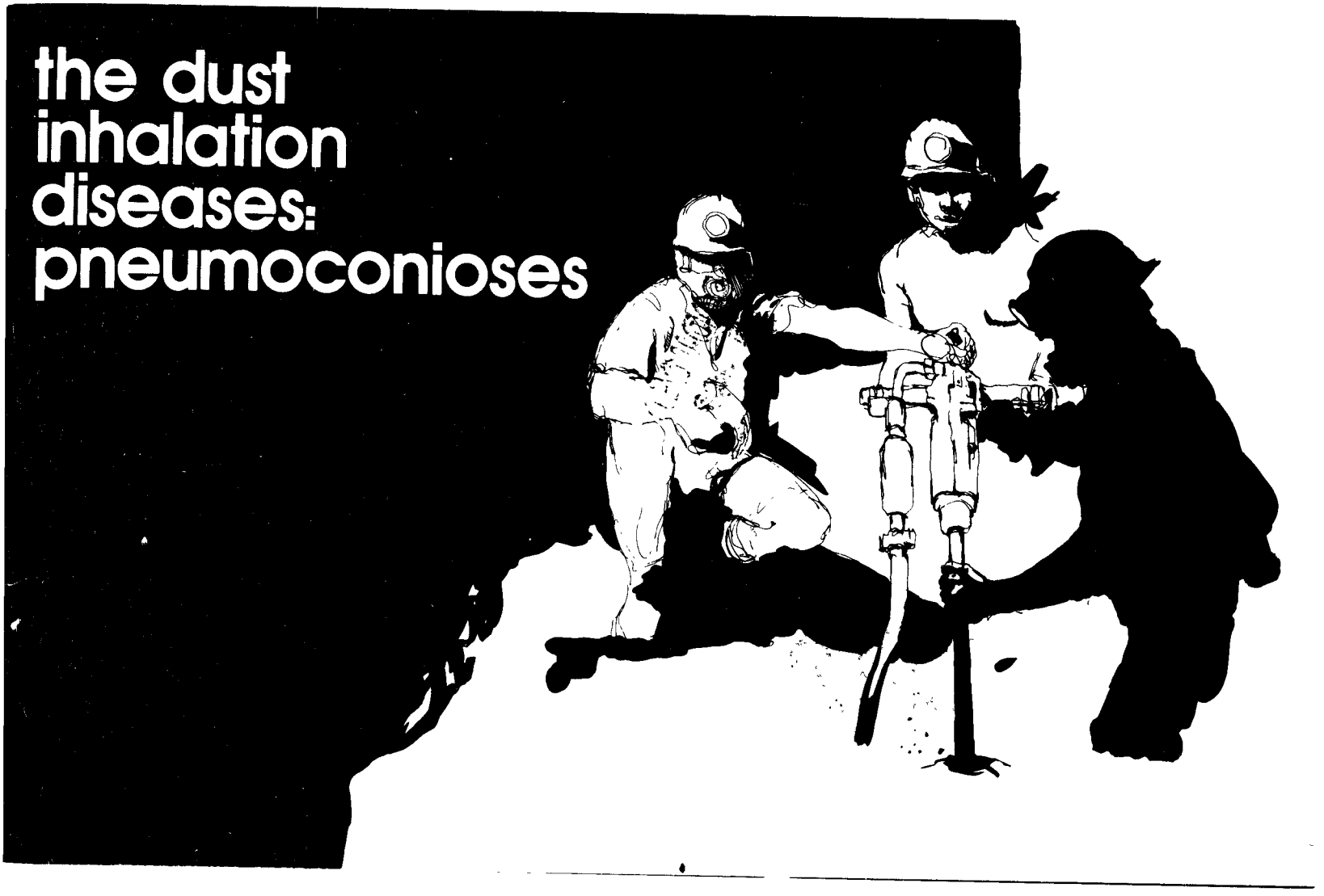
the dust inhalation diseases: pneumoconioses



PRODUCED
JM - 83

Published by AsbestosClaims.Law
asbestosclaims.law/library/25209/1

preface

The National Heart and Lung Institute is a Bureau of the National Institutes of Health, Bethesda, Maryland. Its primary mission is to increase the store of scientific knowledge about the cardiovascular and pulmonary systems and their diseases through the conduct of basic and clinical research; to meet existing needs for highly qualified researchers, clinicians, and teachers in these fields through the support of training programs; and to disseminate as promptly and widely as possible those research and clinical findings applicable to improving health and longevity.

Within the NHLI, the Division of Lung Diseases supports and conducts research activities on various pulmonary disease problems such as environmental diseases of the lung, diseases of the airways, interstitial and diffuse pulmonary diseases, pulmonary vascular diseases, respiratory distress syndromes and the pulmonary aspects of asthma and cystic fibrosis.

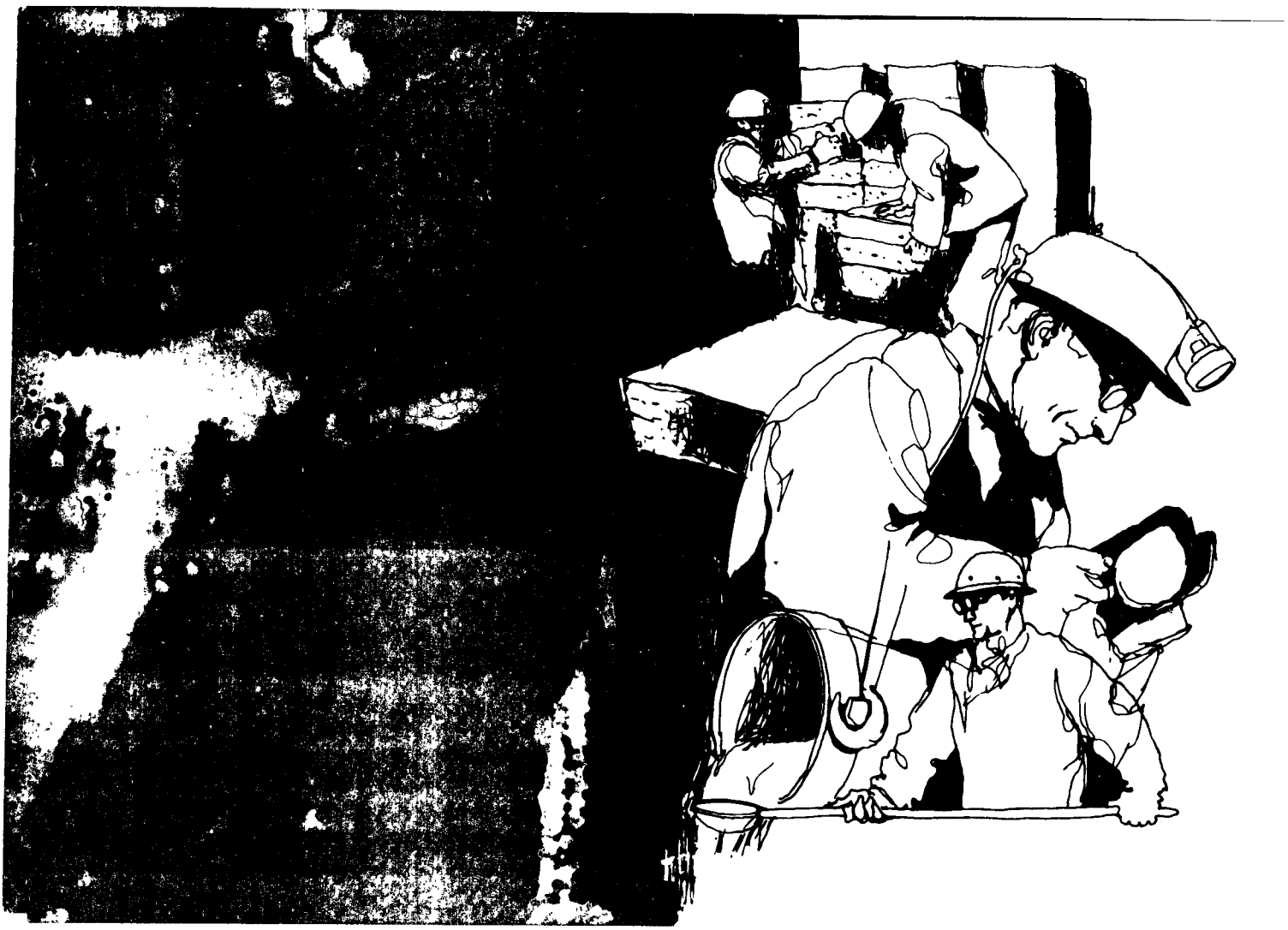
Research is also conducted in fundamental areas such as the structure and function of the normal lung, mechanisms by which alterations in respiratory function may lead to disease and the genetic aspects of pulmonary disease.

The Division supports studies in the diagnosis and clinical care of acute and chronic respiratory diseases, along with studies dealing with the epidemiology and natural history of respiratory diseases.

The goal of this research program is to improve scientific understanding of the functions of the lung and to improve the prevention, detection and relief of the diseases that affect it.

PRODUCED
JM - 83

Published by AsbestosClaims.Law
asbestosclaims.law/library/25209/2



Published by AsbestosClaims.Law
asbestosclaims.law/library/25209/3

nature and scope of problem

Progress often brings related problems. Industrialization has brought us many benefits, but also pollution. The introduction of the pneumatic drill was a tremendous boon to the mining and construction industries, but it also greatly increased the incidence of lung disease caused by the inhalation of dust particles in the air. Of all occupational illnesses, dust inhalation diseases, medically known as the pneumoconioses (from the Greek "pneumo" meaning lung and "konis" meaning dust), are the most serious health problem.

The dusts responsible for the pneumoconioses are not the familiar dusts we wipe off our cars and furniture, but the heavy, often harmful dusts that millions of American workers (coal miners, insulation workers, foundrymen, stone cutters and other occupational workers) breathe in every day on the job. So fine are these dusts that they escape the natural cleansing mechanism of the upper respiratory tract and lodge permanently, inextricably, in the lungs. Some are relatively harmless; others can be deadly. Eventually, if exposure is sufficiently high and prolonged, the accumulated particles may cause fibrosis, or scarring, of the lung tissue. In many cases, this leads to serious disability and even death.

Not long ago, the hazard of pneumoconiosis was considered confined to certain jobs in specific occupations. Today, it is recognized that the problem is far more complicated and that sources of the diseases have greatly widened. It has been found that not only are limited groups of workers

PRODUCED
JM - 83

Published by AsbestosClaims.Law
asbestosclaims.law/library/25209/4

potentially at risk, but also their co-workers and, in some cases, the community at large. (Due to fallout from a construction site.) This last possibility—environmental lung disease associated with agents usually encountered only by certain workers—has given the problem considerably more dimension and importance.

Fortunately, today, there is a keen awareness of the magnitude and urgency of the problem. Through the cooperative efforts of medical science, labor unions, industry and government, it is now possible to detect in workers the long-term effects of exposure to occupational dusts, to identify major sources of these hazards, and to take effective steps toward their reduction and—hopefully—eventual elimination.

The name of each dust inhalation disease comes from the dust that produces it. Of the various pneumoconioses, one of the most serious problems today comes from asbestos.

asbestosis

Because of its resistance to extremely high degrees of heat, asbestos is used in thousands of ways to protect man and his property from fire and heat. A tough mineral, it can be credited with saving countless lives, through fireproof insulation in buildings, fireproof clothing, safer domestic appliances, brake linings, etc. However, on the other side of the ledger, asbestos can be debited with playing a deadly role.

Some 200,000 U.S. workers are directly involved in the production and installation of asbestos products. Through handling, sawing, fabricating, mixing, spraying and waste disposal of

Published by AsbestosClaims.Law
asbestosclaims.law/library/25209/5

silicosis

One of the first of the pneumoconioses to be recognized was silicosis, a fibrosis of the lungs caused by breathing silica, or quartz dust. Quartz, one of the most common of the earth's minerals, is found in numerous kinds of rock. All types of mining in which workers are exposed to silica dust have produced high degrees of silicosis, especially gold, copper, lead, zinc and iron mines, anthracite and bituminous coal mines which rock between the seams of coal. Other industries in which silicosis frequently occurred in the past are foundries, sandblasting, concrete breaking, pottery and china manufacture and granite cutting and polishing.

The onset of silicosis is gradual; often, it is years before impairment of the lungs can be detected. The condition is irreversible and prolonged exposure makes the victim vulnerable to tuberculosis, chronic bronchitis (inflammation and obstruction of the airways) and emphysema (a serious illness in which the air sacs of the lungs are progressively destroyed, making it difficult to breathe). These complications of silicosis (and of other pneumoconioses) are frequently the cause of disability and death.

While silicosis still remains an important occupational health hazard, the decline in the incidence of tuberculosis due to advances in treatment and in the nutritional status of workers, and the instigation of dust control measures, has led to a substantial decrease in the incidence of serious complications of the disorder in recent years.

PRODUCED
JM - 83

Published by AsbestosClaims.Law
asbestosclaims.law/library/25209/6

these products, they inhale significant amounts of asbestos dust in the form of tiny fibers every working day. Another 3 to 5 million workers are secondarily involved in the handling of asbestos products and are exposed to the minute fibers which escape into the air and are inhaled by these workers—to a lesser degree but still one that can be hazardous over long periods. Furthermore, there is a growing concern that the general public is running a risk from the contamination of asbestos dust which drifts through the air during construction and installation activities.

Inhaled asbestos fibers cause the crippling disease known as asbestosis, which scars the lungs and interferes with the passage of oxygen into the blood. Once asbestos enters the lungs, it is embedded and can't be removed. Over the years, it often leads to the development of certain cancers of the respiratory and digestive systems, and is believed to be a leading factor in the death of over 2,000 people in the United States each year. Heavy doses of asbestos in the lungs greatly increases the malignant effects of tobacco smoke. Studies have shown that asbestos workers who smoke have a lung cancer rate eight times higher than smokers in the general population.

Nearly four million tons of asbestos are mined annually throughout the world. In the U.S., which is the world's largest consumer of the mineral, the use of asbestos has increased 1,000-fold in this century, compared to an 8-fold increase for petroleum. As this increase far outstrips that of other materials that cause pneumoconiosis, asbestosis now ranks as our leading dust inhalation hazard, having wrested this dubious distinction away from silicosis which formerly held the title.

Published by AsbestosClaims.Law
asbestosclaims.law/library/25209/7

black lung

This disease, which is officially called Coal Worker's Pneumoconiosis (CWP), as it occurs in men who work in underground and surface coal mines, is popularly known as "black lung" because the fine coal dust particles that the hard or soft coal miner inhales over the years accumulate in his lungs and darken the tissue to the color of the coal itself.

Of the more than 125,000 persons presently engaged in coal mining in the U.S., it is estimated that from 10 to over 20 percent have CWP. Including former coal workers(those who are now retired or in other occupations), the total number of persons with black lung may be as high as 120,000. In about a third of these, it is believed, the disease will progress from simple pneumoconiosis (with only slight impairment, such as shortness of breath) to the more complicated and serious form of the condition known as progressive massive fibrosis, which often leads to severe disability and premature death.

Tragic as this toll has been, prospects are brighter for those who work in our coal mines—as we shall see in the section on prevention of the dust inhalation diseases.

other dust diseases

Other mineral dusts that present occupational hazards—but to a smaller degree—include beryllium, which can cause *berylliosis;* iron dust, which can cause *siderosis* or welder's disease; tin dust which produces *stanosis;* and barium, which can cause *baritosis.*

PRODUCED
JM - 83

Published by AsbestosClaims.Law
asbestosclaims.law/library/25209/8



Published by AsbestosClaims.Law
asbestosclaims.law/library/25209/9

Of these, berylliosis is the only one that can cause significant fibrosis and lung impairment. With the increased use of beryllium as an alloy with other metals in recent years, better control measures have been developed for the extraction of the compounds and serious complications of the disease have largely disappeared.

Other occupational pneumoconioses are due to organic (vegetable) dusts. These respiratory disorders are caused by inhaling cotton dust *(byssinosis)*, dust from sugar cane which has been baled and stored for months (*bagassosis)*, dust from moldy hay (Farmer's Lung) and dust from other living plant life. They produce an allergic reaction, irritating the lungs and making them more sensitive to further exposure, but rarely, as in other pneumoconioses, do they force the worker to change his job.

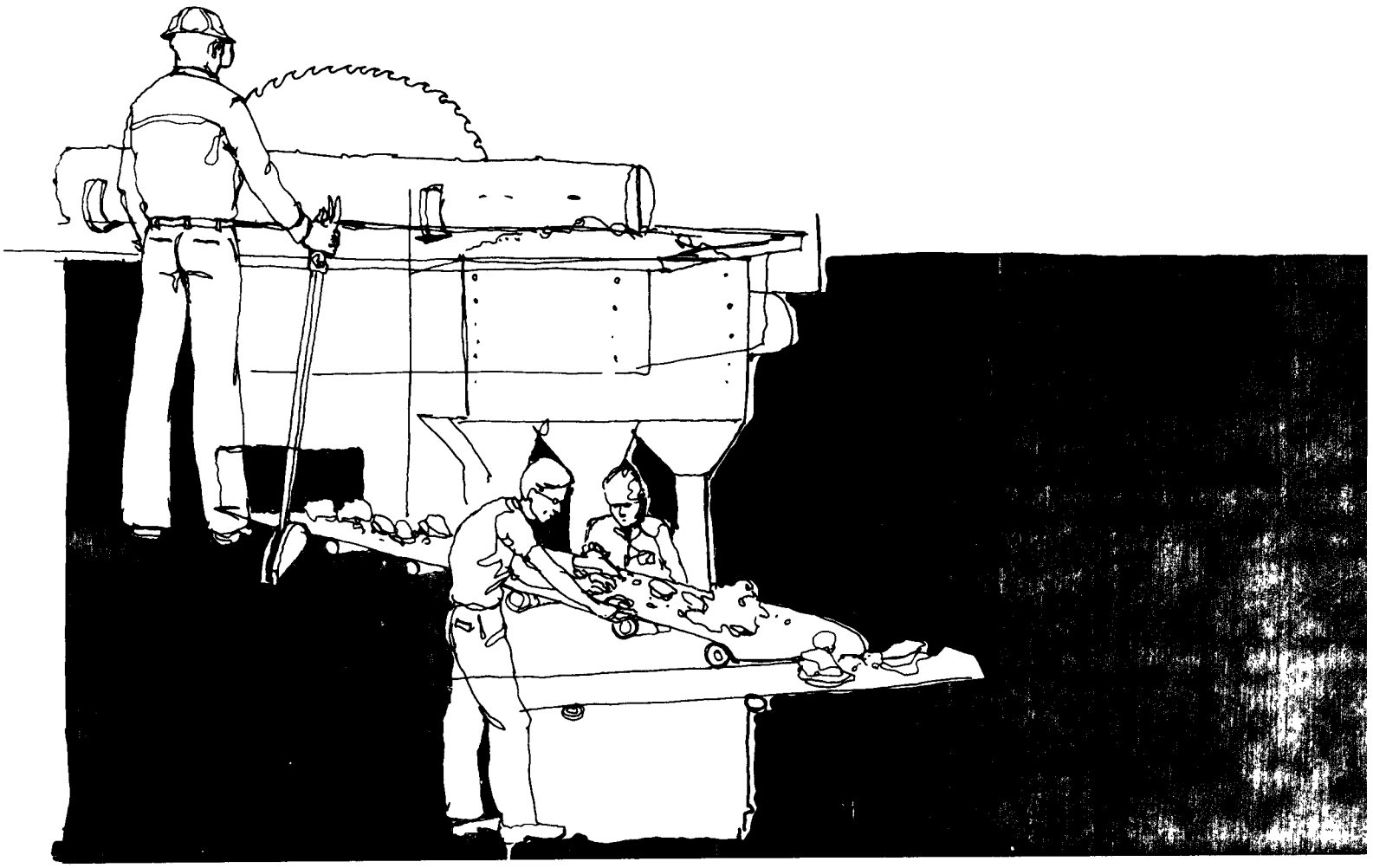
While, in themselves, the so-called benign pneumoconioses are relatively harmless, causing no more than some discomfort, they pose a serious threat in that they may increase the susceptibility of the worker to chronic bronchitis and emphysema—similar to the threat lurking in the more important dust diseases. Studies have given considerable evidence of this.

symptoms

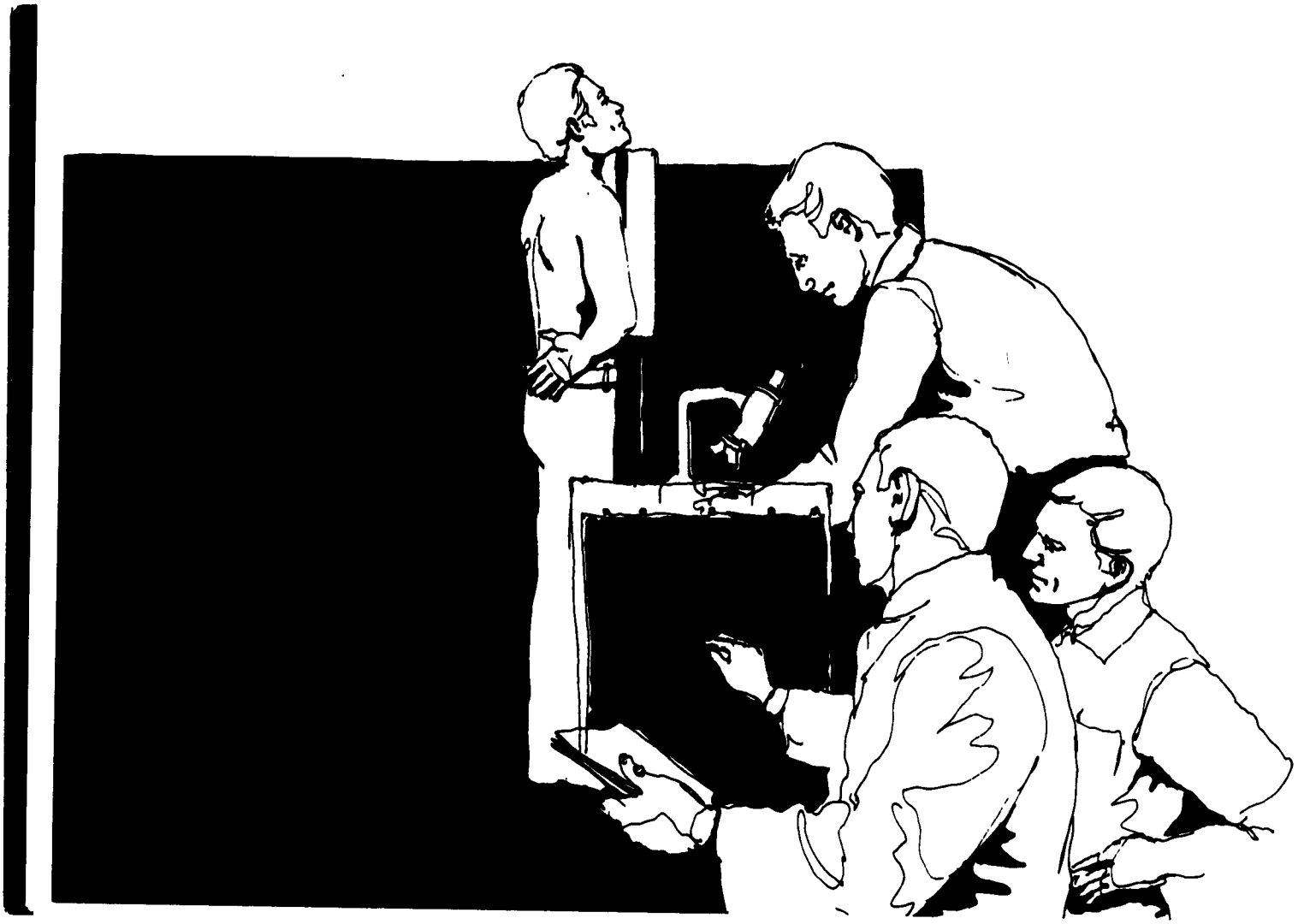
Symptoms of a dust disease—even the most serious kind—may not appear for years. Or they may occur soon after initial exposure. At first, there is shortness of breath, then coughing or wheezing, and later when the disease is advanced, with dust covering much of the lung area, there are chest pains and sometimes blueness of the lips and ears, due to interference with the normal flow of oxygen into the blood stream.

PRODUCED
JM - 83

Published by AsbestosClaims.Law
asbestosclaims.law/library/25209/10

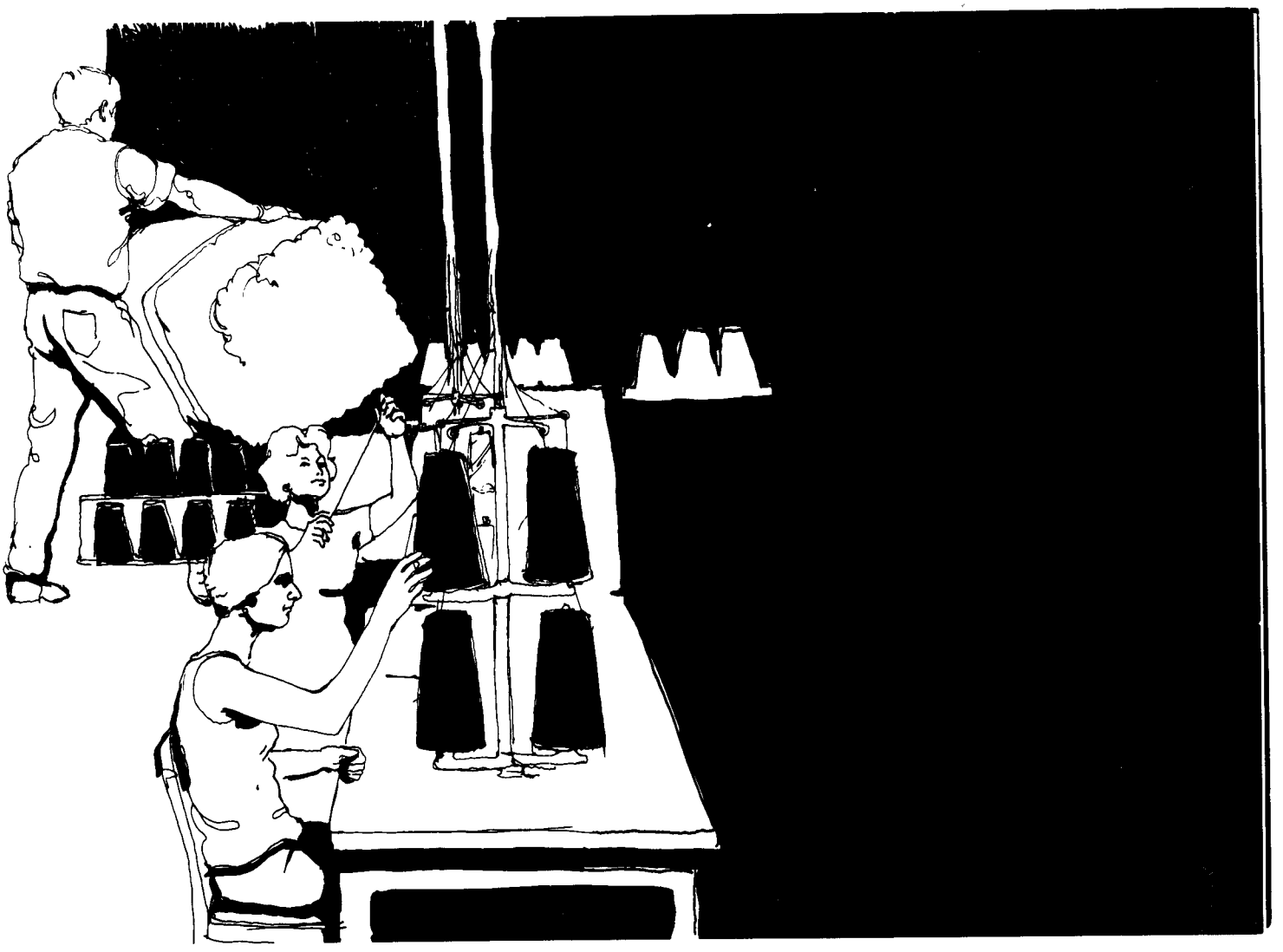


Published by AsbestosClaims.Law
asbestosclaims.law/library/25209/11

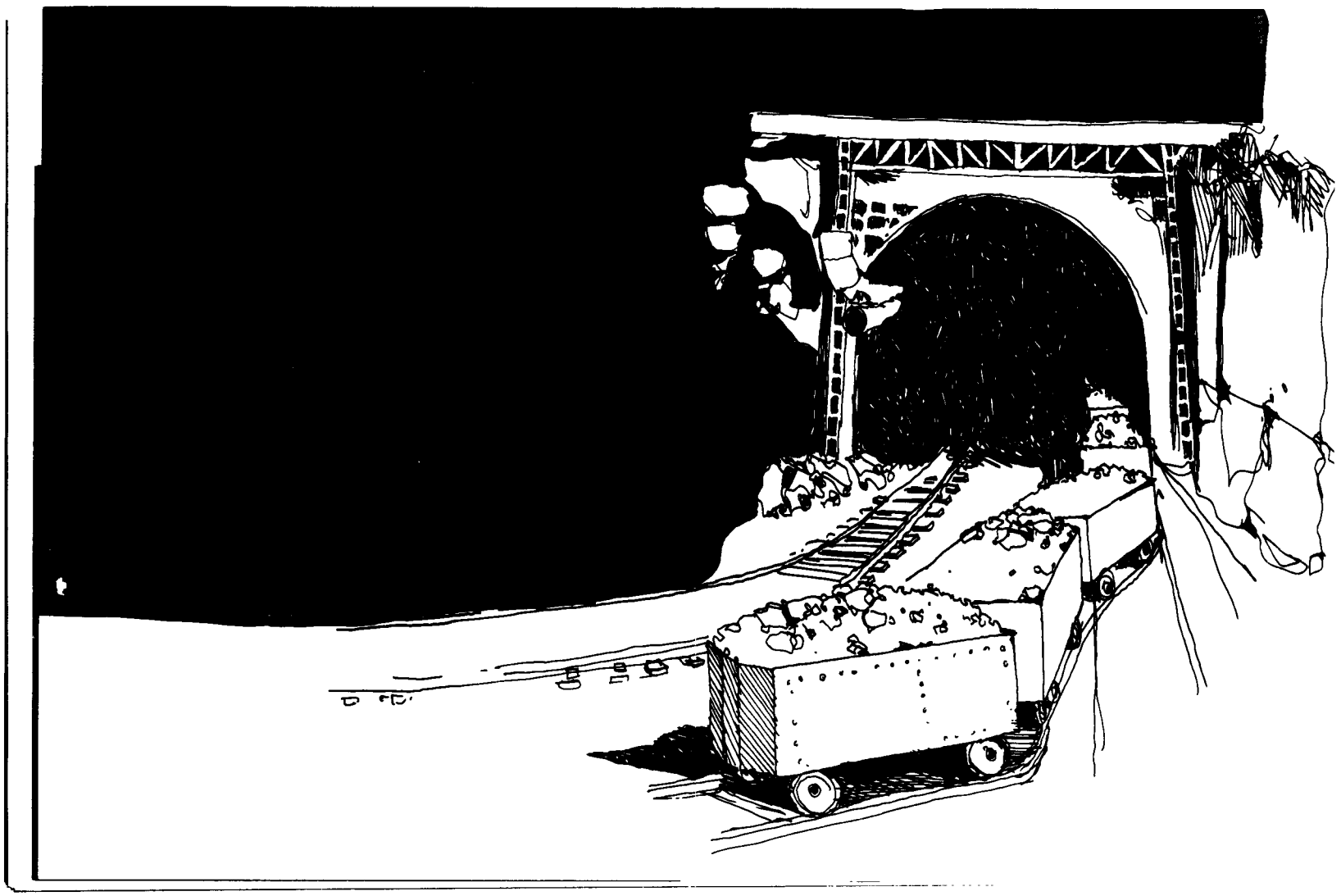


PRODUCED
JM - 83

Published by AsbestosClaims.Law
asbestosclaims.law/library/25209/12



Published by AsbestosClaims.Law
asbestosclaims.law/library/25209/13



PRODUCED
JM - 83

Published by AsbestosClaims.Law
asbestosclaims.law/library/25209/14

As has been noted, tuberculosis, chronic bronchitis, emphysema, lung cancer and other serious complication often go with a dust disease, particularly with silicosis, asbestosis and black lung.

diagnosis

A complete detailed history of each job the worker held in which he was exposed to dust is the first step in the diagnosis of all pneumoconioses. Then chest X-rays are taken. As early stages of the diseases may not show up on chest films, X-rays and lung function tests for those at risk should be scheduled at periodic intervals, every year or two.

treatment

Treatment for the serious pneumoconioses is difficult, for once the lung tissue is damaged, it cannot be repaired. There is no cure and efforts are made to see that the condition doesn't get worse. Shortness of breath and coughing can often be relieved. Special breathing apparatus is helpful in some cases. Infections, such as tuberculosis and pneumonia, can be effectively treated with antibiotics and other drugs. Obstructive diseases, such as chronic bronchitis and emphysema, can sometimes be treated with drugs that enlarge the bronchial tubes, making breathing easier.

Obviously, the best treatment for dust inhalation diseases is prevention—stopping exposure to the harmful dusts. In some cases, particularly

Published by AsbestosClaims.Law
asbestosclaims.law/library/25209/15

easily by such means as the proper ventilation of work areas, the removal of dust by suction as it is produced, the wetting down of materials before they are worked on, or by switching from a hazardous material to one that does not cause disease.

In other cases, the control of dust diseases is an extremely complicated matter, involving elaborate and costly measures. Occasionally, general protective devices are insufficient and the individual worker must take action to protect himself—by wearing an effective face mask.

While this may appear to be a simple matter, many workers find that the masks currently available are cumbersome, uncomfortable, or do not fit properly.

Now, however, this problem, which has been one of the main stumbling blocks in the battle against pneumoconiosis, is being solved. As a result of extensive research, four models of disposable face masks have been developed, which not only afford effective protection against occupational fibers and dusts, but, more importantly, meet the workers' requirements of comfort, convenience and good vision. These masks have been thoroughly tested among workers exposed to various occupational dusts, with excellent results, and they are now being made available to workers who need them.

Occupational dust diseases still remain a serious hazard in our highly mechanized society. Fortunately, with the substantial progress that has recently been made in combating these diseases, there is good reason to believe that the damage they cause will be greatly diminished, perhaps even eliminated, before long.

U S GOVERNMENT PRINTING OFFICE · 1973 O—520-008

PRODUCED
JM - 83

Published by AsbestosClaims.Law
asbestosclaims.law/library/25209/16

among younger workers who contract the diseases and face many years of hazardous exposure, this may necessitate a change of jobs. However, if proper safeguards against dust exposure are taken—safeguards that are presently available but not always followed—the risk of pneumoconiosis in all cases could be greatly reduced.

prevention

Over the years, Congress has passed various laws to protect workers in hazardous occupations, but only recently have the laws had teeth in them. Through such legislation as the Federal Coal Mine Safety Act of 1969, the Occupational Health and Safety Act of 1970, and the Black Lung Benefit Act of 1972, provisions were made not only for guarding the respiratory health of workers by reducing dust concentrations below the danger level, but also for compensating workers disabled by pneumoconiosis. Other federal and state laws are being sought by the National Institute for Occupational Safety and Health and by organized labor, which has provided aggressive leadership in seeking compliance with the 1969 and 1970 laws. In a growing number of communities, the general public, as well as workers, are protected against occupational dusts by safety regulations.

Authorities who have studied the problem believe that with the cooperation of federal and state agencies, management and labor, practically all cases of pneumoconiosis can be prevented.

Each dust-producing job must be studied separately to decide the best method of prevention. Sometimes dust levels can be reduced fairly

Published by AsbestosClaims.Law
asbestosclaims.law/library/25209/17



Prepared by the
Office of Information
for Division of Lung Diseases
National Heart and Lung Institute

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402 - Price 40 cents
Stock Number 1743-00028

PRODUCED
JM - 83