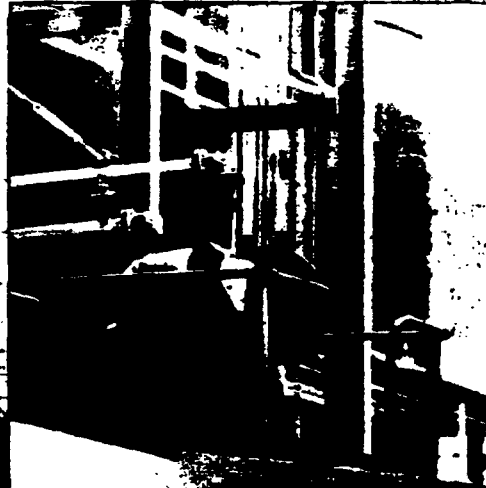


More Than a Paycheck: An Introduction to Occupational Cancer

Cancer Alert Series

U.S. Department of Labor
Occupational Safety and
Health Administration

1978



DANGER

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Cancer Alert Series

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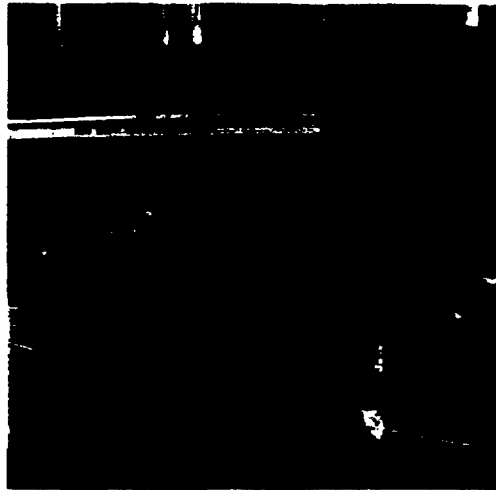
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Working for a Living—Risking Death

Joe H. was ready to retire happily after spending 30 years in the roofing trade, until he developed a persistent, hacking cough Minnie J. had come a long way after working on the Liberty Ships in World War II. Her children were grown and she planned an early retirement with her husband. Suddenly the chest pains began Marty P. was a plastics man for 21 years. One day his stomach began to ache, and the pain just wouldn't go away .

These workers gave the best years of their lives to supporting themselves and their families. In doing so, however, they brought home more than a weekly paycheck. They brought home cancer.



Millions of Americans risk occupational cancer.

Joe, Minnie, and Marty are not alone. The American Cancer Society reports that one out of every four Americans contracts some form of cancer during his or her lifetime, and one American dies of cancer every 80 seconds.

While we often assume that cancer is a mysterious disease with unpredictable causes, scientists have been discovering that our chances of getting the disease are not based

entirely on luck. The evidence suggests that exposure to certain substances can lead to cancer. The cause of the disease may be found in what we eat, drink, breathe, or smoke. It may be a part of the urban atmosphere.

It may also be found on the job. Cancer may begin with microscopic particles, chemical fumes, or low levels of radiation. Even if the intake is gradual, and exposure levels low, these substances can build up in the body like deposits in a long-term bank account. This "bank-account," however, pays off in a slow, lingering death.

The spread of occupational cancer in the United States is a problem of critical proportions. Every American should be concerned—especially because, with cooperative and conscientious effort, most work-related cancer can be prevented.

Do We Know What Causes Cancer?

Scientists do not completely understand cancer, but they do agree that it is characterized by an uncontrolled growth of abnormal cells. It is thought to begin this way: Sometimes one of the cells in an organism goes haywire, overpowers its control mechanism, and keeps on growing and reproducing. This is the start of cancer, a disease which afflicts people, animals, even plants. In humans, its most deadly characteristic is its ability to migrate throughout the body by way of the blood or lymphatic systems to begin new growths. Cancer can strike people of any age, in any part of the body.

The World Health Organization estimates that from 60 to 90 percent of cancers are triggered by the body's exposure to something—for instance, to certain food additives, to some industrial chemicals, or even to excessive sunlight. The risks of such cancers can be reduced. Not smoking cigarettes decreases the possibility of lung cancer. Limiting one's exposure to the sun's direct rays will lessen the chances of skin cancer. And there are many steps that can be taken to prevent ex-

posure to cancer-causing substances in the workplace.

Until recently, there were few long-term survivors of cancer. Now, because of medical advances in detection and treatment of the disease, this rate has improved so that, today, two of every six people who contract cancer will be saved. And our present medical knowledge *could* save another one of the four remaining, given prompt diagnosis and proper treatment.

A Far-Reaching Problem

Cancer in the workplace is not new. For over two centuries, tests by medical and scientific observers around the world have linked the disease to many different occupations. Among workers as varied as painters, chimney sweeps, railroad laborers, and factory workers, the stories were distressingly similar.

In the United States today, many Americans have occupations where they come in contact with disagreeable and sometimes toxic fumes, gases, mists, vapors, dusts, and other airborne particulate matter, as well as with potentially dangerous liquids and solids. Several of these substances have been found to be carcinogens (substances



Roofing is one of the many trades linked to lung cancer and leukemia.

capable of causing cancer). Millions of our nation's workers are thus at a high risk of developing cancer because of the jobs they hold.

A bewildering aspect of workplace cancer is the long incubation period that often occurs between exposure to the carcinogen and the first appearance of cancer symptoms. According to Dr. Irving J. Selikoff, Director of the Environmental Sciences Laboratory of Mount Sinai Hospital, once a person is exposed to a carcinogen, 15 to 45 years may go by before any symptoms appear. An example: Cancer is now taking its toll on those who breathed asbestos particles while working on World War II ships more than three decades ago. Doctors note several recent deaths due to mesothelioma (cancer of the membranes surrounding the lungs and other organs) among these shipyard workers of the 1940's.

Besides the immediate danger to the workers, evidence is mounting that the occupational cancer hazard reaches beyond the workplace to the family and community. Things that cause cancer in the workplace do not necessarily remain in the workplace. Workers who unknowingly take home dust or particles of carcinogenic substances on their bodies, clothes, cigarettes, or any other personal belongings may, in turn, expose their families and friends to possible contamination. One study of three towns in which vinyl chloride factories are located indicated an abnormal rate of cancer of the nervous system, as well as an abnormal number of birth defects, among the entire population.

If you multiply the number of workers exposed to carcinogens on the job by the average number of persons in the American family—four—you get an idea of the magnitude of the problem. For example, consider the over one million brake repair workers in the U.S. exposed to asbestos dust from brake drum linings. Add to them four million construction workers who saw, drill, spray, pack, and otherwise handle asbestos and asbestos products or who work near those who do. Multiply the total by four (in the average family) and you have 20 million

people at risk from asbestos alone. And asbestos is only one of many carcinogens found in the workplace.

The costs as well as the consequences of cancer are alarming. Medical care—including hospitalization, physicians' services, drugs, home nursing, sickroom equipment, and necessary treatment—becomes increasingly expensive. To this cost must be added indirect ones, such as the loss of earning power and disability compensation.

Thus, for everyone in the country, the problem of industrial cancer is a critical one. It touches all parts of our world—workplace, home, community.

The increasingly hazardous environment was described by Mt. Sinai's Dr. Selikoff and Dr. E. Cuyler Hammond, Vice President for Epidemiology and Statistics for the American Cancer Society, in a paper delivered before the American Cancer Society Science Writers' Seminar in 1974.

"The air we breathe today contains gases and particles that never before entered human lungs. Our food has chemicals designed to improve its taste, freshness, and appearance—but which are strange to our intestines, livers, kidneys, and blood. We touch, ingest, inhale, absorb an ever-increasing number of synthetic materials, and, in other circumstances, agents which have existed on earth but were never before part of the immediate human environment."

In another report, Dr. Selikoff warned: "In the coming decades, we'll have to cope with the consequences of our failure to protect workers in the past and simultaneously have to protect the workers of the future."

A Cooperative Effort

The problem of cancer in the workplace is as old as industry, yet grows more urgent all the time. How can such a widespread and complex problem be solved? It is clear that everyone's cooperation is necessary. Our large institutions, business, industry, and labor, as well as individuals, must become involved in a concentrated effort to rid the workplace of occupational cancer.

The following pages will explain some individual rights and responsibilities and will reveal ways in which government, management, labor, and the scientific community are attacking the problem of job-related cancer. Examples of how individual workers can participate in this effort will also be mentioned.

The Government and the Occupational Safety and Health Act

To protect the worker from the many and ever-present dangers of the workplace, the United States Congress passed the Occupational Safety and Health Act (OSHA) of 1970. Its purpose is "... to assure so far as possible every working man and woman in the Nation safe and healthful working conditions and to preserve our human resources ...". The law obligates every employer to provide his or her employees with a workplace free from safety and health hazards.

The OSHA established two government agencies—the Occupational Safety and Health Administration (OSHA) and the National Institute for Occupational Safety and Health (NIOSH). NIOSH performs research in occupational safety and health, while both agencies provide education and consultation to labor, industry, and Federal and state agencies. In addition, OSHA issues and enforces workplace standards, conducts worksite inspections, and responds to worker complaints.

The OSHA standards are regulations which designate safe and healthful working conditions or practices by which work must be performed to prevent injury or illness. It is the employer's responsibility to comply with all the standards pertinent to his or her workplace; if the employer does not comply, he or she can be cited, fined, or ordered to abate the hazards. In addition, the employer must ensure that the workers receive training in all the standards that apply to their jobs.



OSHA strictly regulates worker exposure to vinyl chloride.

Various OSHA standards regulating the use of cancer-causing substances require the employer:

- to inform workers of the provisions of the standards which apply to them;
- to provide regulated work areas restricted to authorized persons;
- to monitor workers' exposure to the substances;
- to ensure that workers' exposure does not exceed specific permissible exposure limits (P.E.L.);
- to provide medical surveillance and protective clothing or other protective equipment;
- to observe special procedures for emergencies, maintenance, or decontamination;
- to keep up-to-date records of workers' medical condition and amount of their exposure to the substance;

- to allow workers access to their medical records;
- to inform workers of the special hazards of the regulated substance; and
- to train them in the safe work practices that will keep the workers' exposure within the permissible limits.

To date, OSHA has issued a number of standards regulating such substances as asbestos, vinyl chloride, and benzene. OSHA has also proposed a regulation which would provide a general procedure for identifying, classifying, and regulating carcinogenic substances more quickly and efficiently.

Any worker who feels that he or she is exposed to a carcinogen on the job, or that there are any other conditions in the workplace which threaten safety or health, should discuss the situation with coworkers or the union representative, and ask the employer to correct the hazard. If more help is necessary, OSHA can make an inspection without giving the worker's name to the employer.

Management's Role: Some Examples

The employer bears a tremendous responsibility in the fight against occupational cancer. As we have already discussed, management has a legal obligation under the OSHA Act to protect the worker's safety and health. In order to carry out these duties, it is important that the employer be thoroughly familiar with whatever OSHA standards apply to his or her establishment. Employers who act responsibly to reduce or eliminate workplace hazards will benefit from a healthier, more productive workforce, savings in workers' compensation and medical insurance premiums, fewer workdays lost due to illness, improved morale, and the knowledge that every possible step is being taken to protect workers from occupational cancer.



It is management's responsibility to control industrial health hazards.

Some steps management can take to control the workers' exposure to carcinogens include:

- regularly monitoring the workers' exposure to the carcinogen;
- instituting adequate ventilation systems, closed systems, and other engineering controls;
- requiring proper housekeeping and maintenance procedures (for example, "wet" cleanup methods that control the spread of harmful dusts);
- employing trained industrial health and hygiene personnel; and
- instituting educational programs for supervisors and workers.

There are many examples of management's taking the initiative in the fight against occupational cancer. Dr. Paul Kotin, Senior Vice President for Health and Safety for Johns-Manville Corporation, outlined in-

dustry's obligations with regard to protecting the worker from cancer. "In reviewing the entire area of risk in the workplace and particularly the risk of the development of cancer, management or industry has a special responsibility" he explains. "It is management that initiates action. It is in management's laboratories that the new products are made. It is management that determines the scope of the activity. How big the company is going to be. How many people it is going to employ. It requires many things to arrive at these conclusions, but basically the decisions are management's This privilege that management has carries with it some very, very undeniable and emphatic responsibilities. The first is, management must be in the vanguard; it must be in the lead of supporting research, initiating research, calling attention to areas of ignorance where new information is necessary"

The Worker's Part

In recent years, labor unions have worked actively for healthful as well as safe conditions on the job. Some new benefits won in contract negotiations include: funds for joint labor-management research into health conditions in rubber products factories; access to company medical records for asbestos workers; and a joint labor-management health and safety committee for oil workers. Certain unions use full-time occupational safety and health specialists who assist with health programs and collective bargaining. They also may recommend to government improved protective legislation or regulations.

Traditionally, unions have insisted on management's strictly following OSHA standards to insure that the rights they provide are enforced or preserved. They have also lobbied for legislation on toxic substances requiring testing and regulating chemicals prior to their introduction into the industrial environment. "It comes down to a question of who shall live and who shall die," declared



Compliance with OSHA standards for fabric dyeing operations protects workers from exposure to carcinogens.

Sheldon W. Samuels, Director of Health, Safety, and Environment for the Industrial Union Department of the AFL-CIO. "We simply cannot continue to build industries around unscreened toxic substances."

Union or nonunion, all workers have an undeniable right to know if they are being exposed to a carcinogenic substance on the job. This right, asserts the National Academy of Sciences, ". . . shapes the boundaries of the employer's duty to reveal information." Workers should feel free to request information—from their employers, safety and health committees, union representatives, company physicians, and OSHA—about any carcinogenic substance used in the workplace, special health hazards involved, or special procedures or equipment necessary for controlling the hazard.

What responsibility does a worker have to safeguard his or her health against the threat of job-related cancer? Workers should:

- read the OSHA poster the employer must display in the workplace;
- comply with all applicable OSHA standards and the employer's safety and health rules;

- report any apparent hazards immediately to supervisor;
- report to the supervisor any job-related illness;
- cooperate fully with the OSHA compliance officer who inspects the workplace;
- practice good personal hygiene; and
- encourage and support the formation of groups such as effective safety and health committees.

The Scientist's Job

How do scientists determine whether an industrial substance causes cancer? The scientists, working in universities, private and public foundations, government, and other institutions, use a number of different methods. One involves exposing laboratory animals, usually rats or mice, to a suspected carcinogen; positive results in these tests can indicate a potential human carcinogen. Another useful method is the study of disease that spreads and involves large numbers of people. Studies of this kind cur-



Scientists identify and evaluate the cancer threat in the workplace.

rently are being used to examine workers who have contracted cancer. If those workers who handle a certain substance have a higher cancer rate than a sampling of the general population of the same age, sex, race, smoking habits, and exposure time, then that substance may be considered a probable cause of cancer.

Two large-scale efforts by scientists to identify high cancer-risk groups are the American Cancer Society's (ACS) Cancer Research Project and the National Cancer Institute's (NCI) Atlas of Cancer Mortality for U.S. Counties—1950-69. The ACS study, co-directed by Drs. Hammond and Selikoff, has the cooperation of labor and industry. The project examines illness and death rates among various union member groups and the materials these workers commonly handle. Under investigation are: printing press workers exposed to carbon black, various dyes, and asbestos talc and roofers exposed to coal tar derivatives.

The NCI study used computer-generated maps to discover a number of geographical areas around the country where the cancer rate among the population is abnormally high. High death rates from lung cancer were evident in the Gulf Coast and eastern regions where there are heavy concentrations of chemical and paper products industries. Unusual death rates for bladder cancer were found in the eastern and New England regions with a heavy concentration of chemical complexes as well as wood, stone, glass, and clay products facilities. Data indicating high incidence of kidney cancer were revealed in the Midwest and western areas with petroleum refineries, smelters, and lumber products operations. NCI's study has provided important clues about the relation of industrial substances to cancer.

Because of cancer's long latency period, during which the disease is not apparent, there is critical need for methods of detection and prediction. To meet this need, new and inexpensive test systems are being developed that may provide quick clues to the possibly dangerous properties of various

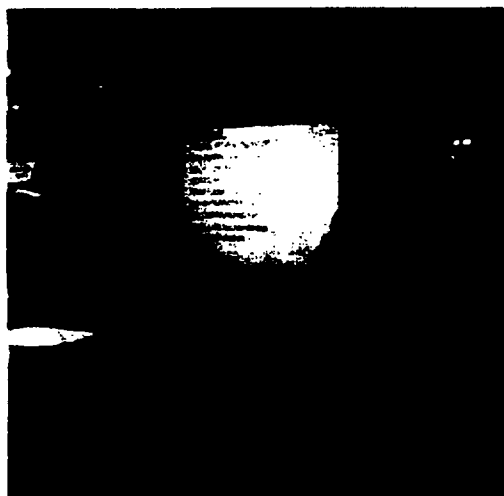
substances. Short-term tests, for example, may enable scientists to examine compounds for cancer-causing potential, to set priorities for longer-term tests, and to recommend safe procedures wherever a carcinogen is in use.

Thus, scientists play a crucial role in the fight against workplace cancer. Their efforts to identify and to evaluate carcinogens produce the evidence upon which the government, management, and labor must act.

A Final Note

This booklet has attempted to provide a brief introduction to the subject of occupational cancer. You should now have a better appreciation of the magnitude and complexity of the problem, and of some of the efforts that have been undertaken to deal with it. More important, you should begin to ask questions. Is my own workplace safe from the threat of cancer? Are carcinogenic substances used in my workplace? If so, what must be done to eliminate or reduce exposure? Is my family safe from the occupational cancer hazard? My community?

Knowledge—of the risks, of control methods, and of mutual rights and responsibilities—is the key to a united defense



Training sessions given by the employer are one way to keep workers informed about cancer hazards.

against occupational cancer. As you have seen, it is the employer's legal obligation to inform the worker about any toxic substance used on the job, the appropriate safe procedures, and the OSHA standards which apply. However, the workplace cancer problem touches all our lives, and every individual should make a point of finding out more about it by requesting information from employers, union or trade associations, OSHA, or other government agencies and public institutions.

Increasing our knowledge will prepare us to join in the fight against occupational cancer and help us to choose the best course of preventive action. The decisions are everyone's to make. "These decisions affect us all," states Dr. Selikoff.

"There is for the first time an opportunity," he continues, "for us all to make our voices known in the decision-making process. All of us have the right to put our two cents in and voice our opinions about what should be done, and the decisions have to be made by all of us. We have the chance to prevent cancer in the workplace. If we miss this opportunity, it will be our own fault."

* * * *

There is a Cancer Information Service (CIS) affiliated with the National Cancer Institute and the American Cancer Society. Callers can receive answers to their questions about cancer by using CIS's toll-free National Line: 800-638-6694.

Some High-Risk Operations, Carcinogens, and Related Cancers

Trade/Operation	Carcinogens	Affected Organ
Roofing trades	coal-tar-pitch volatiles asphalt	lungs, mouth, larynx, esophagus
Woodworking	solvents chlorinated hydro- carbons organic dusts	nasal membranes
Automobile clutch and brake maintenance Mining Milling Insulation construction Asbestos fabrication	abestos	lungs, mesothelium
Uranium processing Milling	radiation	lungs, lymphatic system
Rubber manufacture	benzene	bladder
Dye industry	benzedine	bladder
Metal working	chromium, arsenic	respiratory system
Oil refining	polycyclic hydro- carbons	white blood cells
Coke oven work	coke oven emissions	kidneys, lungs
Plastics production	vinyl chloride	liver

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"More Than a Paycheck" is also the title of a documentary half-hour film in color narrated by John Wayne and presented by the George Washington University School of Medicine and Health Sciences.

If members of your union, trade association, civic organization, school, or other group would like to obtain a copy of the film, contact your nearest OSHA Regional Office or the National AudioVisual Center, General Services Administration, Washington, D.C. 20409 (301-763-1891).

The Cancer Alert Series consists of the following titles:

More Than a Paycheck: An Introduction to
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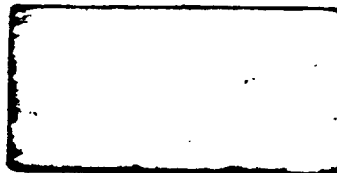
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