BIO-MEDICAL RESEARCH
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Part of the Human Condition -- NIOSH	22
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Brief Summary

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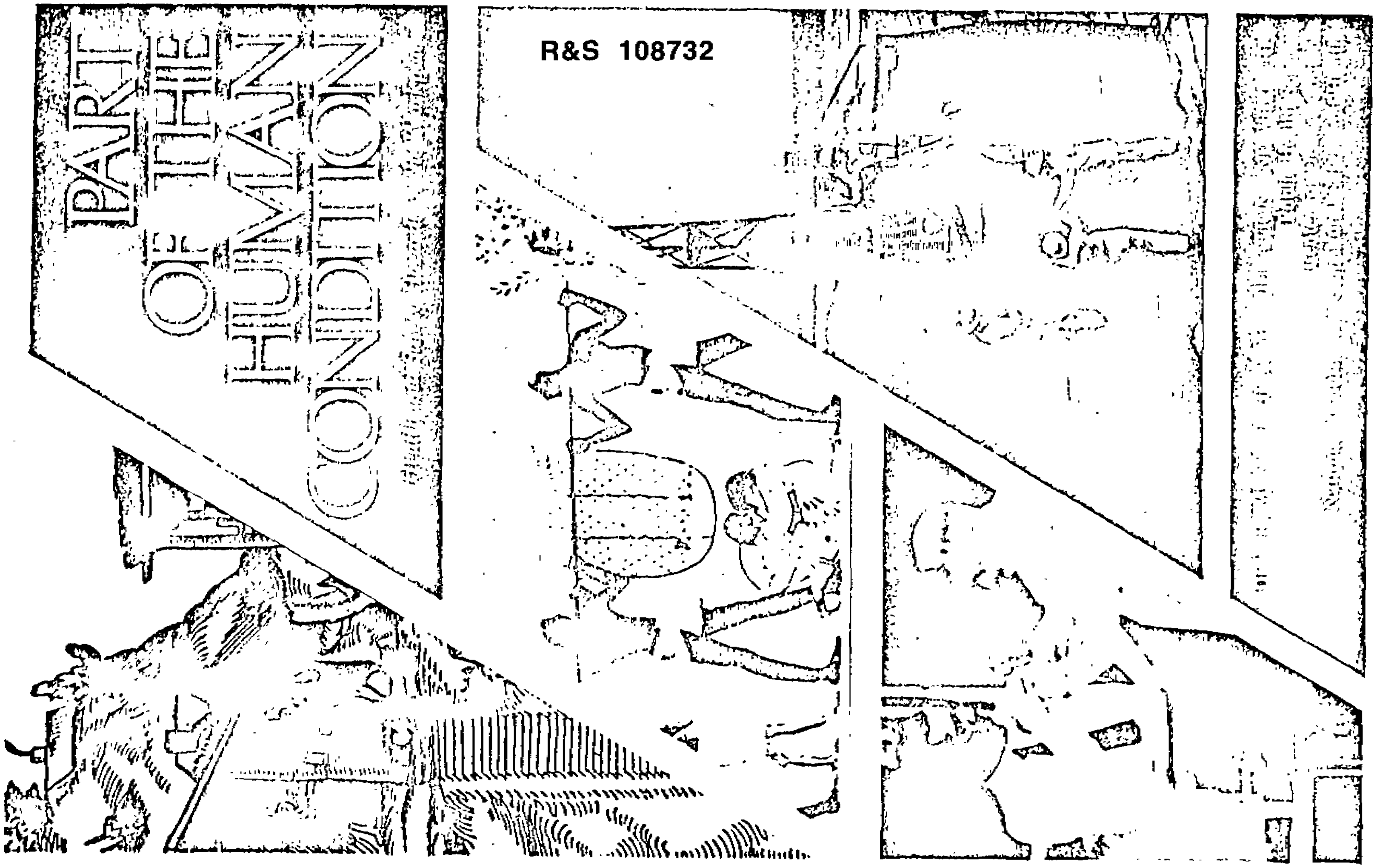

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This publication describes the program of the National Institute for Occupational Safety and Health in research and prevention of job-related illness and injury. It was prepared by Phyllis Lehman for the 1978 YEARBOOK of the U.S. Department of Labor. Ms. Lehman is a free-lance writer and editor specializing in the field of occupational health and safety.

September 1978

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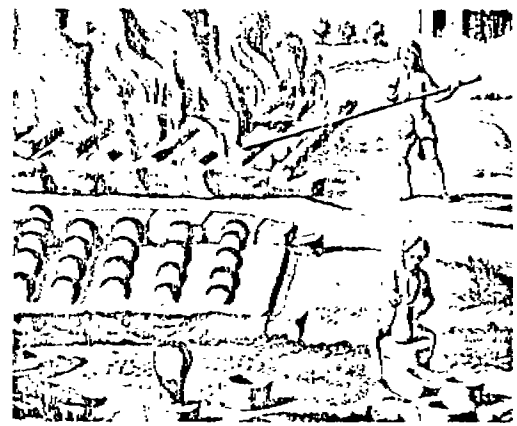
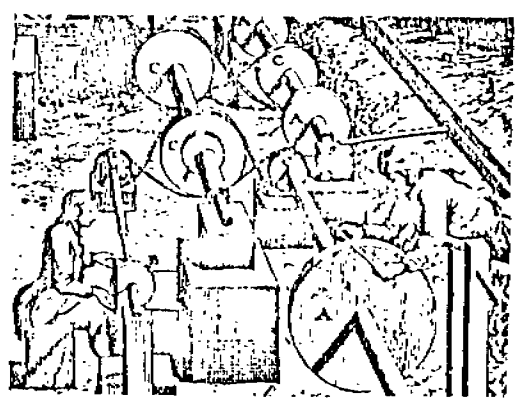
An Old Problem

Getting sick or injured on the job has been part of the human condition since the first caveman cut himself while striking his flint or contracted anthrax while skinning his bison. Sometimes it seems little has changed during man's long trek out of the caves and into the factories.



For instance:
Ancient Roman slaves toiling in mercury mines devised bladder skin masks in a futile attempt to avoid inhaling toxic fumes. In 1976, several workers at a chlorine plant in Linden, New Jersey, were hospitalized with mercury poisoning, and others suffered classic symptoms: weight loss, tremors, and psychological problems. Federal officials ordered engineering and housekeeping improvements with strict use of respirators in the meantime.



Sixteenth century grinders suffered a lung ailment they called "grinders' disease" from inhaling silica dust. Today, in the United States, silicosis is prevalent among sand blasters in the shipbuilding industry. Despite the hazard, this country has chosen not to follow the lead of Great Britain, which banned the use of silica sand in blasting operations more than 25 years ago.

cers among hairdressers and cosmetologists. Obviously, further investigation is warranted. NIOSH also has been checking into incidences of "cancer clustering" — such as several cases of brain tumors at a steel mill in Wheeling, West Virginia, and pancreatic cancer at a chemical plant in Massachusetts. Industry-wide studies of cancer risk have been launched in the printing, dairy, uranium milling and mining, plywood, pulp, and paper, coal gasification, phosphate fertilizer, aluminum, steel, antimony smelting, beryllium, cadmium smelting, pesticide formulation, and lead smelting industries.

A special carcinogens laboratory, nearing completion in Cincinnati, will make it possible for NIOSH to conduct more animal studies and more research on monitoring carcinogens in the workplace.

NIOSH has compiled a list of high priority chemicals for which it will prepare hazard review documents — junior criteria documents summarizing what is known about health hazards and recommending ways to control worker exposures. These will be distributed widely through trade associations, labor unions, and professional societies.

Nonmalignant respiratory disease. A war on occupational cancer is little comfort to those workers suffering from such other major killers as black lung, brown lung (caused by cotton dust), asbestosis, or silicosis. A former cotton worker who has only one-third of his lung capacity and can barely walk a block is just as tragic a victim of occupational disease as the lung cancer patient.

Many occupational diseases strike the respiratory system. More than 3 million workers are exposed to just a handful of respiratory hazards: asbestos, beryllium, coke oven emissions, cotton dust, silica, sulfur dioxide, sulfuric acid, and toluene diisocyanate. The consequences of long years of failure to control hazards is becoming evident in the coal industry, where black lung disability benefits to mine

total $1 billion a year and, in the cotton industry, where machinery modifications needed to meet a new standard may cost more than $800 million.

NIOSH has launched a major effort to learn more about the biological effects of noncarcinogenic dusts, fibers, and chemicals and to develop better methods of sampling these substances in the workplace. The focal point for all NIOSH research on nonmalignant respiratory disease are the facilities in Morgantown, West Virginia, which also have responsibility for research and technical assistance for mining health and safety.

Women in the workplace. As more and more women move into a wider variety of jobs, an increasing number of unborn children are also coming to work and are being involuntarily exposed to hazardous chemicals that can cross the mother's womb.

Women now account for 40 percent of the nation's workforce. NIOSH estimates that 1 million of the 16 million working women of childbearing age are exposed to substances that could cause birth defects or miscarriages. Because very few of the 20,000 chemicals commonly found in the workplace have been tested for their effects on the unborn, NIOSH says only about 20 can be linked to birth defects and miscarriages. Some of these chemicals — such as lead, methyl mercury, and benzene — have been known for some time to damage the fetus. More recent studies have implicated such substances as vinyl chloride and the anesthetic gases that escape into the air in hospital operating rooms. Virtually no substances — even the 400 for which OSHA has specific standards — are regulated with the fate of the unborn in mind.

Congress earmarked $1 million in NIOSH's fiscal year 1977 appropriations for the first year of a new program to study the effects of toxic chemicals on the unborn children of women workers. In addition to laboratory animal studies,

NIOSH is studying the incidence of birth defects and miscarriages among women in certain industries, such as the pharmaceutical industry, the electronics industry, and others where such heavy metals as lead and mercury are used. NIOSH also helped sponsor a 3-day Conference on Women and the Workplace, which brought together hundreds of labor, management, scientific, and government experts for the first nationwide meeting on the subject.

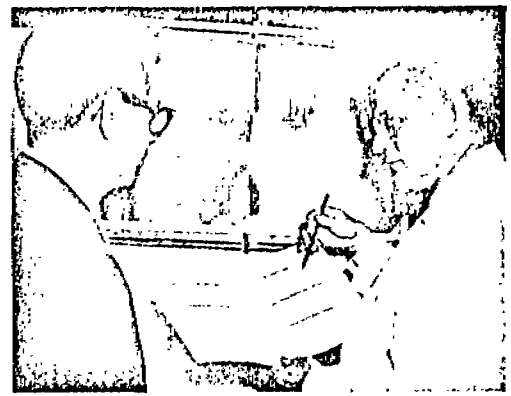
The problem of hazards to women workers is especially touchy because it involves the issue of equal employment opportunity. The danger of special requirements for pregnant or fertile women is that they could easily become an excuse for further discrimination against women. Industry nervousness already has resulted in some drastic action. The Lead Industries Association, for example, has recommended against employment of fertile, pregnant, or nursing women in the lead industries "until such time as adequate information [illegible] been developed regarding the effect of lead." Such policies can leave working women, many of whom must work to support households, with an incredible choice: their job or their fertility. One Canadian woman already has had herself sterilized so she could keep her job in a General Motors Company lead battery plant.

Often overlooked is the fact that reproductive hazards are not restricted to women. At least 14 of the men poisoned by the pesticide kepone are now sterile. Lead has been linked to sexual impotence in men and can alter production of sperm. Recent NIOSH studies have revealed higher rates of miscarriages and birth defects among wives of men exposed to vinyl chloride and anesthetic gases.

So, while the subject is often referred to as "women in the workplace," the real issue is occupational hazards to the reproductive systems of both men and women. Attention to these hazards could produce some far-reaching results in the area of occupational health.

New energy technology. New technology usually means new hazards, and the search for alternative energy sources is no exception. In 1976, NIOSH and the Environmental Protection Agency signed a 5-year, multi-million dollar agreement for research on health problems that may affect workers who use, extract, or process new energy materials. The agreement is part of a massive research effort in which 16 government agencies will spend about $78 million to determine the health and environmental effects of new energy uses and technology.

NIOSH is particularly concerned about the increased use of coal and the way this affects workers in coal-fired power plants, in coal gasification and liquefaction plants, and even in coal mines.



Coal gasification and liquefaction are methods for converting coal with a high sulfur content into a cleaner burning synthetic gas or liquid, but more needs to be known about the health hazards these processes create. NIOSH is studying records of workers at a coal liquefaction plant in Institute, West Virginia, to determine if any unusual health problems are showing up. Other research is focusing on:

Oil shale workers. Some studies indicate that oil shale can cause skin cancer.

Divers. As the need for oil increases, offshore drilling will increase. Divers, of course, are the critical link between the surface and the undersea oil. NIOSH has been studying the effects of long-term exposure to changing pressures, which, in addition to causing bone disease, may be linked to nerve damage and cardiovascular disease.

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