SMOKING and HEALTH

a report of the Surgeon General

- ☐ The Health Consequences of Smoking
- ☐ The Behavioral Aspects of Smoking
- ☐ Education and Prevention

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THE SECRETARY'S FOREWORD

On January 11, 1964, the first Surgeon General's Report on Smoking and Health was published. It created an instant—and justified—worldwide reaction. For the report, a document of impeccable scientific authority, established a frightening link between cigarette smoking and several disabling or fatal diseases.

- The report established that cigarette smoking is causally related to lung cancer in men.
- It revealed that cigarette smoking is directly related to illness and death from heart disease and other ailments; that cigarette smoking is the leading contributory cause of death from chronic bronchitis and other lung disorders.
- The report, in short, pronounced cigarette smoking a health hazard of sufficient importance in the United States to warrant remedial action.

Today, 15 years after the original report, we publish a new Surgeon General's Report on Smoking and Health. This book is more than a compendium of new data confirming the conclusions of the original report. For this document reveals, with dramatic clarity, that cigarette smoking is even more dangerous—indeed, far more dangerous—than was supposed in 1964.

- The new report, for example, presents sobering information about a subject not extensively treated in the 1964 report: women and smoking. Among other things, the evidence suggests that mothers who smoke during pregnancy face the possibility of creating long-term, irreversible effects on their babies. And as smoking levels among women go up, disease and death rates go up also: lung cancer has increased fivefold among women since 1955. Women who smoke like men die like men who smoke.
- The report sheds new light on dramatically increased risks to smokers exposed to certain occupational hazards. Workers in the asbestos, rubber, coal, textile, uranium, and chemical industries, among others, face these risks.
- And the new report, unlike its predecessor, takes up the subject of smoking among children. The percentage of girls aged 12 to 14 who smoke, for example, has increased eightfold since 1968. Among the age group 13 to 19, there are now 6 million regular smokers. One hundred thousand children under 13 are regular smokers.

This document is significant for another reason. It demolishes the claims made by cigarette manufacturers and a few others fifteen years ago and today: that the scientific evidence was sketchy; that no link between smoking and cancer was "proven." Those claims, empty then, are utterly vacuous now. Fifteen years of additional research overwhelmingly ratify the original scientific indictment of smoking as a contributor to disease and premature death. Indeed, even the cigarette industry's own research from January 1964 through December 1973, at a cost of approximately $15 million, confirmed the lethal dangers of cigarette smoking. Today there can be no doubt that smoking is truly slow-motion suicide.

In truth, the attack upon the scientific and medical evidence about smoking is little more than an attack upon science itself: an attack upon the epidemiological, clinical, and experimental research disciplines upon which these conclusions are based. Like every attack upon science by vested interests, from Aristotle's day to Galileo's to our own, these attacks collapse of their own weight.

But why, the reader may nevertheless ask, should government involve itself in an effort to broadcast these facts and to discourage cigarette smoking?

Why, indeed? For one reason, because the consequences of smoking are not simply personal and private. Those consequences, economic and medical, affect not only the smoker, but every taxpayer.

When we consider two major national problems of health policy, we find that cigarette smoking intensifies and complicates each one.

First among these problems is the spiraling cost of health care. Health care costs nationwide now amount to $205 billion a year—of which the Federal Government pays $59 billion. Smoking accounts for an estimated $5 to $8 billion in health care expenses, not to mention the cost of lost productivity, wages, and absenteeism caused by smoking-related illness; an annual cost estimated at $12 to $18 billion.

No person, given these staggering costs, can reasonably conclude that smoking is simply a private concern; it is demonstrably a public health problem also.

A second major problem is that our health care system overemphasizes expensive medical technology and institutional care, while it largely neglects preventive medicine and health promotion.

Certainly, if the government is to shift its health strategy toward preventive rather than merely curative medicine, it cannot ignore smoking. *For smoking is the largest preventable cause of death in America.* When demographers look at death rates for diseases related to cigarette smoking, they identify 80,000 deaths each year from lung cancer, 22,000 deaths from other cancers, up to 225,000 deaths from cardiovascular disease, and more than 19,000 deaths from chronic pulmonary disease—every single one of them related to smoking. That is why smoking is Public Health Enemy Number One in America.

Having established the clear danger of smoking and the legitimacy of smoking as a public health issue, however, a final question remains: How much can government usefully do to publicize the hazards of cigarette smoking; to encourage citizens to stop smoking—or not to start?

Cigarette smoking, after all, is not like most other environmental hazards. It cannot be curbed simply through massive public and private expenditures, as in the case of water pollution abatement, on which $265 billion will be spent in the next 10 years. Cigarette smoking is not subject to the same kinds of government regulation and control that are now used, for example, to check the emission of toxic substances into the environment. These hazards can be dealt with through straightforward programs of abatement and strict regulation. When it comes to smoking, there is, of course, a role to be played by regulation and by economic and other incentives. But in a free society, research and education must be the major tools of any public-health program to deal with smoking.

So the stepped-up smoking-and-health program launched by the Department of Health, Education, and Welfare a year ago is primarily one of research, education, and persuasion. I described it last year, in testimony before the House Subcommittee on Health and the Environment, in these words:

> 'Make no mistake, our efforts are to reduce smoking. But they are efforts grounded in persuasion and information that appeal to the common sense of our citizens. They are not efforts based on coercion and scare tactics. I have the greatest empathy for the millions of Americans who want to stop smoking, but who find it very, very difficult to do so...
> '...If our citizens...are given all the facts from government, or other sources, and still do not wish to give up a personal habit, however hazardous, then, except for protecting the rights of non-smokers, I think government can properly do no more.'

How successful can such efforts be? Quite successful, to judge from the record:

Today, more than 30 million Americans are ex-smokers. This does not include the number of people who, after considering the risks, chose never to take up the habit; they must also number in the millions.

The number of cigarettes consumed per person in the United States has declined from 4,345 in 1963 to 3,965 in 1978. In fact, per capita cigarette consumption this past year is at its lowest level in 20 years.

These facts, without a doubt, are in large part due to efforts by public health agencies and voluntary groups to inform the public about the risks of smoking.

These efforts are not mere publicity; the record suggests that every time government and voluntary agencies have intensified their efforts to spotlight the risks of smoking, more smokers have given up the habit and more have decided not to take it up.

Moreover, we know from surveys of public opinion and attitudes that the great majority of smokers—90 percent—have either tried to quit smoking or would probably quit, if only they could find an effective way to do so.

These people need help.

So, too, do millions of children and young people who must have the facts if they are to make a truly informed choice whether to smoke. Indeed, it is children who are the main focus of our efforts to inform and persuade. It is nothing short of a national tragedy that so much death and disease are wrought by a powerful habit often taken up by unsuspecting children, lured by seductive multimillion dollar cigarette-advertising campaigns.

This new Report of the Surgeon General typifies the Department's approach to the issue of smoking and health. It is based on scientific research. Its purpose is to provide facts. Its persuasive power is in the weight of the scientific evidence.

We set out to publish it for three reasons: First, we wished to bring together new information on smoking and health which has accumulated in the 15 years since Surgeon General Luther Terry released the epochal report of 1964.

Second, we wished to extend the area of inquiry into smoking and health beyond medicine into the fields of education and behavioral science. For many of the remaining unanswered questions about smoking and health are in these latter fields. We have some evidence, for example, that women smokers have more trouble giving up smoking than men—but why? Some observers believe that women are more concerned than men about gaining weight when they stop smoking. But in fact we do not know; the answers to that and other questions about smoking must be pursued through future behavioral research.

Third and finally, we wished to provide a firm base of knowledge on which health agencies throughout this nation—and the world—can build their efforts to reduce cigarette-related death and disability. For the problem of cigarette smoking is not just domestic; it is worldwide. Smokers in the United States consume 615 billion cigarettes a year; worldwide, the consumption of cigarettes approaches three trillion each year.

This, then, is the report: a compendium of 22 scientific papers on smoking and health, commissioned by the Surgeon General of the Public Health Service, compiled by 12 agencies of the Department of Health, Education, and Welfare, and reviewed by scientists who are recognized experts in their fields of inquiry. Thirteen of the papers

comprise a report on the health consequences of smoking, which the Secretary of Health, Education, and Welfare is required by law to submit to Congress each year. The remaining chapters deal with behavioral aspects of smoking and with education and prevention.

This report is, in my judgment, a major contribution to knowledge about smoking and health—and a major resource for physicians, public health officials, educators, and others who are concerned with advancing the nation's health through a sound strategy of prevention.

Joseph A. Califano, Jr.
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January 11, 1979

PREFACE

On January 11, 1964, the Surgeon General's Advisory Committee on Smoking and Health concluded: "Cigarette smoking is a health hazard of sufficient importance in the United States to warrant appropriate remedial action."

Today, this report reinforces that major conclusion. It is backed up by the weight of thousands of additional studies performed throughout the world. Fifteen years later, the scientific evidence on the health hazards of cigarette smoking is overwhelming.

The information in the health consequences and behavioral parts of this report has been brought together by 10 agencies of the United States Public Health Service. As will be seen, these agencies have different research or regulatory missions but a common concern with cigarette smoking as a contributor to illness, disability, and death.

Since 1964, an estimated 30 million men and women have quit the cigarette smoking habit. The prevalence of regular cigarette smoking in the adult population has declined from approximately 42 percent to 33 percent (Appendix). Yet, in 1978, an estimated 54 million men and women smoked 615 billion cigarettes. Each year, the health damage resulting from cigarette smoking costs this nation an estimated 27 billion dollars in medical care, absenteeism, decreased work productivity, and accidents. A great fraction of these costs are borne by the entire public—smokers and nonsmokers—through health insurance, disability payments, and other private and taxpayer-supported programs. In 1979, cigarette smoking is the single most important preventable environmental factor contributing to illness, disability, and death in the United States (Chapters 2 and 3).

This 1979 report describes our current knowledge of the health consequences of smoking, the behavioral aspects of smoking, and efforts in education and prevention. It presents strong conclusions where they are warranted by the accumulated evidence. It provides alternative working hypotheses when the available facts are not sufficient to warrant conclusions. It suggests future lines of inquiry where there are gaps in existing knowledge.

Adhering to this spirit of inquiry and recognizing the magnitude of the public health problem, we must ask: What is our current knowledge about "appropriate remedial action?" What scientific, economic, and behavioral facts are important for the design of public policy toward cigarette smoking? What have we learned so far, and where do we go from here? To answer these questions, we must confront three central facts: Individuals vary in their health risks associated with cigarette smoking. Individuals vary in their cigarette-smoking behavior. The cigarette product itself is changing.

High Risk Populations

The adverse health effects of smoking vary considerably in their nature and severity among individuals. They depend, for example, on the duration and frequency of smoking, on the presence or absence of concurrent illness or other environmental exposures, and on the individual's age and sex. Some health effects are immediate, while others may be delayed for years.

Most importantly, certain individuals may be particularly prone to these adverse health effects.

Women, youth, minorities, and workers exposed to occupational hazards in no way constitute an exhaustive list of especially high risk individuals. Every chapter in this report attempts to focus on particular types of individuals of highest susceptibility. Cigarette smoking acts synergistically with hypertension and elevated cholesterol to enhance the risk of developing coronary heart disease (Chapter 4). Cigarette smoking may be a promoter or co-carcinogen among those individuals exposed to other cancer-causing agents (Chapter 5). It has been suggested that there may be groups of smokers highly susceptible to lung damage from cigarette smoke whose characteristics might be detected by pulmonary function tests and histological studies or by the presence of alpha-1-antitrypsin deficiency (Chapter 6). Those other risk factors which may make maternal smoking more dangerous to the fetus need to be isolated, such as anemia, poor cardiac function, unfavorable age, and other socioeconomic factors (Chapter 8). Individuals with rhinitis or asthma may in fact be more sensitive to the nonspecific noxious effects of smoke (Chapter 10). Cigarette smoking increases the risk of peripheral vascular disease in diabetics (Chapter 4).

Women and Smoking

The findings in the report have grave public health implications for women of all ages. Although the prevalence of cigarette smoking among adult males has declined from approximately 53 percent in 1964 to 38 percent in 1978 (Appendix), the overall percentage of adult female smokers remains virtually unchanged at about 30 percent (Appendix). Cigarette smoking among younger women has increased, particularly among teenage girls. The mortality rate from lung cancer for women in 1978 was almost three times as high as in 1964, and the ratio of male to female mortality from lung cancer has decreased by almost one-half (Chapter 5). Women who have smoking characteristics similar to men experience overall mortality rates similar to men (Chapter 2).

Cigarette smoking is a major independent risk factor for fatal and nonfatal heart attacks and sudden death in both men and women (Chapter 4). The risk of heart attack is increased about tenfold in those

women smokers who use estrogen-containing oral contraceptives (Chapters 4 and 12).

The weight of evidence demonstrates that smoking during pregnancy has a significant adverse effect upon the well-being of the fetus and the health of the newborn baby (Chapter 8).

There is abundant evidence that maternal smoking directly retards the rate of fetal growth (Chapter 8) and increases the risk of spontaneous abortion, of fetal death, and of neonatal death in otherwise normal infants. More important, there is growing evidence that children of smoking mothers may have measurable deficiencies in physical growth, intellectual development, and emotional development that are independent of other known risk factors (Chapter 8). Children of mothers who smoke during pregnancy do not catch up with children of nonsmoking mothers in various stages of development (Chapter 8).

Children and Teenagers

Smoking among teenage boys has remained virtually constant, and among teenage girls it is actually increasing (Chapters 17, 18, and Appendix). The average age of experimentation with cigarettes and initiation of regular cigarette smoking has been decreasing (Chapter 17 and Appendix). Survey data suggest that teenage and early-youth smoking habits are major determinants of lifelong cigarette consumption. The mortality rates from all causes are significantly higher among those who initiate smoking earlier in life (Chapter 2).

Evidence is accumulating that the health effects of smoking evolve over a lifetime (Chapters 2, 3, 4, 5 and 6). Even when a morbid or fatal consequence of smoking occurs in later life, its antecedents may be present even in childhood. For example, autopsy studies show that cigarette smoking is associated with more severe and extensive atherosclerosis of the aorta and coronary arteries (Chapter 4). Several scientific questions have been raised about effects of smoking on the severity of atherosclerosis in childhood and adolescence and the premature development of adult forms of these lesions (Chapter 4).

Clinical, experimental, pathological, and epidemiological studies in humans and animals demonstrate that cigarette smoking produces measurable lung damage, even in very young age groups (Chapter 6). Young cigarette smokers, even those without respiratory symptoms, have evidence of small airway dysfunction more frequently than nonsmokers (Chapter 6). A number of recent studies have established a higher prevalence of regular cough, phlegm production, wheezing, and other respiratory symptoms in teenage and young adult smokers as compared to nonsmokers (Chapter 6). The connection between pediatric respiratory illness and adult chronic respiratory disease has been supported in prospective studies (Chapter 6).

Children and teenagers are susceptible in many ways to the effects of others' smoking. Numerous research studies have found a signifi-

cant relation between childrens' respiratory illness and parental smoking (Chapter 11). Childrens' cigarette smoking habits are strongly influenced by the smoking habits of family members and peers (Chapters 17 and 18).

Minorities

The health consequences of cigarette smoking in minorities may be particularly severe, yet little is known about these health consequences at present. Survey data indicate that the prevalence of cigarette smoking among blacks exceeds that of whites (Appendix). Lung cancer death rates among blacks exceed those of whites (Chapter 5). The effects of maternal smoking on fetal development and infant health may be especially significant among minority mothers with other risk factors for complication of pregnancy (Chapter 8). Nonwhite workers in industrial settings may be particularly susceptible to the combined effects of cigarette smoking and occupational exposure to toxic agents (Chapters 5 and 7).

Smoking and Occupational Exposure

In every race, sex, and age group, blue-collar workers are especially susceptible to the combined effects of cigarette smoking and exposure to toxic industrial agents (Chapter 7). Fumes from fluorocarbon polymers are decomposed by the heat of burning cigarettes (Chapter 7). These and other chemicals contaminate cigarettes, which are then smoked (Chapter 7). Cigarette smoke contains many of the same chemicals found to be workplace toxins, such as hydrogen cyanide and carbon monoxide (Chapter 7). Exposure to coal dust, cotton dust, chlorine, and radiation combine additively with cigarette smoke to produce lung damage (Chapters 6 and 7). Cigarette smoking acts synergistically with exposure to asbestos to produce lung cancer (Chapters 5 and 7). Other documented examples of synergistic action include rubber fumes, dust, and radiation from uranium mining (Chapter 7). Studies have shown that cigarette smoking contributes to accidents in the workplace (Chapter 7).

Cigarette Smoking Behavior

The design of policy depends not only on our ability to identify high-risk groups but also on our understanding of differences in the cigarette-smoking behavior of these individuals. As numerous references in Chapters 15–21 and the Appendix emphasize, there are serious gaps in our understanding of the initiation of the smoking habit, the nature of cigarette dependence and withdrawal, and the cessation of smoking. Yet to design and implement effective policies, we must know how various target groups differ in each of these dimensions.

Evidence is cited in this report that women may differ from men in the initiation, maintenance, and cessation of smoking. It has been suggested that the abstinence syndrome is more severe in women (Chapter 15). Women are apparently more likely to fail in organized cessation programs (Chapter 19). Survey data suggest an increase in the prevalence of heavier smoking among younger females entering the smoking population (Appendix).

In this respect, we need to study the effects of introducing filter cigarettes in the 1950's and 1960's and the effects of the newer lower "tar" cigarettes in the 1970's upon the initiation of smoking, especially among young women (Appendix). We need to know whether advice is effective in influencing cigarette smoking, particularly among pregnant women during prenatal care.

Among children and teenagers, the experimental phase of cigarette smoking (Chapter 17) may in fact be the critical point of intervention. It is possible, and some investigators have suggested (Chapter 17), that younger and older adolescents respond differently to different types of antismoking intervention (Chapter 17). It also remains unclear whether teenagers respond more to contemporary peer pressure to smoke or to adult smoking images (Chapter 17). If adult family members in fact have the most critical influence on teenage smoking initiation, then the critical target population may be the adults and not their children (Chapter 17). Although the literature on the responsiveness of cigarette consumption to price is conflicting, some studies suggest that the demand for cigarettes among teenagers may be more price sensitive (Chapter 18).

Survey data suggest that individuals who attempt to quit cigarette smoking have had considerably more success in rapid and complete cessation than in gradual reduction in the amount smoked (Chapter 15). Some studies in fact suggest that withdrawal symptoms are more severe during gradual reduction (Chapter 15). Other studies suggest that very few smokers can satisfy their addiction on less than 10 to 12 cigarettes daily (Chapter 16). On the other hand, there is some evidence that lighter smokers are more successful at cessation (Chapter 18 and Appendix). There is also inconclusive evidence that lower "tar" and nicotine cigarettes can be a vehicle for cessation. These results need to be reviewed in light of the emergence of new personalized programs of smoking cessation which have reported recent success (Chapter 16).

Finally, the available survey data indicate that the prevalence of smoking is higher among minorities and blue-collar workers (Appendix). Yet very little is known about motivations for initiation and cessation of smoking among these individuals.

The Changing Cigarette Product

The cigarette product itself has changed considerably in the past 25 years. In 1954, when reports linking cigarettes to lung cancer first appeared, less than 1 percent of cigarettes produced were filter-tipped (Appendix). The average "tar" delivery of cigarettes was approximately 36 mg. The average nicotine delivery was over 2 mg (Chapter 14 and Appendix). In the years following this antismoking publicity, the consumption of filter cigarettes rose rapidly, and the average "tar" and nicotine deliveries of cigarettes decreased. By 1964, at the time of the Surgeon General's first report, the market share of filter cigarettes had reached 60 percent (Appendix). The average "tar" delivery of a cigarette was about 23 mg. The average nicotine delivery was approximately 1.3 mg (Chapter 14 and Appendix).

Since then, the average "tar" and nicotine deliveries have continued to decline. This was encouraged by a series of Government actions beginning in 1966. In that year, the Public Health Service issued its finding that "the preponderance of scientific evidence strongly suggests that the lower the 'tar' and nicotine content of a cigarette, the less harmful [will] be the effect." This was followed by the decision of the Federal Trade Commission to begin measuring the "tar" and nicotine yields of cigarettes and to permit manufacturers to begin using this information in their advertising.

By 1977, the sales-weighted average "tar" per cigarette approached 17 mg; the sales-weighted average nicotine per cigarette approached 1.1 mg (Chapter 14 and Appendix). This decline in "tar" and nicotine resulted from important changes in cigarette production technology—the development of tobacco sheet reconstitution, improvements in cigarette filtration and cigarette paper, the genetic manipulation of tobacco strains, and increased use of plant stems and other tobacco portions formerly regarded as waste. In the past 5 years, the market share of cigarettes with "tar" delivery of 15 mg or less has increased dramatically and is now expected to exceed 30 percent. In 1977, nearly one-half of the cigarette industry's $0.8 billion advertising and promotional budget was devoted to these cigarettes.

How should we interpret these changes? What do these "tar" and nicotine measurements represent?

In one year, a typical one-pack-per-day smoker takes in 50,000 to 70,000 puffs through the burning column of a unique chemical factory which contains over 2,000 known compounds (Chapter 14). Many of these compounds are established carcinogens (Chapter 14) and appear in the particulate phase or "tar" of the smoke. A nonspecific decrease in "tar," however, does not necessarily imply a specific decrease in any single dangerous substance. Moreover, there is as yet no unequivocal evidence for the existence of "safe" levels of these carcinogenic chemicals. Even if we could identify and selectively eliminate certain known carcinogenic chemicals from cigarette smoke, there may be

numerous, as yet unidentified, dangerous substances remaining (Chapter 14).

In addition to "tar" and nicotine, cigarette smoke contains a gaseous phase with numerous components such as hydrogen cyanide, volatile aromatic hydrocarbons, and carbon monoxide. Carbon monoxide, in particular, has been identified throughout this report as a possible critical factor in coronary heart disease, atherosclerosis and sudden death, occupationally related illness, chronic respiratory disease, fetal growth retardation, and the noxious effects of passive smoking (Chapters 4, 6, 7, 8, and 11). At present, we do not have standard, reproducible measurements of the delivery of carbon monoxide in all U.S. cigarettes. Yet, some published studies suggest that some allegedly less harmful cigarettes may have higher concentrations of carbon monoxide. In Great Britain, the carbon monoxide delivery of certain filter cigarettes exceeded that of other nonfilter cigarettes (Chapter 14).

There is substantial experimental evidence, and some supporting data from retrospective studies, that cigarettes with reduced "tar" and nicotine delivery should in principle have reduced risks of health hazard (Chapters 2, 4 and 5). However, there is only one single controlled prospective study, quoted numerous times throughout this report, of the effect of "tar" and nicotine content on mortality rates. Such a study has not been repeated. The risks of overall mortality and specific mortality from lung cancer and coronary heart disease were lower in those smoking lower "tar" and nicotine cigarettes than in those smoking higher "tar" and nicotine cigarettes. But the risks for low "tar" and nicotine cigarette smokers were still significantly higher than in nonsmokers. This study did not evaluate the risk of mortality from other causes, such as chronic obstructive lung disease. It does not establish that low "tar" and nicotine cigarettes diminish the effect of smoking on the unborn fetus or the developing child. Moreover, the period of observation in this study was 1960 to 1972. Cigarettes regarded as low in "tar" and nicotine during this time do not represent current products. This study does not establish that currently available low "tar" and nicotine cigarettes are necessarily less hazardous.

The "tar" and nicotine content of cigarettes is measured by machines which smoke cigarettes according to a predetermined puff rate, butt length, duration of puff, and volume of puff. An individual smoker does not necessarily consume cigarettes in this standardized manner. It is possible for a low "tar" and nicotine smoker to inhale in one day much more of these constituents than a smoker of cigarettes with higher "tar" and nicotine content. Some studies suggest that individuals who smoke low "tar" and nicotine cigarettes may inhale more deeply or smoke the cigarette further down to the butt to compensate for the lower concentration of nicotine (Appendix). In other experiments, individuals given low "tar" and nicotine cigarettes

increase the number of cigarettes they smoke. In this respect, there is little epidemiological information concerning the trade-off between smoking a few higher "tar" cigarettes and smoking many lower "tar" cigarettes. A few long-term follow-up studies suggest that many smokers who voluntarily switch to low "tar" cigarettes may not increase their frequency of cigarette consumption. The interpretation of these studies is complicated, however, by our lack of understanding of the motives and circumstances of an individual's decision to switch to a lower "tar" cigarette.

The effect of a decrease in "tar" and nicotine content applies not only to changes in the habits of current smokers, but also to the cigarette consumption of potential new smokers (Appendix). Although there is no conclusive evidence on this point, we need to know whether the lowering of "tar" and nicotine in cigarettes over the past 20 years has made it easier for our youth to experiment with and later become habituated to cigarettes (Appendix).

Finally, the successful marketing of these low "tar" and nicotine cigarettes has required the addition of numerous flavor additives. The nature and composition of these additives is to some extent a proprietary matter. Nevertheless, we do not know whether these undisclosed additives are themselves harmless.

Until these scientific and behavioral issues are resolved, there can be no final assessment of the public health benefits of our present search for less hazardous cigarettes. The preponderance of scientific evidence continues, as in 1966, to suggest that cigarettes with lower "tar" and nicotine are less hazardous. It has become clear in the years since, however, that in presenting this information to the public three caveats are in order: Consumers should be advised to consider not only levels of "tar" and nicotine but also (when the information becomes available) levels of other tobacco smoke constituents, including carbon monoxide. They should be warned that, in shifting to a less hazardous cigarette, they may in fact increase their hazard if they begin smoking more cigarettes or inhaling more deeply. And most of all, they should be cautioned that even the lowest yield of cigarettes presents health hazards very much higher than would be encountered if they smoked no cigarettes at all, and that the single most effective way to reduce the hazards associated with smoking is to quit.

Public Policy

The decision to smoke is a personal decision, but once this is said, it remains unquestionably the responsibility of health officials to insure that smokers and potential smokers are adequately informed of the hazards. This is especially true in a society where hundreds of millions of dollars are spent each year promoting cigarettes and where these

and many other influences are encouraging young people to take up smoking.

The consideration of what is meant by "adequately informed" is a scientific and public health policy problem.

As this report shows, our knowledge of the relevant facts regarding the health hazards of cigarette smoking has increased manyfold since 1964. And efforts at adequately informing the public have had some success. According to survey data (Chapter 16), a majority of smokers, both adults and teenagers, respond affirmatively to questions about the health hazards of smoking and the desirability of quitting. Yet, perhaps because nicotine is a powerful addictive drug, millions of smokers seem unable to translate this information into personal action. Further, we know so little about how to prevent smoking among children and teenagers that the numbers of new smokers have remained virtually constant.

Earlier in this preface we noted changes that have taken place in the composition of the smoking population, in smoking behavior, in the character of the cigarette itself, and in smoking risks. We must take these changes into account in our efforts to inform. If we can now identify groups of people who are at high risk, what interventions can we design to reach them? Have previous educational efforts been too broadly based? Do the changes in the nature of the cigarette argue for a shift in emphasis, from less hazardous cigarettes to less hazardous smoking? Are there specific instances where the weight of the scientific evidence and the magnitude of the health problem require action by society, other than merely imparting information?

In addressing these questions, we must be sure we are active rather than reactive in our approach. The hazards of cigarette smoking have been established and the question has turned to what society's response to these hazards should be. If this report is successful, it will encourage the medical and public health communities to continue their search for what the Advisory Committee 15 years ago defined as "appropriate remedial action."

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