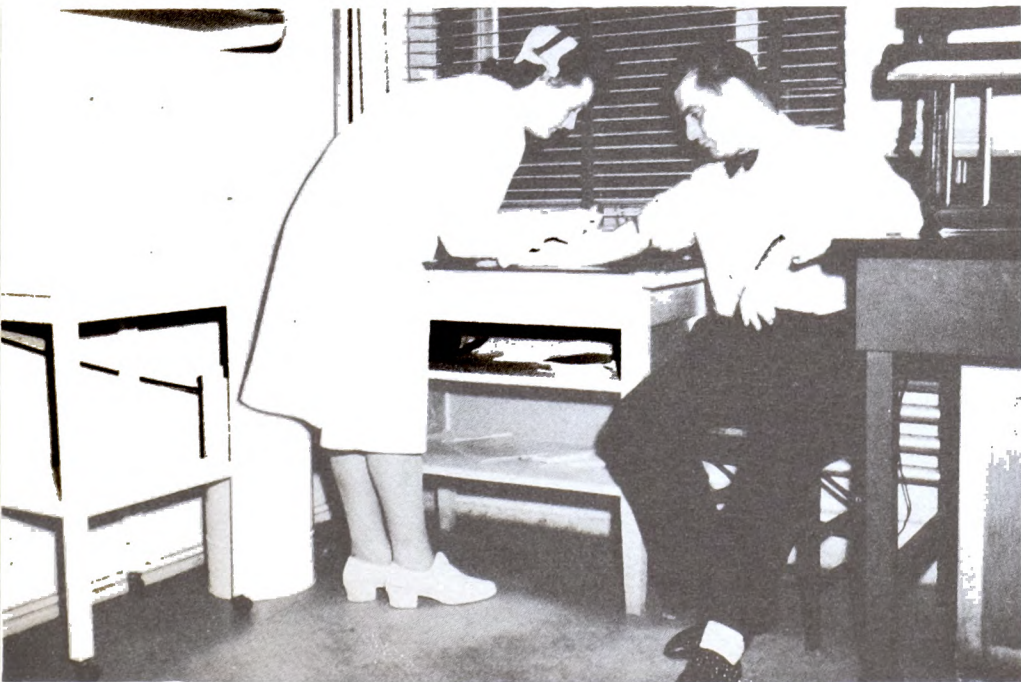
PH 2955-C. As part of the neurological examination, the physician is testing the applicant's reflexes.



A



B



C

A
PH 3001-C. Recording the body temperature is routine
in a thorough physical examination.

B
PH 2980-D. An X-ray picture of each worker's chest
is especially important in the prevention of tuber-
culosis.

C
PH 2997-D. The examination includes the taking of a
blood sample for special tests.

INDUSTRIAL NURSING

The industrial nurse plays an important role in a plant's program for improved health and efficiency. She is in a strategic position to enlist the cooperation of both employer and employee, not only in the prevention and control of disease arising out of occupation, but also in promotion of general health and mental well being.

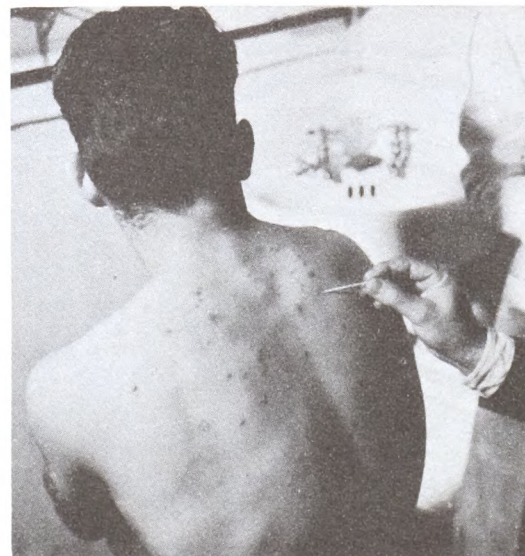
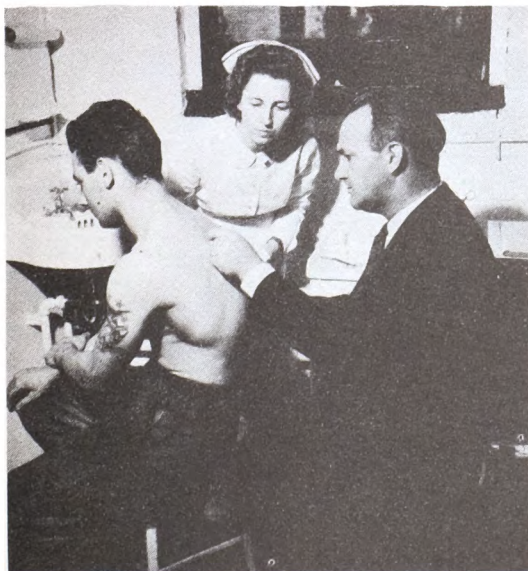
One of the nurse's responsibilities is to become thoroughly familiar with the industrial process in the plant, the occupational hazards, and methods in use for their control. The nurse is the logical person to follow through cases of absenteeism by visits to the home of the worker.



PH 2985. Less than two percent of workers in small plants have either part-time or full-time nursing service. This nurse began as a part-time nurse in a small plant. After two months the management decided that it would pay to make her a full-time nurse.



PH 2952. When the nurse is in doubt as to whether a worker should be referred to the insurance doctor, she consults the State Industrial Hygiene service and a physician examines her patient.



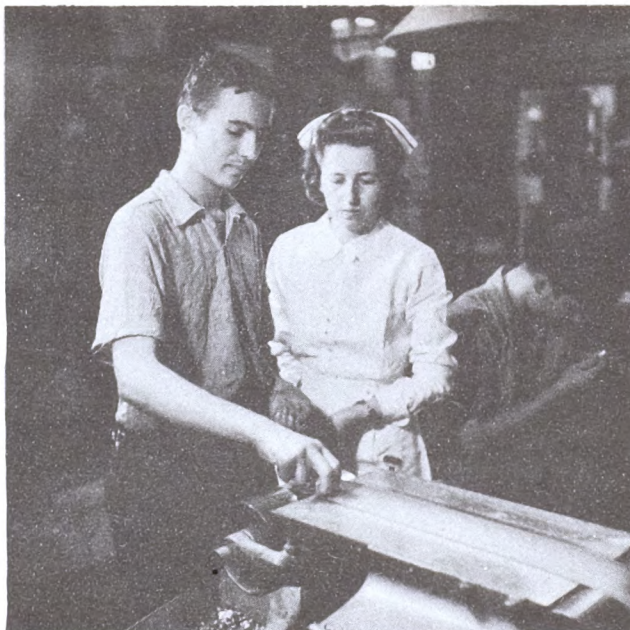
PH 3022-C. The physician of the State Industrial Hygiene service tells the nurse that this worker has ordinary acne, not oil dermatitis.



PH 3014-C. The nurse's job is to observe all sickness and accidents among the workers and to obtain medical advice on the causes, prevention and cure.



A



B

A
PH 3043-E. The fumes of this solvent bath proved to be a health hazard for this worker. At the nurse's suggestion, he transferred to another job in the plant.

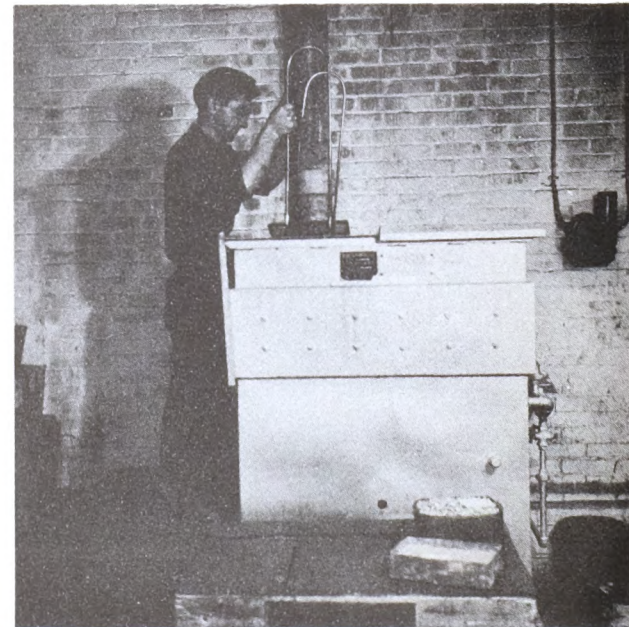
B
PH 3038-E. The same worker on a new job which did not expose him to the poisonous fumes. The boy's health has noticeably improved since the transfer.

C
PH 3045-E. This press machine operator had many accidents to his left hand. The nurse found that poor vision in the left eye caused the accidents.



C

D
PH 2945-C. Here the same worker is cleaning metal parts, a job which offers no hazard to his left hand. He had had no accidents since the transfer.



D

A PLANT DISPENSARY

Every plant should have a dispensary staffed by trained nurses, under the supervision of a physician. Although equipment and size will vary according to the plant, the dispensary should provide emergency medical care for illness and accidents. It should be large enough to allow laboratory tests, privacy in making physical examinations, and beds for sick or injured workers. The dispensary should be located in the quietest part of the building and should be light, airy, and spotlessly clean.



PH 2991-C. Careful record keeping is a requirement for every well-run industrial dispensary.



PH 2930-C. A busy plant dispensary at the end of the shift where minor injuries are treated and first aid given to emergency cases.



PH 2934. A fresh dressing at the end of the shift is for the slight arm injury which might otherwise become infected.



A

A
PH 2949-C. Injuries to the fingers and hands are the most frequent accidents in industry.



B

B
PH 2942-C. At the end of the shift this young worker reports to the dispensary for treatment of a wrenched arm.



C

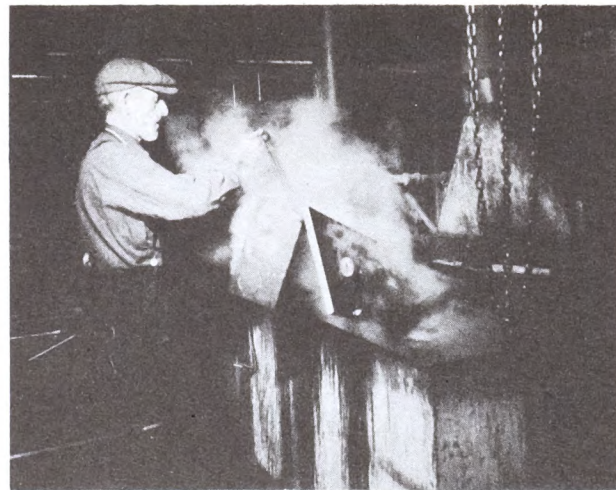
C
PH 2947-C. Emergency treatment for an eye injury. Injuries to the eyes are second in frequency to those of the extremities.

PLANT HOUSEKEEPING

Good housekeeping is rule 1-A for the control of occupational hazards. It means maintaining an orderly workmanlike shop indoors and out. Good housekeeping is everybody's job. Therefore, the workers should be trained in the safe way of doing their jobs. Good housekeeping and good practices will eliminate many needless hazards.



PH 2946. Lack of space, poor lighting and poor housekeeping increases the hazards of industrial work.



PH 2967. Fumes that may be poisonous could be controlled by proper ventilation and safe practice.



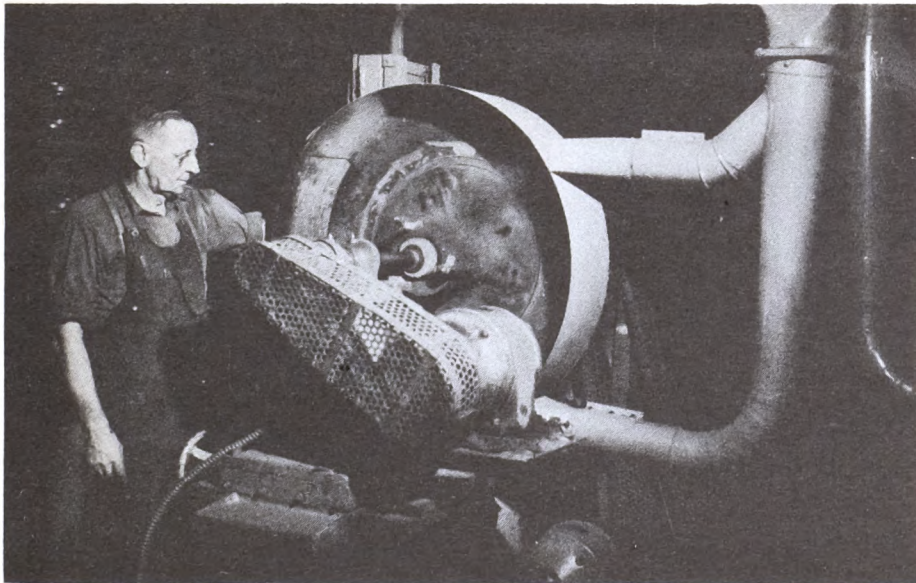
PH 3046. Poor practice in dipping a rack and metal parts into the cleansing solvent, the fumes of which are toxic.



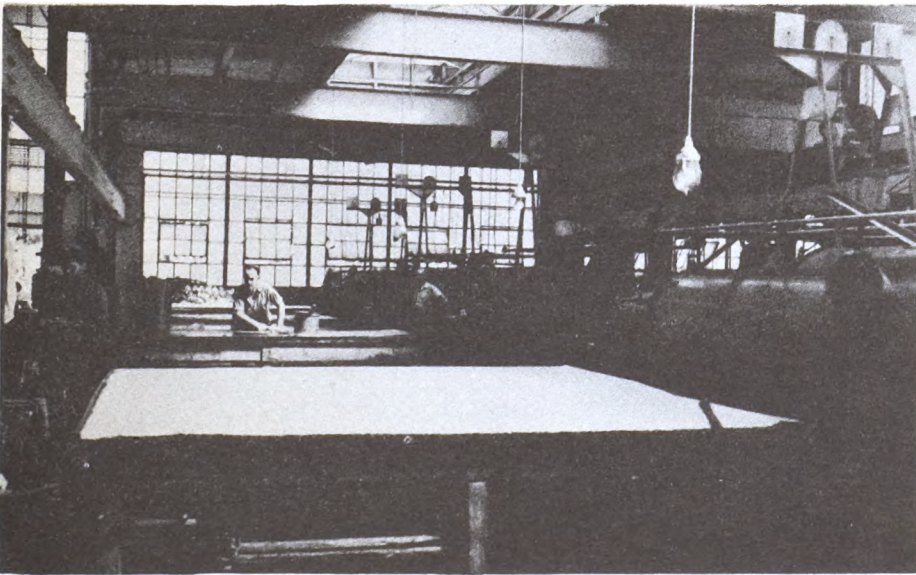
PH 2975-D. Poor lighting and overcrowding of machines increase the hazards of industrial work.



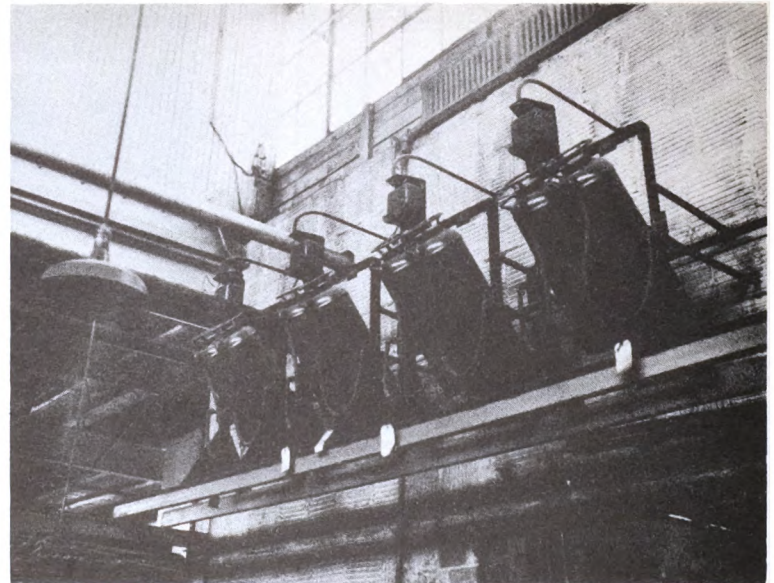
PH 3012. Machines too close together, unguarded machinery, and poor housekeeping make dangerous working conditions.



PH 2953-C. The dangerous dust from this grinding operation is carried out of the workshop atmosphere by effective exhaust ventilation. Note the well-guarded moving parts of the machine.



PH 2959. Good lighting and ventilation in a factory making asbestos products.



PH 3018. Fire hazard in any plant. These double-barrelled fire extinguishers automatically throw down a curtain of fire-fighting chemicals between two work rooms.



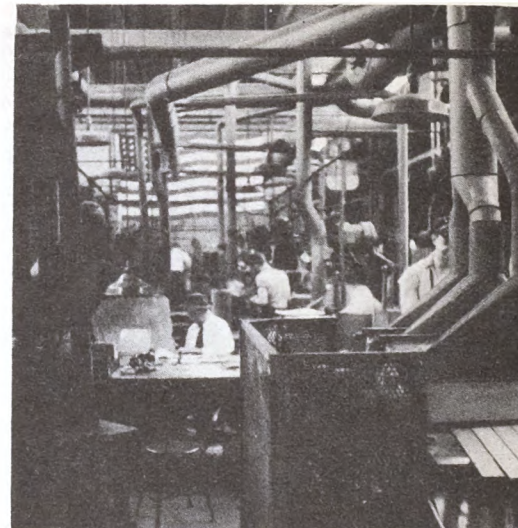
PH 829-M4. "Time out" in the women's rest room. Rest periods at the end of the first quarter and again at the three-quarter mark of the shift help prevent fatigue.



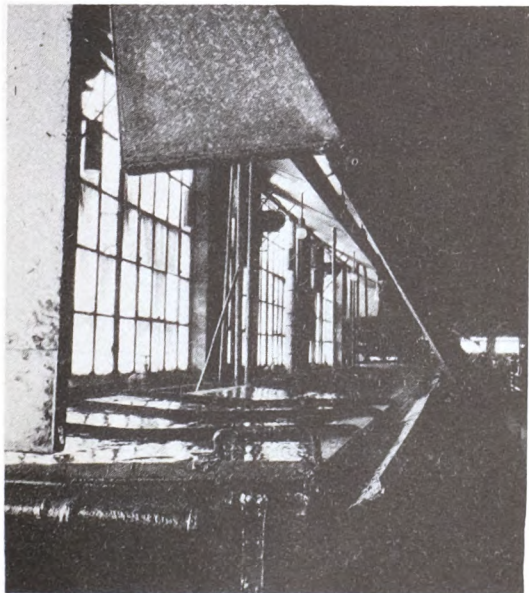
PH 3055-E. On jobs where exhaust ventilation is impossible, workers must wear approved masks to prevent exposure to dangerous materials.



PH 3050



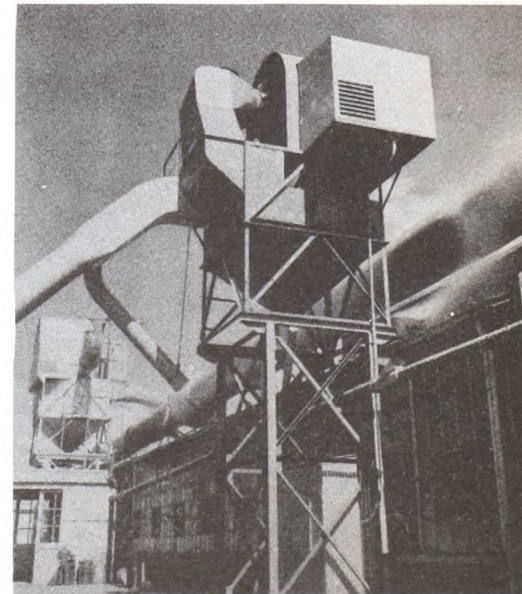
PH 3042. Well-guarded moving machinery, complete exhaust ventilation where there might be exposure to poisonous dusts and fumes, and good housekeeping.



PH 2929. A hinged enclosure (raised to permit the taking of the picture) keeps dangerous fumes in this impregnating process away from workers.



PH 3050 & PH 3047. Modern hand-washing facilities help to prevent skin diseases and other ailments.

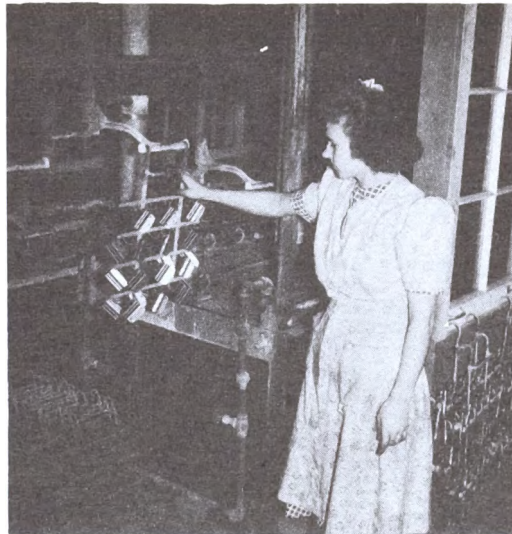


PH 2943-C. A Rcto-Clone outside a factory separates contaminants from the air. It works on much the same principle as a cream separator.

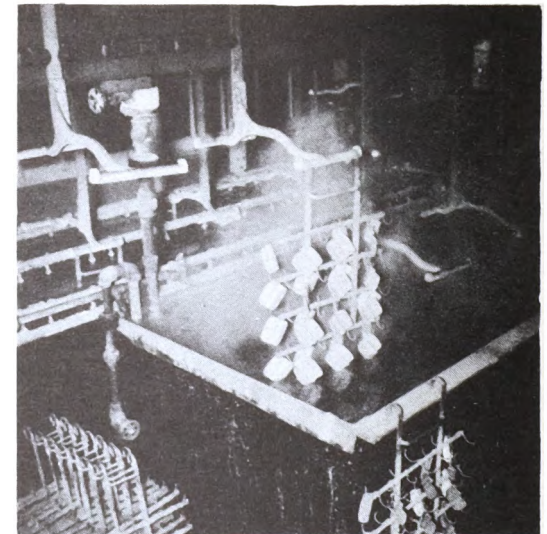
METAL PLATING

In metal industries other than iron and steel many workers are exposed to metallic dusts, siliceous dusts, and gases. Over 16 percent of the workers in these industries are exposed to lead and its compounds. Over 15 percent are exposed to carbon monoxide. Many are exposed to cyanide, chrome, and other metal fumes.

The acid vapors and metal fumes in plating processes usually necessitate isolation and ventilation. On some jobs, respirators should be worn until the situation is under control. Manual processes should be eliminated where possible by installing enclosed automatic conveyors.



PH 3031-E. The first glass-enclosed continuous plating process to be installed in the United States.



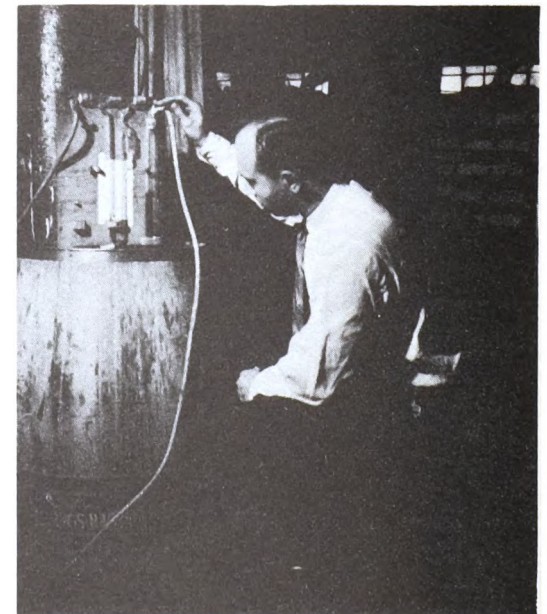
PH 3024-E. Inside view of the glass-enclosed continuous plating process. Exhaust fans carry the fumes outside the building.

ENGINEERING SERVICE

An important part of an industrial hygiene survey in a plant is the determination of exposures to poisonous dusts, fumes and gases. The engineering and chemical services of State and local industrial hygiene units are prepared not only to detect hazards in the working environment, but also to recommend methods by which the hazard may be eliminated or at least brought within safe limits.



PH 2964. Industrial Hygiene engineer taking air samples where exposure to poisonous fumes is suspected.



PH 2969. Rate of sampling is controlled by another engineer.* Samples are analyzed at the laboratory.

GOOD LIGHTING

According to the estimates of certain insurance companies, 25% of all accidents are due to bad lighting. Studies also show an increase in accidents ranging from 50 to 100% during winter months when artificial lighting is employed. The British Departmental Committee on Lighting in Factories and Workshops found 29% more accidents during hours of artificial lighting than during hours of natural lighting. Accidents to the eye are more common in night shifts than in day shifts, owing to the need of bringing the eyes nearer to the work.



PH 3200-D. The composing room of this medical publishing house in Baltimore provides modern lighting.



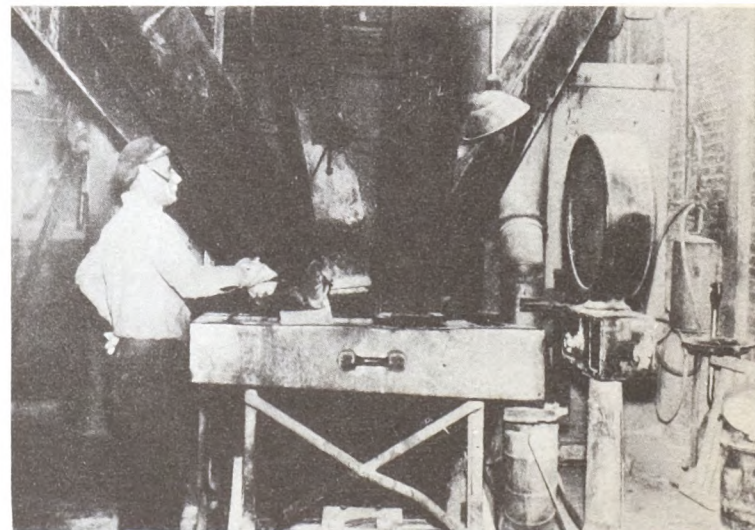
PH 3195. A composer at work in a medical publishing house in Baltimore under modern lighting conditions. Eyestrain not only impairs efficiency and slows up work, but is one of the first causes of headache and fatigue.

GLASSMAKING HAZARDS

In the glassmaking industry workers are exposed to extreme heat and temperature changes.

Exposure to silica dust, silicate dust and nonsiliceous dust are other potential dangers in the clay, glass, and stone industries. Thirty-four percent of the workers in these industries are exposed to silicate dust, over 26 percent to silica dust, and 17.8 percent to nonsiliceous dust.

Exhaust ventilation at dust sources, and good ventilation will help to control the chief hazards in the glass industry.



PH 830-M3. This is an excellent example of exhaust ventilation applied at the dust source. Without proper engineering control this picture would show only a cloud of dust.



A



PH 829-M5. A team making glass bottles in a glass factory. The heat is intense, so the workers are supplied with cooled air.



B



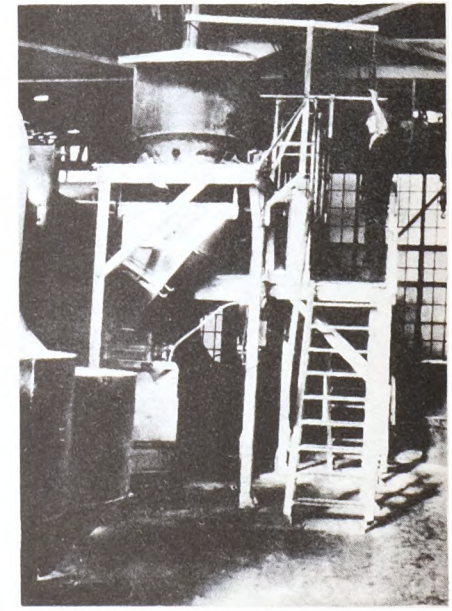
C

A
PH 829-M2. The network of pipes over and around this glass furnace carry off dangerous fumes and supply cooled air to the workers.

B
PH 831-M2. Glass blowing is one of the highly skilled trades vanishing before the machine. The characteristic "chipmunk cheeks" of glass blowers are seldom seen in this country.

C
PH 832-M5. Grinding glass stoppers into glass bottles. Wet grinding minimizes dust exposure.

D
PH 829-M1. Charging a glass furnace with a mixture of finely pulverized materials. Automatic charging process eliminates dust exposures.

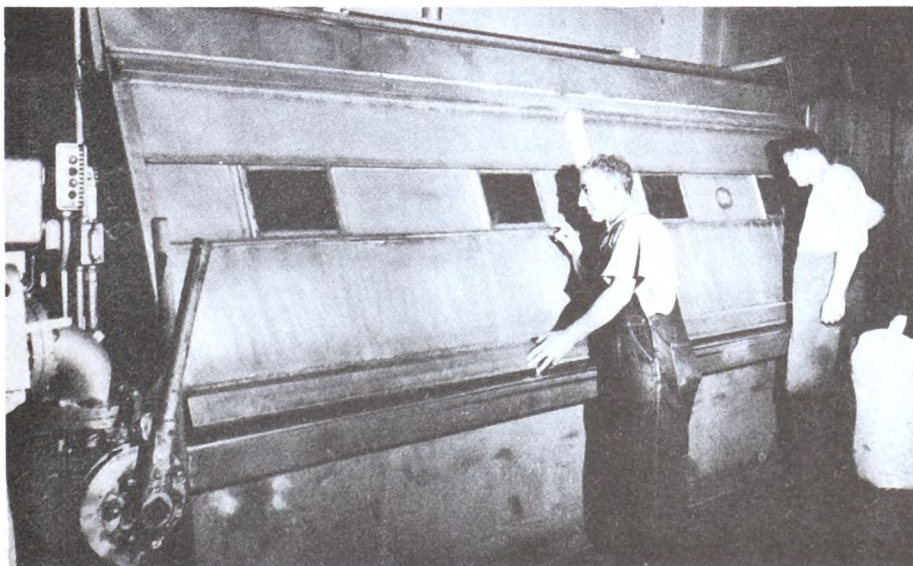


D

DYEING HAZARDS

Unless control is established, workers in the dyeing industry are exposed to extremes of heat, dampness, dyes and chemicals of which the fumes and vapors may be poisonous.

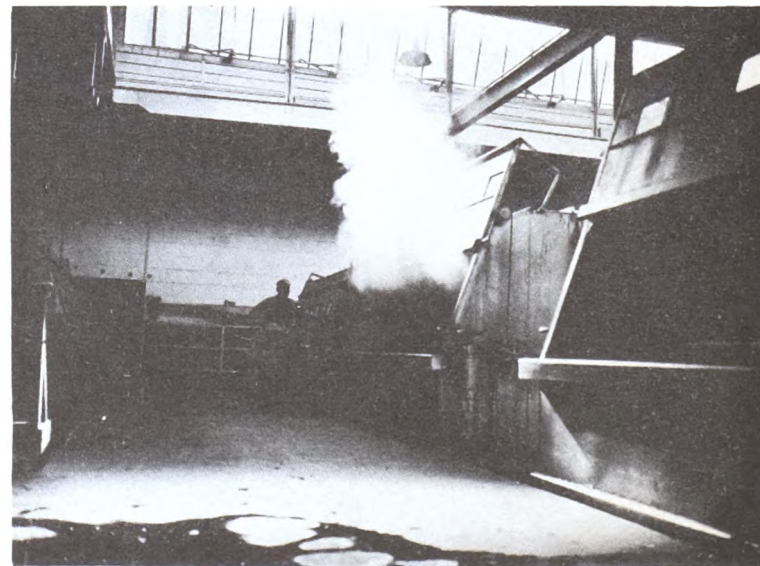
Over one-fourth of the workers employed in chemical and allied industries were exposed to petroleum products, almost one-fourth to organic dusts, while about one-fifth were exposed to organic solvents, alkaline compounds, and other gases. Over 60 percent of the workers in textile and related industries are exposed to organic dusts while about 19 percent are exposed to high humidity.



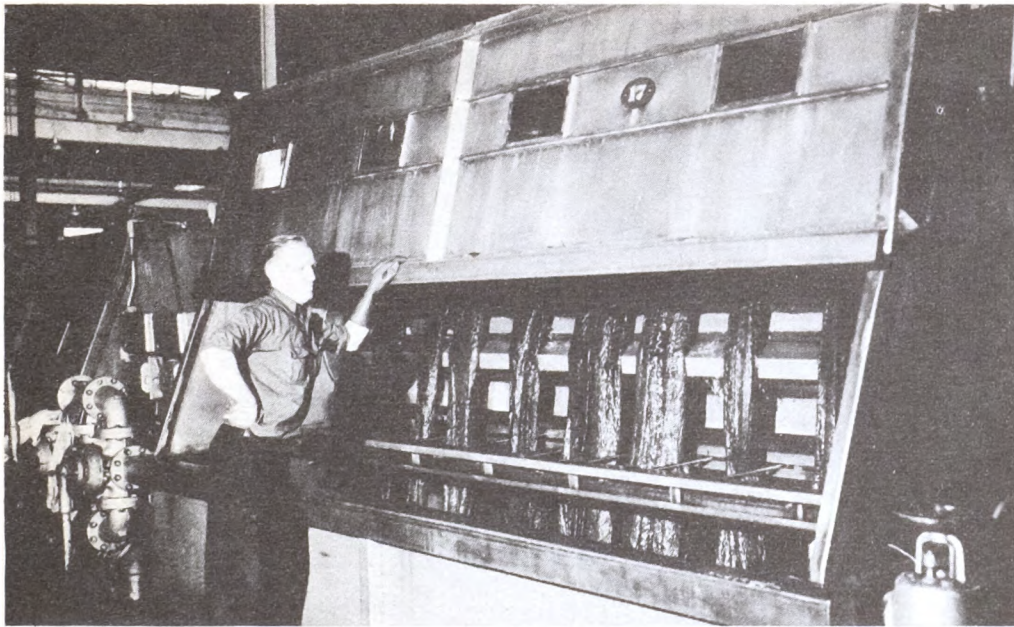
PH 2983-D. Dye workers observe the process through glass enclosures so that if materials become entangled they can stop the process.



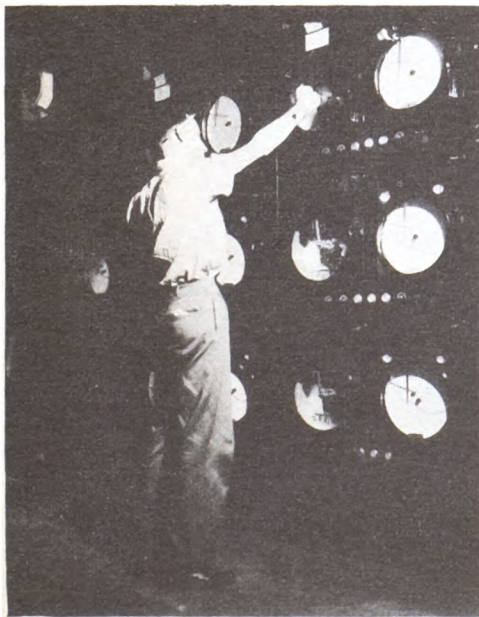
PH 2999-C. In this modern system, undyed materials are fed into the rollers. The covers on the vats are closed and the dyeing liquid is admitted.



PH 2984-D. Showing the volume of steam and fumes that would come from one vat if the operation were not enclosed as in this modern dyeing room for heavy textiles.



A



B



C

A
PH 2998-C. After the dyeing operation is complete, the dye bath is drained away and the fabrics left to cool.

B
PH 2963-C. The dye bath is automatically mixed by machines controlled by operators in a separate room.

C
PH 3009-C. Close-up of operator controlling mixing of dye bath.

FUR FELT HAT INDUSTRY

One of the oldest and most dangerous health hazards to workers is mercury poisoning. Studies by the U. S. Public Health Service, in cooperation with State health departments, the industry, and labor unions, showed that complete solution of the problem could only be attained by substitution of non-poisonous compounds for mercury compounds. About 60 percent of the industry has now eliminated mercury from its manufacturing processes.



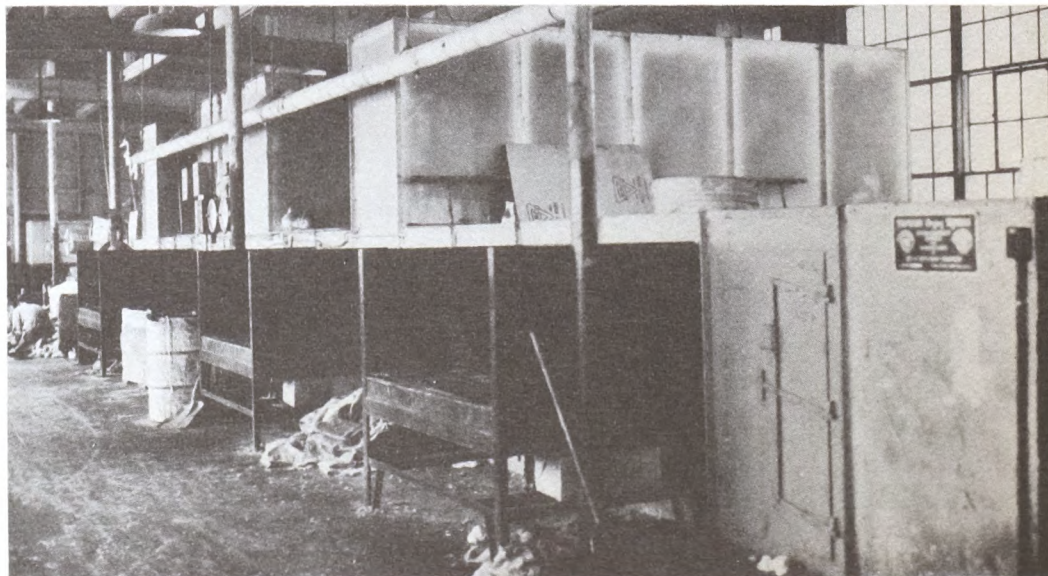
PH 3000. Sorting rabbit skins from all over the world. The first step toward making a fur felt hat.



PH 2941-C. Slitting the rabbit skins. Filter masks prevent breathing dust and rabbit hair which are not poisonous, but irritating to delicate membranes and sinuses. Some of the girls wore their masks; others on the same job failed to do so.



PH 2977. Slitting the rabbit skins open. This worker is not wearing a filter mask.



PH 2990. Enclosed drying oven for carrotted rabbit skins. Indoor drying skins carrotted with a mercury solution offers a hazard unless the operation is enclosed.



PH 3008. Girls collecting rabbit skins which have been dried in the open air. Drying in the open air offers no hazard.



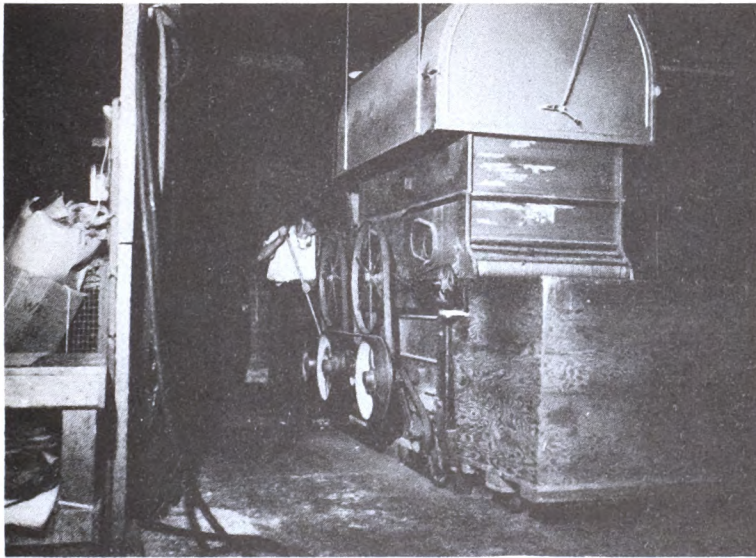
PH 3005. Shaving the rabbit hair from the skins which have been dried in the open air. Exhaust ventilation is needed to control dust from carrotted rabbit fur.



PH 2989-C. Close-up of the shaving operation. Note piles of skins on top of machine, an indication of crowding and poor housekeeping.



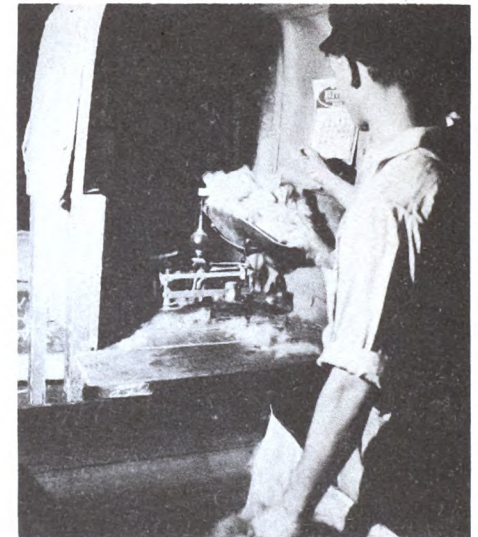
PH 3013. The effectiveness of the exhaust ventilation system at this fur cutting operation is shown by the dust-laden lighting fixtures.



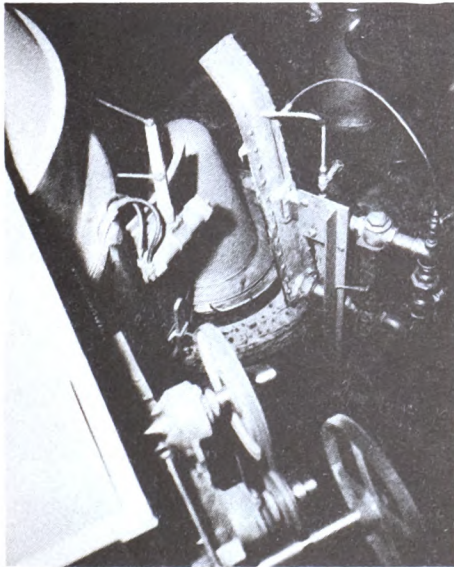
PH 3003. The effectiveness of an enclosed operation and of good housekeeping are demonstrated. An enclosed blower for separating the soft rabbit hair from the coarser.



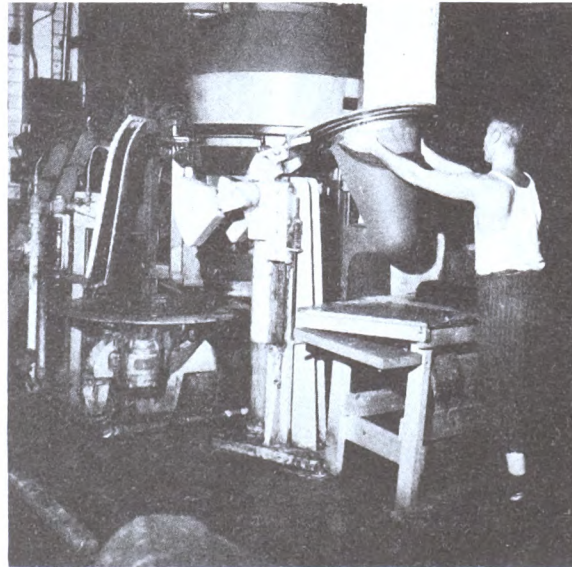
PH 2940-C. In the new automatic type of forming machine, one hat is weighed automatically by means of an electric eye.



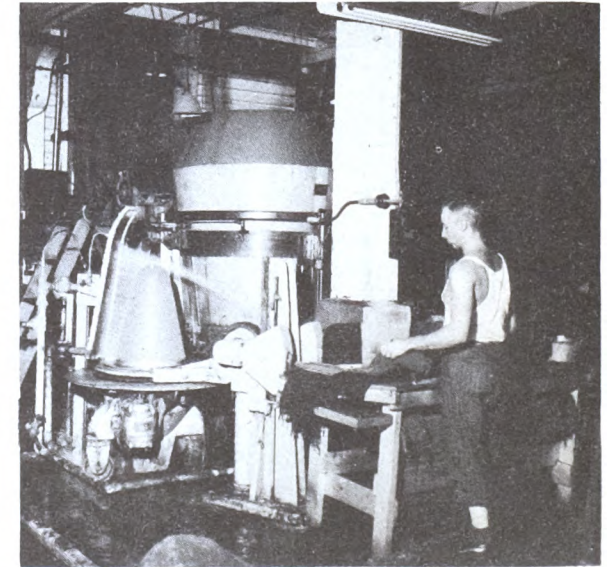
PH 3016. Old style method for weighing up fur. The worker weighs the fur in correct amounts to make one hat. In this operation fine particles of carrotted fur are scattered in the air.



PH 3017. In the forming machine the carrotted fur is drawn by suction into a conelike metal form, at the same time being saturated with extremely hot water.



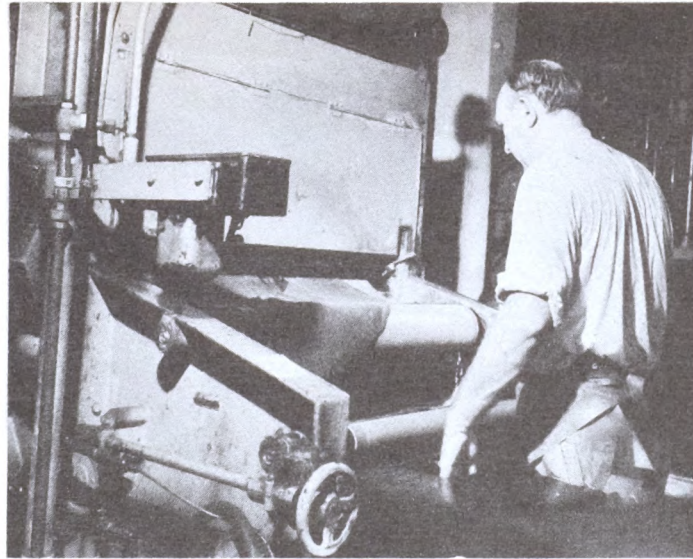
PH 2974. The worker removes the cold wet form. This is the only stage in the forming process at which he has touched the felt.



PH 2962. The cone-shaped form is automatically released from the machine and sprayed with cold water. The worker has not touched the form.



A



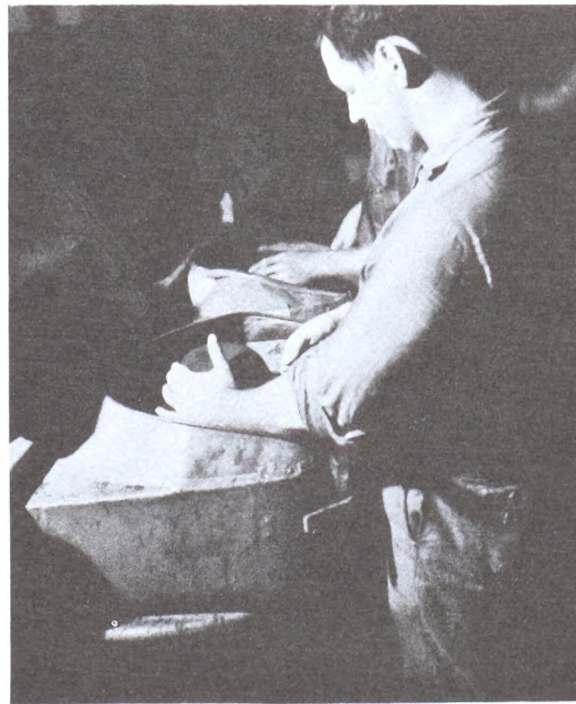
B

A
PH 2932. "Pouncing" is the process wherein the forms are soaked in extremely hot water and then turned, heated and kneaded. Many workers in the pouncing room keep their hands in hot water most of their lives.

B
PH 2938. Formerly when the hot water and steamy air contained mercury, it was almost impossible to prevent serious cases of poisoning.



C



D

C
PH 2993-C. The emery wheel at which this man is working is provided with effective updraft ventilation.

D
PH 2948-C. In the final shaping of a felt hat, the dust from the inside of the hat is removed by down draft exhaust. Without this type of ventilation, the air at the worker's level would be filled with clouds of dust.

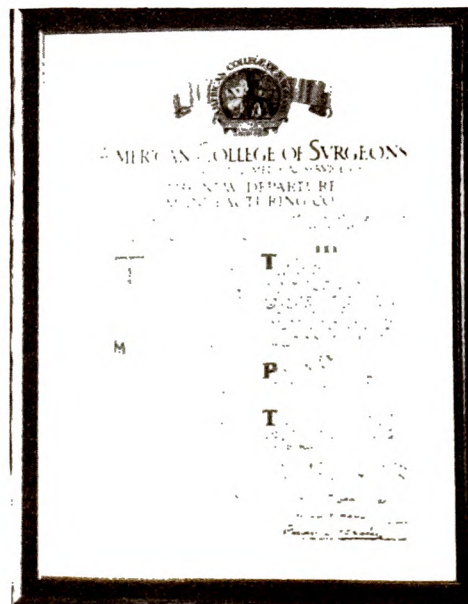
MISCELLANEOUS

A
PH 2935-C. A State industrial hygiene service reviews the week's work at a Monday morning staff conference. Seated at desk: Dr. Albert S. Gray, chief, Bureau of Industrial Hygiene, Connecticut State Department of Health. Standing, left to right: Dr. DeSimone, industrial hygienist; Mr. Coleman, engineer; Dr. Crit Pharris; Miss Rowena Belden, nursing consultant; Dr. Doyle; Mr. Woodhouse, Engineer. Seated, left to right: Mr. Batista, engineer; Mr. Press, industrial hygienist; Dr. Williams.



B
PH 2992. The American College of Surgeons has set up standards for a good medical service in industry. Every service which has met these standards has received a certificate.

C
PH 2981-D. A common dangerous practice among workers is attempting to dry or cool the skin with compressed air. "Horseplay" of this kind is extremely dangerous. Upwards of 50 pounds of pressure could blow out a worker's eye or eardrum if the hand should slip.



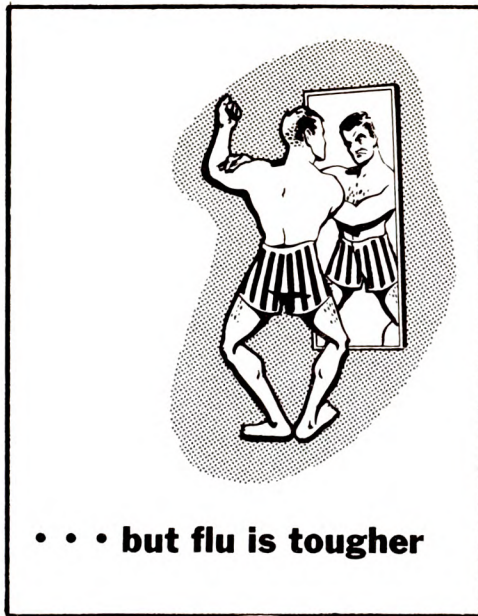
A



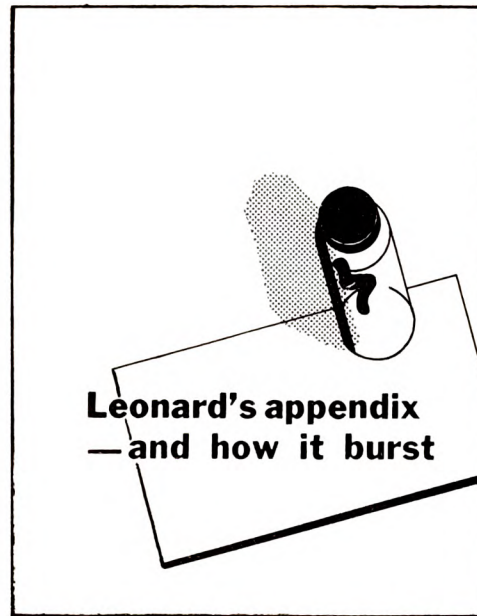
B

C

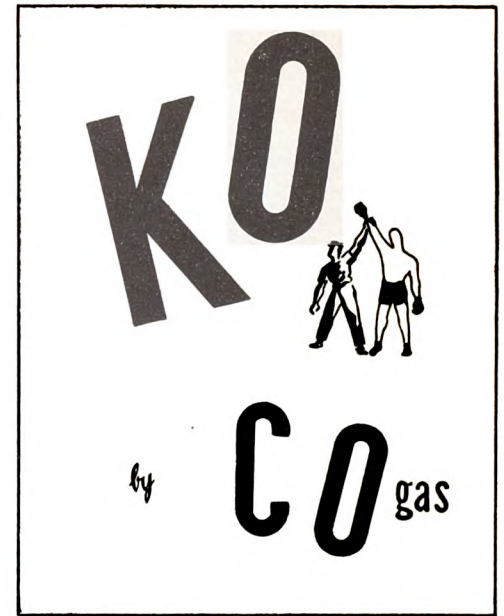
PAMPHLETS



Workers' Health Series No. 1



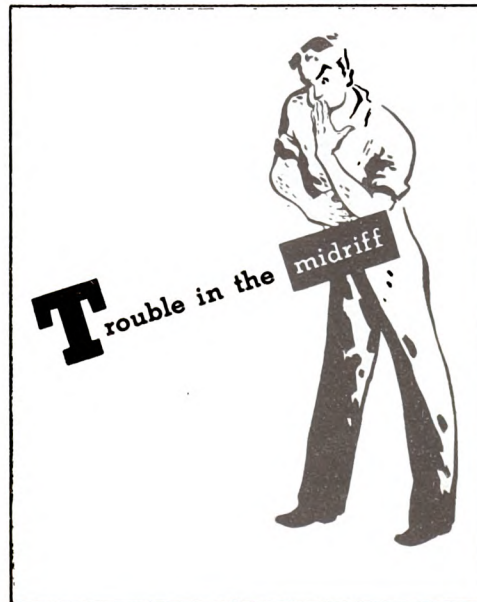
Workers' Health Series No. 2



Workers' Health Series No. 3



Workers' Health Series No. 4

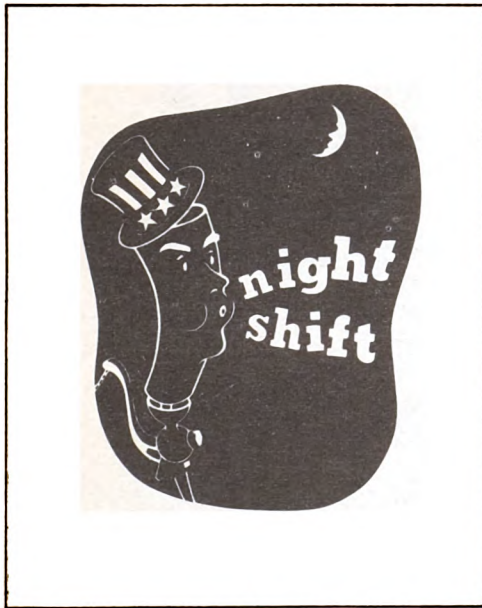


Workers' Health Series No. 5



Workers' Health Series No. 6

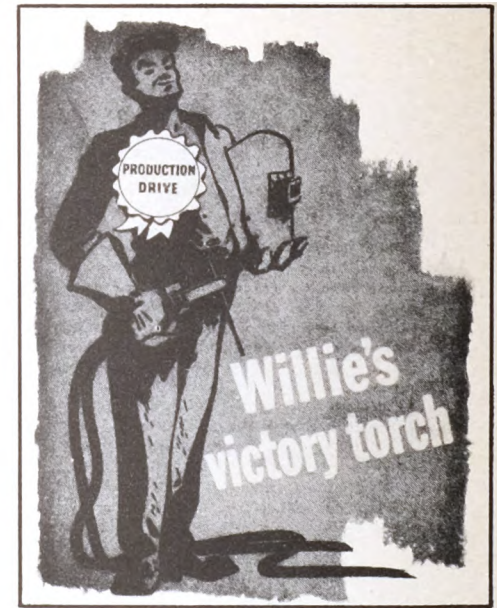
PAMPHLETS



Workers' Health Series No. 7



Workers' Health Series No. 8

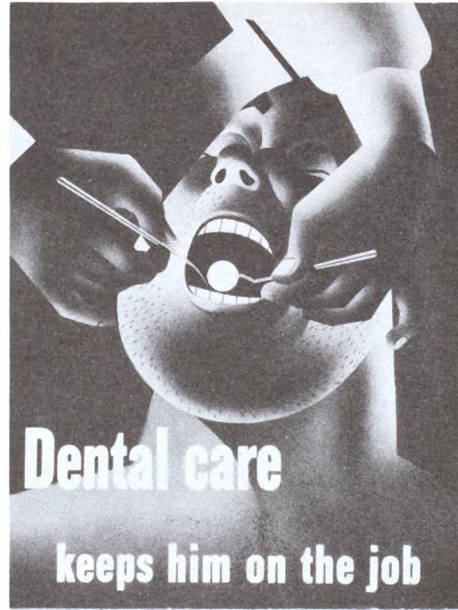


Workers' Health Series No. 9

POSTERS



WH 1



WH 2



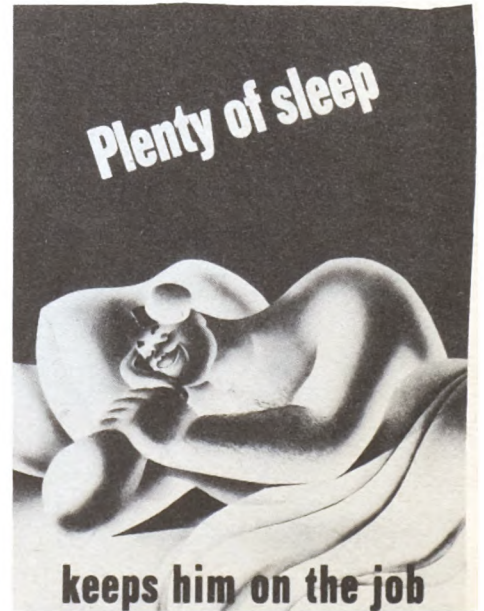
WH 3



WH 4



WH 5



WH 6

POSTERS



WH 7



WH 8



WH 9



TB. 1



TB. 2



TB. 3

FILMS

TO BORROW FILMS Write the Surgeon General, U. S. Public Health Service, Washington (Bethesda Station), D. C., three weeks in advance of showing date. No charge except for transportation.

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SAVE A DAY

Sound - 16 mm. or 35 mm. -
10 minutes - Black-and-White

Documentary film-- State industrial hygiene engineers in action . . . taking dust counts in a factory . . . changing a miner's drill to prevent silicosis . . . low-pressure experiments by the Industrial Hygiene Division, National Institute of Health.

HELP WANTED

Sound - 16 mm. - 26 minutes
- Black-and-White

General presentation of the basic principles of first aid . . . the circulatory system . . . improvised tourniquets . . . use of bandages . . . treatment for shock . . . burns . . . artificial respiration . . . splints . . .

Produced by Johnson & Johnson in cooperation with the United States Public Health Service.

ABOUT FACES

Sound - 16 mm. or 35 mm. - 10
minutes - Black-and-White

Semi-dramatic film--Danny Smith's teeth prove they're in good condition . . . how Danny took care of them . . . results of inadequate dental care . . .

Commentary by Lowell Thomas. Longer color version available in 16 mm. only for special showings.

KNOW FOR SURE

Sound - 16 mm. or 35 mm. - 22
minutes - Black-and-White

Dramatic film--a physician's experiences with syphilis. Sources of infection . . . early symptoms . . . diagnosis . . . clinical treatment . . . prevention . . . quacks . . .

Produced in Hollywood by Darryl Zanuck, directed by Lewis Milestone. Suitable for male audiences. To be shown only under supervision of your local health department. A physician must be present to answer questions.

PROOF OF THE PUDDING

Sound - 16 mm. - 10 minutes
- Color

Interpretive film on nutrition. Types of food needed by the body . . . laboratory rats reared on unbalanced diets . . . preparing food in the home . . .

Produced jointly by the Metropolitan Life Insurance Company and the U. S. Public Health Service. Order from the Metropolitan Life Insurance Company, 1 Madison Avenue, New York, N. Y.

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MEN AND MACHINES

A worker succumbs to carbon monoxide. The doctor, called on the case, blames faulty equipment in the plant, and points out that consultation of the plant management and industrial engineers would prevent such accidents. Millions of work days are lost every year because industrial hazards, which might be eliminated for small cost, are not understood and dealt with. The work of the Industrial Hygiene Division of the National Institute of Health is explained.

STORY FOR TOUGH GUYS

The story of an interstate truck driver who takes dangerous chances and a wife who worries about him, makes an interesting vehicle for reporting the results of fatigue studies conducted by the Division of Industrial Hygiene, National Institute of Health. This family's experience is a human interest version of an important research problem. Told with action and suspense, the story drives home the "safety first" message in a forceful, original way.

U. S. GOVERNMENT PRINTING OFFICE : 1943