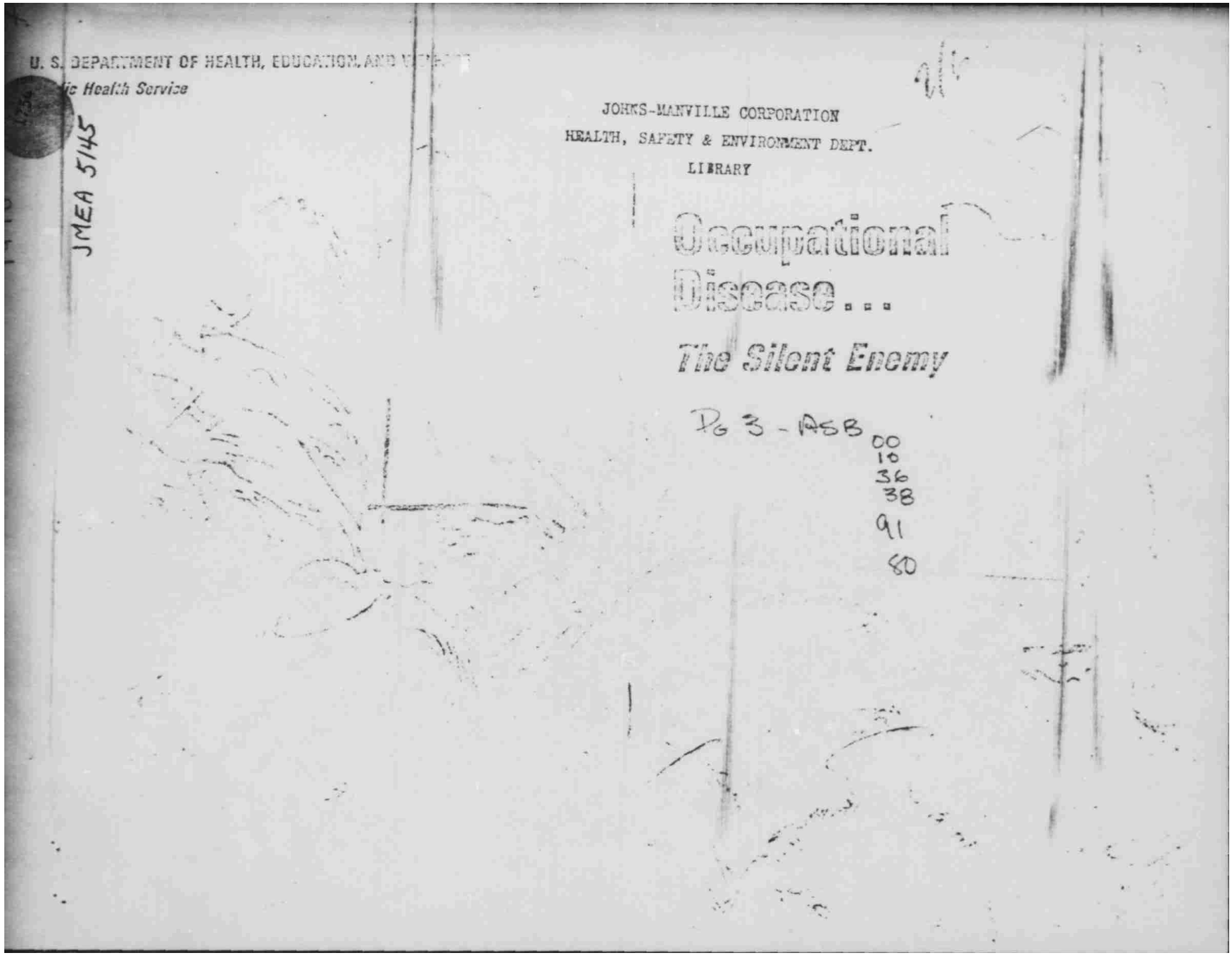
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Occupational Disease...
The Silent Enemy
Pg 3 - ASB
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10
36
38
91
80

Occupational Disease...

The Silent Enemy

In a nation of workers, the health of workers affects everyone and is the concern of all. Yet, even in our modern society, millions of Americans, as a direct result of their occupations, are exposed to health damage, from toxic chemicals, from physiological stress and, increasingly, from psychological pressure.

Each step in man's scientific progress—bringing with it tremendous benefits to mankind—has brought, at the same time, unforeseen threats to man's health, or happiness, or peace of mind. Today, changes in our physical environment resulting from t chnological progress constitute a major, and frightening, threat to health. It is in the industrial situation, moreover, that man is first exposed to materials which subsequently contaminate our air and water, endangering the whole population.

In 1965, 27,000 occupational diseases were reported in California, a State where such disease is reportable and where there are vigorous health and safety programs. If this rate is projected nationally, we can assume that *there are every year at least 336,000 cases of occupational disease among the 75 million employed civilians in the United States.*

Occupational illnesses are *preventable* diseases. Most on-the-job health damage need not occur if known, effective methods of protection are applied in the workplace. And modern science has the capacity to combat even the new and unfamiliar hazards which science has itself created.

A massive effort will be required—an effort enlisting the combined resources of government, industry, workers, and the scientific professions—but occupational disease, the silent enemy, *can* be vanquished, even in an age of unparalleled technological change.

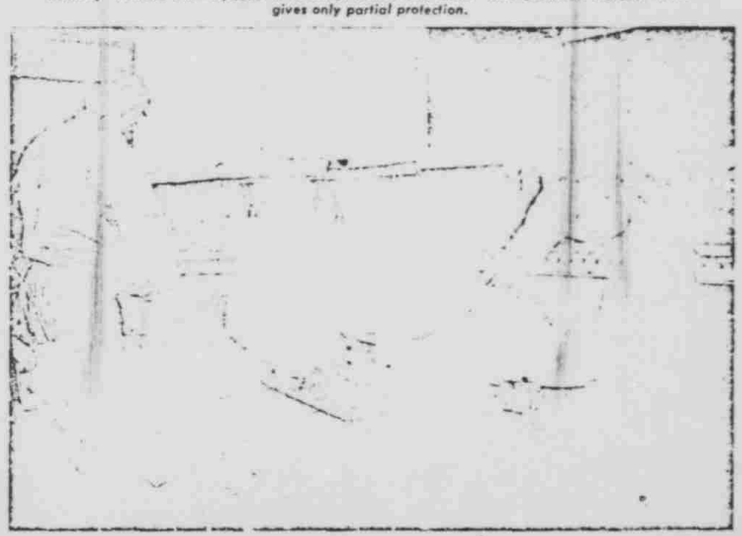
Cover:

Some work involves multiple health hazards. These quarrymen are exposed to silica dust as well as noise and vibration.

The silent enemy in the workplace may strike a swift and deadly blow...

- A California welder is fatally poisoned by the deadly fumes of cadmium contained in silver solder. Total time of exposure: 6 hours.
- In a Colorado industrial plant, a thermostat ruptures at 600°F. Dangerous concentrations of mercury vapor hospitalize six men.
- A New Jersey worker dies of acute pulmonary fibrosis after accidental exposure to chemical fumes in a plant producing fluorocarbon compounds.
- In Pennsylvania, a man enters a large tank without respiratory protection, is overcome by the fumes of a degreasing compound, and dies on the way to the hospital.
- A farmer is sickened by nitrogen dioxide fumes from a recently filled silo and expires two weeks later from pulmonary insufficiency.

Foundry workers are exposed to harmful fumes and dust. This overhead exhaust hood gives only partial protection.





Inhalation of asbestos fibers can cause lung damage.

Cancer of the skin (squamous cell carcinoma)—the result of tar exposure.



Or it may work in slow and subtle ways to undermine the health and shorten the lives of workers...

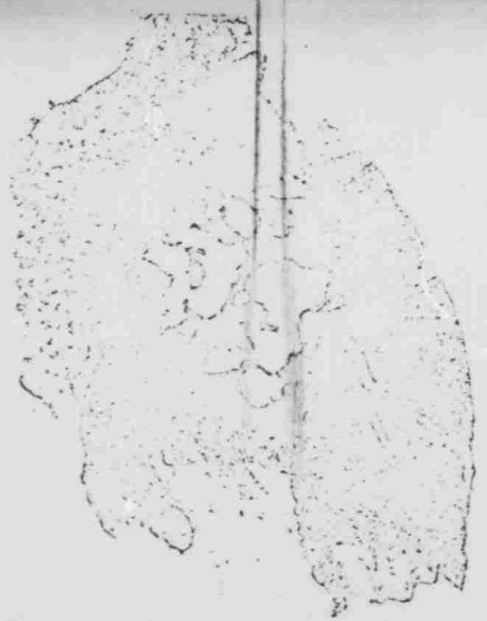
- Three and a half million American workers exposed to asbestos face a dual threat: not only are they subject to the lung-scarring pneumoconiosis of their trade, *asbestosis*, but are endangered by *lung cancer* associated with inhalation of asbestos fibers. Recent studies of insulation workers in two States showed 1 in 5 deaths were from *lung cancer*, 7 times the expected rate; half of those with 20 years or more in the trade had X-ray evidence of *asbestosis*; 1 in 10 deaths were caused by *mesothelioma*, a rare malignancy of the lung or pleura which strikes only 1 in 10,000 in the general working population.

- Of 6,000 men who have been uranium miners, an estimated 600 to 1,100 will die during the next 20 years as a result of *radiation exposure*, principally from lung cancer.

- Certain dye ingredients, such as benzidine and beta naphthylamine produce *bladder cancer* in a high proportion of exposed workers. Beta naphthylamine has been outlawed in one State but is still being produced elsewhere. Of 25 employees of one small plant engaged for 30 years in making benzidine, 14 have so far developed bladder cancer.

- Some chromium compounds, widely used in metal working and plating, as well as fur processing, dry battery manufacture, soap making, textile dyeing, and many other processes, are suspected *cancer* agents.

- Coal tar pitch, used in many trades, from farming to roofing, causes a variety of skin diseases, including *skin cancer* following years of exposure.



Lung section from deceased coal miner shows advanced pneumoconiosis with massive fibrosis and great cavities in the lung tissue.

This worker has suffered skin depigmentation from exposure to an anti-oxidant used in rubber manufacturing.



- "Black lungs," "grinder's rot," "potter's asthma," "stone mason's phthisis"—these are ancient terms for the progressive crippling lung damage which has afflicted thousands of workers in the dusty trades over the years. The State of Pennsylvania alone is paying more than 16,000 persons $55 million in compensation claims in 1968 for these occupational *pneumoconioses.*

  Among *soft coal miners,* the death rate from respiratory disease is five times that of the general working population.

  Over 3,000 cases of *silicosis* are reported yearly from exposure to free silica—the major constituent of all rocks, soils, sands and clay.

  Cotton dust, talc, diatomite, carborundum, sugar cane fiber, asbestos, even the dust from moldy silage—each produces its own form of lung damage wherever dust control and worker protection are inadequate.

- A recent study of 231 foundries revealed that 1 in 15 of the 3,200 workers were exposed to environmental conditions capable of producing disabling and fatal diseases. On the basis of this study, the Public Health Service estimates that more than 20,000 workers in this industry are presently working under dangerous conditions.

- Fifty percent of the machines in industry generate *noise* levels potentially harmful to hearing.

- Hundreds of thousands of workers each year suffer skin diseases from contact with materials used in their work. The *dermatoses* are the most common of all occupational illnesses.

- Even the old, well-known industrial poisons, such as mercury, arsenic, and lead, still cause trouble. In New Mexico recently, workers dismantling a missile site were hospitalized from *lead intoxication* after using acetylene torches to cut structural steel coated with a red lead paint.

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- The list of known or potential health hazards in industrial use is long, and it is growing longer—solvents, plastics, resins, lasers, masers, microwave, ultrasound, ultraviolet. *Every 20 minutes, it is estimated, a new and potentially toxic chemical is introduced into industry.*

- Little is known of possible *synergistic action*, that is, the combined, intensified effect of several toxic agents. The possibility of *genetic damage*, affecting generations yet unborn, is an immeasurable, but very real, threat whenever the living body is subjected to a constant barrage of different chemical and physical assaults.

Current efforts to safeguard the health of workers...

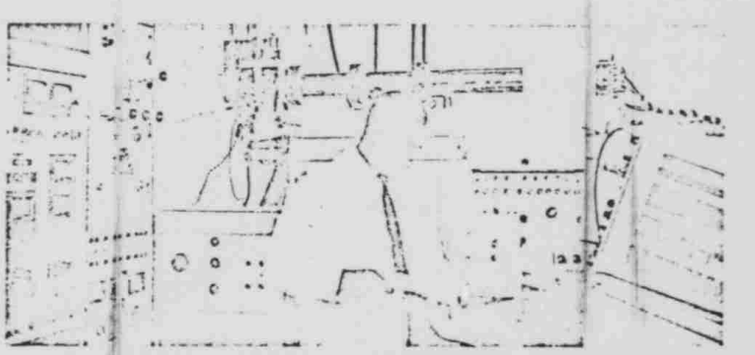
The U. S. Public Health Service, through its Occupational Health Program, coordinates and provides leadership to the Nation's effort to protect and improve the health of workers. In its main laboratories at the National Center for Urban and Industrial Health in Cincinnati, O., a small group of researchers studies the effects of dusts, chemicals, and other environmental hazards on the body and develops preventive and control measures which can be effectively applied in industry. Where serious and urgent problems are suspected, Public Health Service industrial hygienists perform industry-wide surveys of the work environment; its physicians and statisticians make clinical and epidemiological studies of worker groups to assess the effects of job hazards on health and efficiency.

Forty-two States, the District of Columbia, and Puerto Rico maintain occupational health units, as do thirty-two local jurisdictions. Staffing and activities of these programs vary widely, and resources have never been commensurate with the size and needs of the work force. Personnel assigned to occupational health duties, either full or part time, in State and local governments numbered 500 in 1967. All State and local expenditures for worker health protection total about 5 cents per year for each member of the Nation's work force.

Industry spends an estimated $320 million annually for health services and professional surveillance of plant environment. However, no more than 20 percent of the total work force is employed in plants where such services are provided. *Four out of five of the Nation's workers are employed in small plants, which usually offer no health services at all.*



In this paper manufacturing plant, an industrial hygienist monitors a worker's breathing zone for dust particles.



A time-of-flight mass spectrometer, in the Public Health Service's occupational health laboratory, determines exact chemical nature of gases and vapors.

How to help protect your own health on the job...

- Know what you're working with—

  Do you come into contact with harmful dusts, fumes, gases, vapors, mists?
  Are you exposed to excessive dust of any kind?
  Do you work with radioactive materials, microwaves, lasers?
  Do you work with drugs or hormones?
  Are you exposed to molds, parasites or bacteria from animals or animal products?
  Are some materials apt to cause skin irritation?
  Is there excessive noise?

- Know what precautions are required—

  Are there exhaust systems to carry off dangerous dusts, fumes, etc.?
  Are there monitoring devices to detect leakage of dangerous gases?
  Are safety instructions attached to electronic equipment? To all equipment which might involve radiation or similar risks?
  Are safety devices inspected and tested regularly?
  Who makes and enforces the rules for maintaining a healthy workplace?
  Are there shower and change-rooms for workers who handle dangerous substances?
  Are sanitary facilities clean and adequate?
  Do you need special cleansers or protective lotions?
  Should you wear gloves, an apron, or other protective clothing? Ear plugs, goggles, a hard hat? A mask or respirator? DO YOU USE THEM?

- Help to maintain a healthy workplace. And watch for unexpected hazards.

  Make sure your workplace is clean, tidy, free of grease or clutter.
  Keep dangerous materials, such as solvents, in covered containers and use only with good ventilation.
  If you notice peculiar odors or other signs of danger, report them immediately.
  Watch for leaks, ventilation failure, or accidental spills—and get out of danger.
  Practice good personal health habits. Wash toxic or irritant materials from the hair and skin promptly and thoroughly. Wear clean clothes.
  DON'T TAKE CHANCES! Avoid unnecessary or excessive exposure to dust, fumes, and vapors. Treat electronic equipment with respect.
  Wear protective clothing. Use respirators, ear protection, goggles. Be sure guards, hoods, and other safety devices are in place and effective.

- Know and use the special health services available to you—

  Are you examined periodically to make sure you can do your job without endangering your health? Is someone responsible for changing your job if it presents health dangers?
  Is there an occupational health physician or nurse on duty in your work place? If so, report promptly any symptoms of disease. Always tell your own doctor what your job is and what health hazards you may have encountered in your work—it may speed diagnosis and cure.
  Are positive health benefits offered by your employer or public agencies? Take advantage of flu shots, chest X-rays, and other preventive services. Take health brochures home to the family.
  If you have questions about job health hazards, ask your supervisor, your union safety steward, the doctor, nurse, or health and safety engineer in your health unit. If not satisfied, or you suspect trouble, write your State health department explaining the situation.

Remember—your job, your family's welfare, your life itself, may be the price you pay for occupational disease. Guard against the silent enemy in the workplace!

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