THE HEALTH CONSEQUENCES OF SMOKING

CANCER AND CHRONIC LUNG DISEASE IN THE WORKPLACE

a report of the Surgeon General
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1985
The Honorable Thomas P. O'Neill, Jr.
Speaker of the House of Representatives
Washington, D.C. 20515

Dear Mr. Speaker:

It is a pleasure to transmit to the Congress the final edition of the Surgeon General's Report on the Health Consequences of Smoking, as mandated by Section 8(a) of the Public Health Cigarette Smoking Act of 1969. This is the Public Health Service's 17th Report on this topic and, like earlier Reports, identifies cigarette smoking as one of this Nation's most serious public health problems.

This Report, which provides a detailed review of the relationship between smoking and hazardous substances in the workplace, is particularly disturbing because of the added health burden that many workers carry if they smoke cigarettes. As this Report makes clear, for some workers this added burden is substantial. No better example exists to illustrate this interaction than the case of asbestos workers. Current scientific evidence indicates that heavily exposed asbestos insulation workers who did not smoke may experience a 5-fold increase in lung cancer compared to nonsmoking, nonexposed workers. However, if this same worker also smoked, his lung cancer risk is increased more than 50-fold.

Also disturbing is the continued high rate of current cigarette use among blue collar workers compared to their white collar counterparts. These workers are more apt to be exposed to dusts and other harmful substances in their workplace environments. Programs to reduce workplace hazardous exposures are helping to offset these risks. For the majority of workers who smoke, cigarette smoking poses a greater risk to health than does occupational exposure. Thus, elimination of cigarette smoking among such workers can have a profound effect on improving their health.

This Department has a strong commitment to prevention and health promotion. It is essential that workplace health promotion programs have a strong focus on reducing cigarette smoking among employees to the extent possible. These efforts can not only have an effect on the health of the individual, but may also have a substantial impact by reducing absenteeism on the job, thereby improving productivity and reducing health care costs.

Cigarette smoking is associated with an estimated $23 billion in health care costs annually and over $30 billion in lost productivity and wages. To a certain degree we all share these costs whether we smoke or not. Programs that reduce smoking, therefore, can have a benefit to our society.

Sincerely,

Otis R. Bowen, M.D.
Secretary

Enclosure
The Honorable George Bush  
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Washington, D.C. 20510

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Sincerely,

Otis R. Bowen, M.D.
Secretary

Enclosure
FOREWORD

Over the past generation, the actions of labor unions, management, insurers, and Government have made substantial progress in reducing exposure to hazardous substances in the workplace. This Report acknowledges this progress, and demonstrates clearly that these efforts to protect the American worker must continue. There can be no relaxation in our efforts to continue the safeguards already in place or to seek new safeguards as new hazards are identified.

This Report also establishes that for these efforts to protect the worker to fully succeed, these same forces of labor, management, insurers, and Government must become equally engaged in attempts to reduce the prevalence of cigarette smoking, particularly among those working populations most at risk. For the majority of workers who smoke, cigarette smoking poses a greater risk to health than does occupational exposure.

This 1985 Report of the Surgeon General examines in greater depth than ever before the relationships between cigarette smoking and occupational exposures; it is a document of singular importance. As with previous Reports, a large number of experts and scientists recruited from both within and outside the Federal service have participated in developing and reviewing the content of this Report. I express here my respect and gratitude for their efforts.

Donald Ian Macdonald, M.D.
Acting Assistant Secretary
for Health
PREFACE


Cigarette smoking and its relationship to cancer and chronic obstructive lung disease (COLD) were extensively reviewed in the 1982 and 1984 Surgeon General’s Reports, respectively. In the 1982 Report, cigarette smoking was judged to be the leading cause of cancer mortality in the United States; a causal association was found between smoking and cancer of the lung, larynx, oral cavity, and esophagus, and smoking was identified as a contributory factor in the development of cancer of the bladder, kidney, and pancreas. In 1984, cigarette smoking was identified as the major cause of COLD, which includes chronic bronchitis and emphysema, among both men and women in the United States. The contribution of other factors in COLD morbidity and mortality was found to be far less important than that of cigarette smoking.

This Report examines the evidence available on the role played by cigarette smoking and occupational exposure in the development of cancer and chronic lung disease. Cancer and chronic lung disease are major causes of death in the United States, accounting for well over 25 percent of all deaths annually. Cancer mortality rates have shown a steady increase, unlike rates for the major cardiovascular diseases, which have declined over the last two decades. Chronic lung disease, now the fifth leading cause of mortality, has been increasing more rapidly than other major causes of death. It is estimated that more than 10 million Americans report suffering from these diseases.

Findings of the 1985 Report

The major overall conclusions of this Report are these:

For the majority of American workers who smoke, cigarette smoking represents a greater cause of death and disability than their workplace environment.

In those worksites where well-established disease outcomes occur, smoking control and reduction in exposure to hazardous agents are effective, compatible, and occasionally synergistic...
approaches to the reduction of disease risk for the individual worker.

Smoking and occupational exposures can interact synergistically to create more disease than the sum of the separate exposures. This kind of interaction is exemplified by the relationship between asbestos exposure and smoking. A study of heavily exposed asbestos insulation workers, more than 20 years after onset of exposure, demonstrated a fivefold increased risk for lung cancer among nonsmoking asbestos workers compared with nonsmokers without asbestos exposure. We know that in non-asbestos-exposed populations, smoking increases the lung cancer risk approximately tenfold. The risk is increased more than fiftyfold if the asbestos workers also smoke. This risk in cigarette-smoking asbestos workers is greater than the sum of the risk of the independent exposures, and is approximated by multiplying the risks of the two separate exposures. In other words, for those workers who both smoke and are exposed to asbestos, the risk of developing and dying from lung cancer is 5,000 percent greater than the risk for individuals who neither smoke nor are exposed. Thus, the interaction of cigarette smoking and asbestos exposure is multiplicative. For asbestos workers, the risk of developing and dying of lung cancer increases with an increasing number of cigarettes smoked per day and with an increasing asbestos exposure. For example, the risk is 87 times greater for those workers who smoke more than one pack per day. The risk declines among workers who are able to stop smoking, compared with the risk for those who continue to smoke. An interaction for the production of lung cancer also exists between cigarette smoking and the radon daughters exposure of miners, although the exact nature of this interaction is not clear.

Both cigarette smoking and exposure to certain occupational hazards increase the risk for chronic lung disease. These risks can occur independently or may combine to produce a greater degree of lung injury than would have occurred from either exposure separately. While many exposures are capable of producing chronic lung injury, either independently or in combination, smoking appears to be the more important exposure for the majority of U.S. workers.

Differences in Smoking Behavior Between White-Collar Workers and Blue-Collar Workers

This Report also presents detailed findings with regard to differences in smoking prevalence between blue-collar workers and white-collar workers. Blue-collar workers are more likely to be exposed to workplace agents, which, in combination with their higher smoking rates, may place these workers at considerable excess risk for cancer.
and chronic lung disease. Although these differences exist among both men and women, they are more pronounced among men.

The differences in the prevalence of smoking between blue-collar workers and white-collar workers may underestimate the differences found among specific populations of occupationally exposed workers. As noted in this Report, individual studies among certain workers report current smoking rates well in excess of 50 percent. In addition, in one of the largest studies of asbestos workers, more than 80 percent of the men in the cohort had been regular cigarette smokers during their lifetime and only 11 percent were classified as never having smoked regularly. These differences in smoking behavior make the control for smoking behavior an important part of the design of studies of the relationship of occupational exposures and cancer or chronic lung disease.

On the average, blue-collar men initiate smoking approximately 14 months earlier than white-collar men. We know from existing studies that an earlier age of initiation is strongly correlated with increased mortality for lung cancer and chronic lung disease as well as for most other smoking-related diseases. Even with this earlier age of initiation, a substantial fraction of blue-collar workers begin smoking coincident with their entry into the workforce, and blue-collar workers are less likely than white-collar workers to be able to successfully quit smoking.

**Smoking Control in the Workplace**

The potential role of the workplace in promoting initiation and fostering the continuation of smoking behavior represents a kind of interaction between smoking and the workplace that may affect large numbers of U.S. workers. It seems clear that the responsibility for health in the workplace includes at minimum a work environment that does not promote smoking or interfere with cessation.

The worksite offers an opportunity for implementation of smoking cessation programs. A number of studies cited in this Report found worksite-based programs to be more successful than clinic-based programs, probably owing to their more intensive nature and because many employer-sponsored programs offer economic and other incentives, thus enhancing their success.

The goal in public health, both in the worksite and outside it, is the reduction and elimination of disease and the promotion of healthy behavior. The content of this Report makes it clear that the elimination of chronic lung disease and cancer from the workplace cannot succeed without a companion effort to alter the smoking behavior of workers. It is precisely those occupations in which the greatest occupational hazards have existed that smoking cessation also yields the greatest return for individual worker's health. It
should be obvious that smoking cessation efforts are an adjunct to, and not a substitute for, occupational environmental controls. Correspondingly, a concern about workers' health that limits itself to the control of environmental exposure levels disregards the major health benefits of smoking cessation.

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Surgeon General
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