

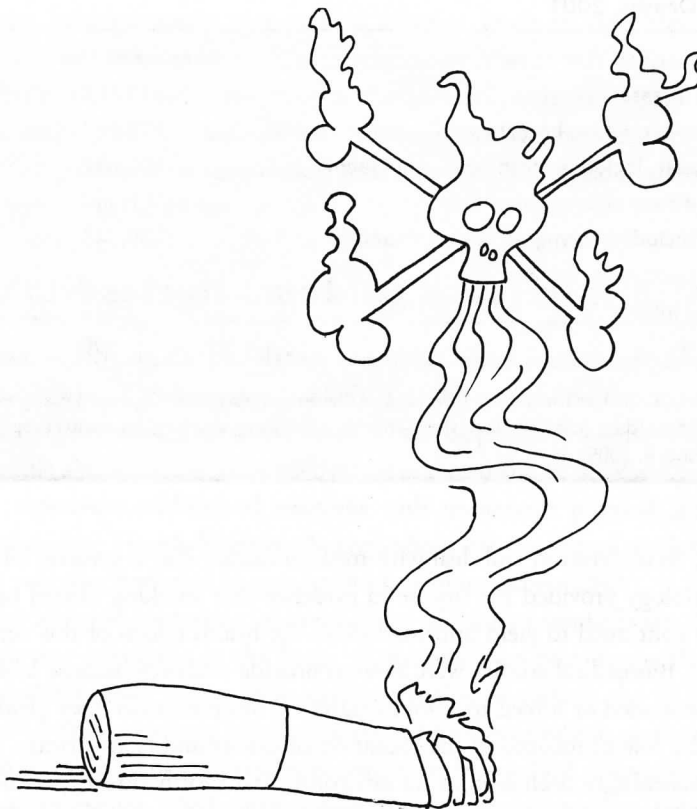
# INTRODUCTION TO Public Health

*Third Edition*



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# Public Health Enemy Number One: Tobacco



Deadly Habit

Cigarette smoking—the leading actual cause of death in the United States according to the analysis described in Chapter 13—is clearly the nation’s most significant public health issue. The problem of tobacco-caused disease embodies the complex interactions by which psychological, social, cultural, economic, and political factors influence individual behavior to cause over 400,000 deaths each year. Table 15-1 lists the major diseases caused by smoking and estimates the annual number of deaths from each disease.

**Table 15-1** Major Diseases Caused by Smoking and Estimated Annual Number of Deaths, 2001

Disease	Number of Deaths
Cardiovascular disease	131,503
Cancer of the lung, trachea, bronchus	125,100
Respiratory disease, including bronchitis, emphysema and chronic airway obstruction	102,632
Other cancers, including laryngeal, oral, stomach, esophageal, pancreatic, urinary	30,343
Diseases among infants	910
Fire-related	800

*Source:* Data from U.S. Centers for Disease Control and Prevention, *Fact Sheet: Cigarette Smoking-Related Mortality*. [www.cdc.gov/tobacco/data\\_statistics/fact\\_sheets/health\\_effects/cig\\_smoking\\_mortality/#top](http://www.cdc.gov/tobacco/data_statistics/fact_sheets/health_effects/cig_smoking_mortality/#top) (Accessed November 8, 2009).

The struggle to understand and deal with tobacco-caused illness involves all areas of public health. Epidemiology provided the first solid evidence that smoking caused cancer and heart disease and has continued to yield information on the health effects of this very human habit (see Chapter 4). Biomedical studies were slow to provide evidence because laboratory animals could not be persuaded or forced to smoke cigarettes, but eventually they yielded valuable information on the role of tobacco in the causation of cancer and heart disease. In recent years, smoking has increasingly been seen as an environmental health threat, producing indoor air pollution that has been shown to cause adverse health effects in nonsmokers. Ultimately, however, smoking is a behavior, and it is the social and behavioral sciences that must provide insights into why people smoke and how they can be persuaded to quit.

Public health faces a fundamental dilemma in confronting the current epidemic of tobacco-caused disease: What should be the role of a democratic government in confronting a behavior that is practiced by one out of five adults and will kill up to half of them? Political and economic forces that favored tobacco have opposed strong government measures against cigarettes. Public health efforts involving education and health promotion campaigns have persuaded many people to stop smoking but seem to have reached the limit of their effectiveness in bringing smoking prevalence down to about 20 percent among adults.

However, the 1990s saw a major shift in federal and state governments' attitudes toward smoking. Recognition that the nicotine in tobacco is addictive, together with evidence that cigarette companies have purposely manipulated nicotine levels in cigarettes to keep people hooked, have forced politicians to look with suspicion on what was previously considered a freely chosen behavior. Moreover, evidence of the high economic costs paid by government-financed programs, including Medicare and Medicaid, for the treatment of tobacco-caused disease has forced governments to question their previous assumptions about the economic advantages of supporting the tobacco industry.

## Biomedical Basis of Smoking's Harmful Effects

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The basic fact underlying the popular success of cigarettes is that they deliver nicotine, an addictive drug. Nicotine is absorbed by the linings of the mouth and the respiratory tract and travels rapidly to the heart and then to the brain. The drug produces a sense of enhanced energy and alertness, while also having a calming effect on addicted smokers. When people try to quit smoking, they experience withdrawal reactions with unpleasant physical and psychological symptoms. In the 2007 Health Interview Survey, about 40 percent of smokers reported that during the past year they had tried to quit, most of them unsuccessfully.<sup>1</sup>

In addition to nicotine, an important component of tobacco smoke is tar, the residue from burning tobacco that condenses in the lungs of smokers. Tars provide the flavor in cigarette smoke; they are also a major source of its carcinogenicity. As early as the 1930s, experiments were done in which these tars were painted on the ear linings of rabbits or the shaved backs of mice and found to cause tumors. Decades of studies by biomedical researchers—and clandestinely by tobacco companies, which did not wish to publicize their results—have confirmed the carcinogenicity of the tars as well as other ingredients of the smoke, including arsenic and benzene. When filters were added to cigarettes with the ostensible purpose of removing tars and other harmful ingredients, it turned out that they tended also to remove the taste and “satisfaction” from smoking. Thus filter cigarettes, to be acceptable to smokers, had to deliver significant levels of tar and nicotine, meaning that there were limits to how “safe” a cigarette could be.

Tars not only cause cancer but also contribute to other lung diseases through their tendency to damage cilia, the tiny hairs on the linings of the respiratory tract that sweep the lungs and bronchi clear of microbes, irritants, and toxic substances. Damage to cilia and irritation of respiratory tract linings by components of smoke increase susceptibility to infectious diseases like bronchitis, influenza, and pneumonia as well as to diseases brought on by chronic irritation such as emphysema and asthma.

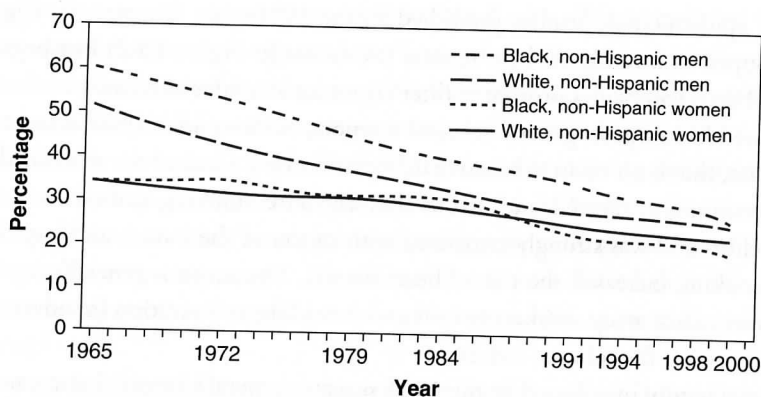
In contrast to the long-term processes leading to cancer and emphysema, the effect of smoking on the cardiovascular system can be very rapid. The nicotine in cigarette smoke raises blood pressure and heart rate. It may also cause spasms in the blood vessels of the heart, especially if damage already exists, increasing the risk of sudden cardiac death. Carbon monoxide in cigarette smoke interferes with the oxygen-carrying capacity of red blood cells, leading to oxygen shortages in the hearts of patients suffering from coronary artery disease. Smoking increases the risk of stroke and heart attacks by altering the clotting properties of blood. Components of cigarette smoke also have been shown to raise total blood cholesterol levels and reduce levels of HDL, the "good" cholesterol (see Chapter 11).

## Historical Trends in Smoking and Health

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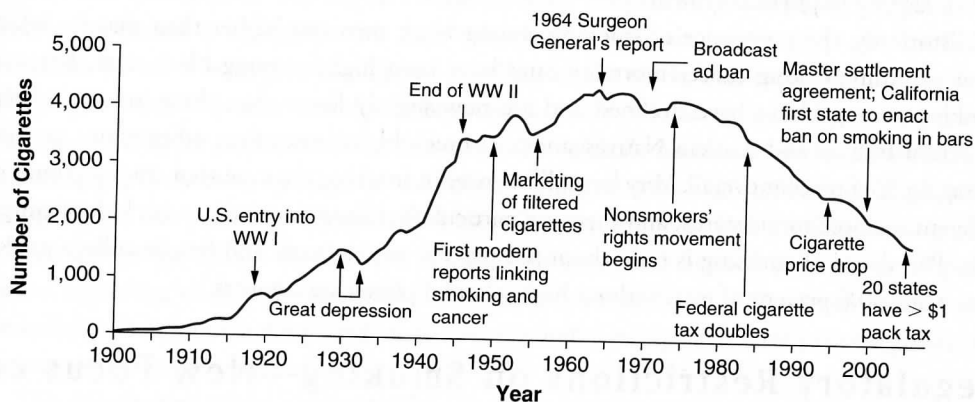
Although it has been smoked and chewed for hundreds of years, tobacco was not used intensively enough to cause widespread illness until the 20th century. Before then, almost all tobacco was smoked in pipes and cigars or used as chewing tobacco and snuff. Cigarette-rolling machines and safety matches were invented in the 1880s, but cigarette smoking began to increase dramatically only after 1913, when Camel, followed by other brands, began mass marketing campaigns.<sup>2</sup> The distribution of free cigarettes to soldiers during the two world wars further stimulated smoking among men. Smoking among women was frowned on early in the century, but women began to take up the habit during and after World War II, and by 1960 about 34 percent of American women smoked.<sup>2</sup> While estimates of the percentage of men and women who smoked during the early part of the century are imprecise [they were done before the Centers for Disease Control and Prevention (CDC) began systematic surveys of the population in 1965], a general idea of the trends since the middle of the century can be seen in **Figure 15-1**. A better sense of the extent of smoking in this country, and the circumstances influencing it comes from U.S. Department of Agriculture data on total manufactured cigarette consumption, as shown in **Figure 15-2**.

The first disease clearly linked to smoking was lung cancer, which is caused predominately by smoking and is relatively rare in nonsmokers. Lung cancer was virtually nonexistent in the United States and Britain in 1900. In the 1930s, the increase in deaths from lung cancer began to attract attention, and a link to cigarette smoking began to be suspected. This link was con-



Because of small sample sizes in individual years, data were combined to provide more reliable and stable prevalence estimates. Data points shown and the combined NHIS surveys from which the data were derived are as follows: 1965 (1965–1966), 1972 (1970 and 1974), 1979 (1978–1980), 1984 (1983 and 1985), 1991 (1991–1992), 1994 (1993–1995), 1998 (1997–1999), and 2000 (2000–2001).

**FIGURE 15-1** Trends in Cigarette Smoking Among Adults and Major Smoking and Health Events, 1965–2001. *Source:* U.S. Centers for Disease Control and Prevention, “Cigarette Smoking Among Adults, United States, 2001,” *Morbidity and Mortality Weekly Report* 52 (40): 953–956.



**FIGURE 15-2** Annual Adult per Capita Cigarette Consumption in the United States, 1900–2005. *Source:* U.S. Centers for Disease Control and Prevention.  
[http://smokingcessationleadership.ucsf.edu/Downloads/ppt\\_June\\_172009.pdf](http://smokingcessationleadership.ucsf.edu/Downloads/ppt_June_172009.pdf)



firmed in the epidemiologic studies published in the 1950s (see Chapter 4). Cigarette consumption dropped as a result of these reports (as shown in Figure 15-2) but began to climb again when tobacco companies promoted filter cigarettes as a safer alternative.

In 1964, the U.S. surgeon general released a report, *Smoking and Health*, a summary of the evidence to date, the result of an exhaustive deliberation by a panel of ten renowned scientists.<sup>3</sup> The panel unanimously agreed and wrote that cigarette smoking caused lung cancer and chronic bronchitis and was strongly associated with cancer of the mouth and larynx. It also reported that smoking increased the risk of heart disease. The surgeon general's report was very influential, convincing many smokers to quit and providing ammunition for advocates wishing to impose controls on the tobacco industry.

Women were hardly mentioned in the 1964 surgeon general's report. Lung cancer was rare in women, and all the studies had been done on men. However, women soon began to catch up. In 1980 the surgeon general issued another report which focused entirely on women. *Health Consequences of Smoking for Women* addressed "the fallacy of women's immunity."<sup>4</sup> The report points out that the first signs of an epidemic of smoking-related diseases among women were just beginning to appear, because women had only begun smoking intensively 25 years after men had (Figure 15-1 and Figure 4-2). Indeed, lung cancer was about to surpass breast cancer and become the leading cause of cancer death in women, as it is today.<sup>5</sup> The report noted that, in addition to suffering the same ill health effects as men, female smokers are at increased risk for complications of pregnancy and that infants of female smokers are more likely to be premature or lagging in physical growth.

Historically, the prevalence of smoking among black men was higher than that for white men; accordingly, lung cancer mortality rates have been higher among black men. Rates of smoking among blacks have declined and are now slightly lower than those among whites. American Indians and Alaskan Natives smoke at much higher rates than other ethnic groups, averaging 36.4 percent overall. Very large differences in smoking rates are seen among groups of different socioeconomic status, and there is a particularly strong association with lack of education. Prevalence of smoking is only about 9.6 percent among male and female college graduates, while 30.6 percent of men without high school diploma are smokers.<sup>1</sup>

## Regulatory Restrictions on Smoking—New Focus on Environmental Tobacco Smoke

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Public health efforts at discouraging smoking have had to contend with the enormous economic and political power of the tobacco industry. Congress, which is now phasing out subsidies to tobacco growers, has been very reluctant to pass legislation opposed by the industry. However, the 1964 surgeon general's report carried great credibility, and its publication led to a number of

government actions aimed at restricting cigarette marketing. These included Federal Trade Commission requirements that cigarette packages contain warning labels and a Federal Communications Commission mandate in 1968 that radio and television advertisements for cigarettes be balanced by public service announcements about their harmful effects. The latter requirement, called the Fairness Doctrine, was so effective in countering the tobacco companies' ads, as seen in the drop in cigarette consumption shown in Figure 15-2, that in 1971 the industry submitted to a total ban on cigarette advertising on radio and television. In return, the public service announcements ceased. The tobacco companies shifted their advertising efforts to magazines, newspapers, billboards, product give-aways, and sponsorship of sporting and cultural events.<sup>2</sup>

Over the past three decades, new awareness of the harm caused by "secondhand smoke" has led to some of the most effective actions against smoking. Studies began to show that exposure to environmental tobacco smoke caused some of the same health problems as active smoking. For example, the nonsmoking spouses of smokers have an increased risk of lung cancer and heart disease, and children of parents who smoke are more likely to suffer from asthma, respiratory infections, and sudden infant death syndrome. In 1992, the Environmental Protection Agency issued a report that declared environmental tobacco smoke to be a carcinogen, causing 3000 lung cancer deaths a year.<sup>6</sup> Evidence of the harm caused by passive smoking inspired the nonsmokers rights movement, which largely bypassed the Congress and focused political pressure on state and local governments.

In 1974 Connecticut was the first state to enact restrictions on smoking in restaurants. Minnesota passed a comprehensive statewide clean indoor air law in 1975. In 1983, San Francisco passed a restrictive law against smoking in the workplace, including private workplaces. The clean indoor air movement blossomed. At the state level, laws were passed that restricted smoking on public transit and in elevators, cultural and recreational facilities, schools, and libraries. Over the objections of the tobacco industry, a ban on smoking on all domestic airline flights was passed by Congress in 1989.<sup>2</sup> Restrictions on indoor smoking became more widespread in the 1990s. By the end of 2008, 16 states had banned smoking in all public places, including work sites, restaurants, and bars. All but three other states had enacted some limitations on indoor smoking, and many counties and municipalities have passed legislation to promote clean indoor air.<sup>7</sup>

The effectiveness of the nonsmokers' rights movement stems from its success in transforming smoking into a socially unacceptable activity. Bans in so many public places force smokers to refrain for extended periods and to segregate themselves when they wish to smoke, often by going outdoors. By making smoking inconvenient, bans encourage people to quit. As Figure 15-2 shows, cigarette consumption has declined steadily since the nonsmokers rights movement began.



## Advertising—Emphasis on Youth

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While smoking rates among adults have fallen, public health advocates have become increasingly concerned about smoking among youth. Teenagers tend to be less worried about their health in the distant future than they are with their image and social status among their peers. Tobacco companies exploit those concerns in their attempts to win over young people to smoking.

In order to maintain a constant number of customers over time, the tobacco industry must persuade two million people to take up the habit each year to balance the number of smokers who die or quit.<sup>8</sup> Cigarette advertising and promotional expenditures have continuously increased, amounting to \$13.1 billion in 2005, almost double the amount spent in 1998 and triple the expenditures in 1990.<sup>9</sup> Because the teen years are the critical period for smoking initiation—90 percent of adult smokers started when they were teenagers, and the average age at which they took up the habit is 14.5—tobacco companies have targeted their advertising toward children and young people.<sup>2</sup> For example, Joe Camel ads were strongly appealing to children. A 1991 study found that 91 percent of 6-year-olds recognized the cartoon character, the same percentage that recognized the Mickey Mouse logo of the Disney channel. Some 98 percent of high school students recognized Joe Camel, compared with only 72 percent of adults.<sup>10</sup> Between 1988, when the Joe Camel ad campaign was introduced, and 1990, it is estimated that Camel cigarette sales to minors went from \$6 million to \$476 million.<sup>2</sup> In response to an outburst of negative publicity and public anger at the tobacco companies, Joe Camel was retired in 1997.

Tobacco companies also targeted youth with promotional items, such as T-shirts, caps, and sporting goods bearing a brand's logo. They managed to evade the ban on broadcast advertising by sponsoring sporting events, at which brand names were displayed in the background, ensuring that they would be visible on television throughout the event.

As part of the 1998 Master Settlement Agreement (MSA), major tobacco companies agreed to stop advertisements targeted at children, including some promotional activities. Although the most blatant appeals to youth are gone, the companies began running ads that, while ostensibly antitobacco public service ads, were actually more sophisticated messages designed to encourage youth smoking.<sup>11</sup> The messages were that smoking is for adults only, and that parents should talk to their children about not smoking. Analyses of their impact on teens have shown that these ads were ineffective in discouraging young people from smoking and may have increased their intention to smoke. This may have been the intention when the ads were designed. Nevertheless, a combination of public health efforts, including the MSA, have

contributed to a decline in the number of teens who smoke. The CDC's biannual survey of high school students found in 2007 that 21.9 percent had smoked in the previous month, down from 36.4 percent in 1997, the year when the highest number of students reported having smoked.<sup>12</sup>

All states have laws prohibiting the sale of tobacco to minors, but enforcement of the laws varies. The CDC's 2007 survey found that 16 percent of the student smokers bought cigarettes from stores or gas station. There is evidence that increasingly, youths are buying cigarettes via the Internet, making age laws difficult to enforce. A 2007 Institute of Medicine committee has recommended that Congress pass legislation to prohibit all online tobacco sales and shipment of tobacco products directly to consumers.<sup>13</sup>

As advertising to children and teens has become increasingly restricted, tobacco companies have focused their efforts on young adults, who are still receptive to social pressures, may smoke occasionally, and may be vulnerable to advertising. The companies use promotional activities in bars and nightclubs, such as distributing free cigarette samples or brand-labeled articles of clothing, with the goal of turning occasional smokers into addicts. Social events at college campuses are other occasions where companies can gain access to young adults. A study in 2000–2001 of 119 colleges found that events at which free cigarettes were distributed occurred at all but one of them. Many of the events took place at bars and nightclubs, but fraternities and sororities were also popular sites for the events.<sup>14</sup> Indoor smoking bans, which have become more widespread in the last few years, have blocked the effectiveness of this kind of marketing. Portrayal of smoking in movies and on television has been shown to exert a powerful influence in inspiring adolescents to smoke, and the Institute of Medicine has recommended that the movie rating system take this into consideration when G, PG, PG-13, or R ratings are assigned.<sup>15</sup>

The tobacco industry has targeted advertising at women and minorities, groups identified as promising sources of new smokers. Young women have been attracted by suggestions that smoking will help them lose weight, beginning with the Lucky Strike ads of the 1920s that advised, "Reach for a Lucky instead of a sweet." More recently, Virginia Slims ads have taken a similar approach. Shortly after the Virginia Slims advertising campaign began in the 1960s, the proportion of 14- to 17-year-old girls who started smoking nearly doubled.<sup>2</sup> African Americans historically had higher rates of smoking—and of lung cancer—than whites, though that trend appears to be reversing over the past decade.<sup>13</sup> Tobacco companies try to win over black leaders by donating to black causes, such as the National Association for the Advancement of Colored People and the United Negro College Fund, and by sponsoring black cultural events such as jazz festivals. They advertise heavily in African American publications and, before the MSA, blanketed neighborhoods with billboards.

## Taxes as a Public Health Measure

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Antismoking activists, supported by economics research, have concluded that one of the most effective measures to discourage young people from smoking is to raise the tax on cigarettes. One reason is that a pack of cigarettes represents a more significant proportion of a teenager's disposable income than it does for adults, and the higher price is likely to have more impact on someone who is not yet addicted. Low income and minority smokers are also sensitive to price.<sup>15</sup>

Recent research on teenage smoking suggests that teenagers are indeed sensitive to price. For example, after Philip Morris cut the price of Marlboro cigarettes, a brand favored by young people, by 40 percent in April 1993, the proportion of teenagers in 8th, 10th, and 12th grades who smoked rose from 23.5 percent to 28 percent in 1996. Other studies have shown that a 10 percent increase in price reduces the number of teenagers who smoke by approximately 7 percent to 12 percent.<sup>16</sup> "Raising tobacco taxes is our number one strategy to damage the tobacco industry," an American Cancer Society executive was quoted as saying. "The industry has found ways around everything else we have done, but they can't repeal the laws of economics."<sup>16(p.293)</sup>

Raising taxes on cigarettes is effective in reducing smoking among adults as well. In 1989, California increased cigarette taxes from 10 cents to 35 cents per pack. The law specified that 20 percent of the proceeds were to be designated for programs designed to prevent and reduce tobacco use, especially among children. Surveys conducted before and after implementation of the tax increase found that the prevalence of cigarette smoking among adults in California was reduced from 26.7 percent in 1988 to 22.2 percent in 1992 to 16.7 percent in 1995.<sup>17,18</sup> It is difficult to determine the share of the decline that can be attributed to the price increase as compared with other antismoking measures, including indoor smoking bans and the antismoking campaign funded by the tax.

In recent years, state and local governments have found that raising taxes on cigarettes is a painless way of closing budget shortfalls, and many states have followed this policy. In 2008, for example, New Jersey had the highest rate, with a tax of \$2.57 per pack. In New York, the state tax was \$1.50 per pack, and New York City had imposed an additional tax of \$1.50. In contrast, tobacco-producing states have low cigarette taxes: Mississippi's rate was 18 cents per pack, and Missouri's rate was 17 cents.<sup>19</sup> California, a leader in raising cigarette taxes for public health goals, had fallen to a rank of thirtieth among states, with a tax of 87 cents per pack. The federal government increased its tax on cigarettes from 39 cents to \$1.01 on April 1, 2009, a change that—combined with some state tax increases—was expected to significantly raise cigarette prices and encourage many more smokers to quit.<sup>20</sup>

## California's Tobacco Control Program

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California's voter-initiated tobacco control program, funded by a 25-cent tax increase on cigarettes beginning in 1989, launched an experiment in the community, multipronged efforts to reduce smoking statewide. The initiative mandated mass media antitobacco advertising as well as school and community education and intervention activities. It also mandated that the effectiveness of the program be evaluated after a decade. Thus, the California experience has provided evidence on what methods are effective in reducing smoking.

The tax increase itself contributed to the success of the program, as discussed in the previous section. Immediately after the increase was implemented, the rate of decline in cigarette consumption increased significantly in California compared with the rest of the nation. The rate of decline then leveled off until the media campaign was launched in 1990 and 1991, when there was a further 12 percent decline.<sup>21</sup> In 1994, the California legislature passed a law prohibiting smoking statewide in all workplaces except bars, taverns, and casinos. The law has since been strengthened to include these workplaces as well.

Overall, per capita cigarette consumption in California fell by 67 percent between 1988 and 2008.<sup>22</sup> This reduction was achieved by a combination of a reduction in the number of smokers and reduction of the number of cigarettes each smoker consumed per day. In California, according to the CDC's Behavioral Risk Factor Survey, the prevalence of smoking was 14.3 percent in 2007, compared to 19.8 percent in the nation as a whole.<sup>23</sup> California's antitobacco campaign suffered budget cuts after the first few years, and tobacco companies stepped up their political efforts to oppose the state's control measures, as well as their advertising and promotion of cigarettes; but the permanent changes in policy, as well as additional tax increases, have helped California to maintain its lead over all other states except Utah in keeping smoking levels relatively low.<sup>23</sup>

California's campaign included an aggressive advertising component, which contributed significantly to the campaign's overall success. Studies of the effectiveness of antismoking messages have shown that some messages are much more effective than others. In fact, some programs sponsored by the tobacco industry, which are presented as smoking prevention efforts, have been shown to make smoking more attractive to youths. For example, these advertisements often present the messages that smoking is an "adult" choice, that parents have a responsibility to help their kids fight peer pressure for smoking, and that "it's the law" that retailers not sell cigarettes to youth. Examination of industry documents, discussed in the next section, has found that the industry has purposely used these "forbidden fruit" messages to generate good public relations and fight restrictive legislation without actually discouraging youth smoking.<sup>24</sup>

The evaluation component of California's media campaign identified which antismoking messages were most effective in reaching youth. Researchers found that the message most effective in reaching both youths and adults is that "Tobacco industry executives use deceitful, manipulative, dishonest practices to hook new users, sell more cigarettes and make more money."<sup>25(p.774)</sup> One such successful ad, called "Nicotine Soundbites," showed the actual footage of tobacco executives testifying before Congress in 1994, raising their right hands and swearing that nicotine is not addictive. Ads with this message made both adults and teenagers angry, because no one likes to learn that they are being manipulated.

Another message that was found to be effective among both adults and teens was that secondhand smoke harms others. One ad portrayed a boy smoking, sitting with his little sister watching television. The little girl begins coughing and smoke comes out of her mouth. In the early 1990s, California also ran ads that encouraged quitting and provided information on smoking cessation programs, including toll-free quit lines; calls to the quit lines dramatically increased. Ads with some other messages, including those that focused on health effects, were found to be ineffective.<sup>25</sup>

Researchers concluded that, to be effective, antitobacco advertisements need to be "ambitious, hard-hitting, explicit, and in-your-face."<sup>25(p.776)</sup> The industry recognized the effectiveness of the ads and worked hard to limit them. R. J. Reynolds threatened to sue the California Department of Health and the television stations that ran the Nicotine Soundbites ad; the lawsuit was not filed, but the ad was later dropped. During the state campaign, the tobacco industry tried to counter the antitobacco efforts by increasing spending in California on advertising, incentives to merchants, and promotional items. One study calculated that after 1993, the industry spent nearly \$10 for every \$1 spent by the state.<sup>21</sup>

## **The Master Settlement Agreement (MSA)**

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The 1990s saw dramatic developments in the battle against smoking, and suddenly it seemed possible that effective tobacco control measures would be enacted at the federal level. The changes resulted from several separate political and legal events, as well as public revelations that have discredited the tobacco industry.

In February 1994, David Kessler, then Commissioner of the Food and Drug Administration (FDA), launched an offensive against the tobacco industry by asserting that his agency had the authority to regulate tobacco. Kessler, who was appointed by the first President Bush but now had the support of an antismoking president, Bill Clinton, based his claim on thoroughly documented evidence that nicotine is an addictive drug and cigarettes are drug delivery systems. He proposed a series of measures aimed to protect children and teenagers against tobacco company efforts to get them hooked.

Coincidentally, in March 1994, a class-action lawsuit was filed against American tobacco companies in federal district court in Louisiana on behalf of "all nicotine-dependent persons in the U.S." and their families and heirs, seeking compensatory and punitive damages, attorneys fees, an admission of wrongdoing, and other remedies. Although this suit was dismissed, it was followed by other major lawsuits, including one in May 1994 by Michael Moore, the attorney general of Mississippi, who sought to recover the medical costs that the state had incurred treating smoking-related illnesses. Attorneys general from most of the other states followed suit over the next three years.<sup>26</sup>

Also in 1994, an anonymous informant from the Brown & Williamson tobacco company, who called himself "Mr. Butts" after the Doonesbury comic strip character, sent a box of top-secret tobacco industry internal documents to Stanton Glantz, a professor of medicine at the University of California at San Francisco and a well-known critic of the tobacco industry. The papers provided a wealth of information on discrepancies between what the industry knew about the ill effects of tobacco and what they were telling the public. For example, a lawyer for Brown & Williamson had written in a 1963 internal memo, "Nicotine is addictive. We are, then, in the business of selling nicotine, an addictive drug effective in the release of stress mechanisms."<sup>27</sup>(p.58) Glantz, with the support of University of California lawyers and librarians, published the papers on the Internet.

The tobacco companies, of course, challenged the FDA's authority to regulate tobacco, and they also vigorously defended against the lawsuits by attorneys general and injured smokers. However, the documents released by Glantz, together with other internal industry documents that were leaked, have seriously undermined the industry's ability to defend itself in court. In April 1997, a North Carolina court affirmed the FDA's authority over tobacco as a drug, although it struck down some of the advertising restrictions proposed by the agency. However, in August 1998, an appeals court ruled the other way, stating that only Congress has authority to regulate the tobacco industry. The Supreme Court agreed to take up the issue, and in 2000 it supported the appeals court decision that the FDA did not have the authority to regulate tobacco.<sup>28</sup>

In early 1997, when the tobacco industry was on the defensive, it began negotiations with the attorneys general, hoping to reach a settlement that would protect them against unlimited lawsuits and possible financial ruin. A historic settlement was announced in June, in which the companies agreed to pay \$368.5 billion over a 25-year period to compensate states for treating smoking-related illnesses and to set up a fund to pay damage claims for ill smokers, as well as for other purposes including financing of nationwide antismoking programs. The industry also agreed to a number of restrictions on advertising and promotion and to allow the FDA to regulate the nicotine in cigarettes. However, the settlement required Congressional approval, which did not materialize. In 1998, the tobacco industry reached a more limited settlement with the



attorneys general, agreeing to pay 46 states \$206 billion over 25 years and accepting some restrictions on advertising, including a ban on billboard ads. The settlement also provided \$1.7 billion over a 5-year period to create the American Legacy Foundation, which used the funds for public education and other tobacco control activities.<sup>29</sup>

The MSA has been something of a disappointment for public health advocates. It was hoped that the states would use some of the settlement dollars for tobacco control programs. Smoking-cessation programs that include counseling and nicotine-replacement therapy, such as nicotine gum or patches, can double or even triple a smoker's chance of quitting.<sup>29</sup> Telephone quit lines, sponsored by some states and sometimes by voluntary organizations, can be effective at motivating people to quit. However, most states have used little of the MSA funds for such programs, using the windfall to close state budget gaps. On the other hand, tobacco companies have had to increase the price of cigarettes by 45 cents a pack to pay for the settlement. As discussed previously, higher prices discourage people from smoking, especially young people.

The American Legacy Foundation has used its part of the settlement to run aggressive ad campaigns against smoking targeted at youth, called the "truth" campaign. Drawing on findings from evaluations of the California and other tobacco control programs, the ads convey the message that tobacco companies manipulate the truth, deny health effects and the addictive nature of tobacco, and try to make smoking appear attractive. The "truth" ads featured statements such as: "In 1984, one tobacco company referred to new customers as 'replacement smokers'" and "In 1990 tobacco companies put together a plan to stop coroners from listing tobacco as a cause of death on a death certificate." Another ad features a young man trying to ship a box of cigarettes at the post office, saying, "I'd like to ship this arsenic and cyanide spreading mechanism," insisting that it's perfectly legal and being met with skepticism by the clerk.<sup>30</sup> The "truth" ads were placed in youth-oriented magazines and television programs. Two national youth surveys, used to evaluate the effect of the "truth" campaign, found that young people who had seen the ads were significantly more likely than those who had not seen them to hold negative attitudes toward tobacco.<sup>31</sup> The "truth" campaign, together with the increased tobacco prices, has contributed to reducing youth smoking to a 27-year low of 20 percent in 2003, where it has remained.<sup>29,32</sup> Smoking rates among young African Americans are lower than those among white youths.

The American Legacy Foundation's funding from the MSA expired in 2003. However, the foundation has succeeded in finding funds to continue the truth campaign and to launch the "EX" campaign, designed to help smokers quit by "re-learning to live their lives without cigarettes."<sup>33</sup> It also collaborates with the University of California at San Francisco in maintaining an on-line library of previously secret tobacco industry documents, which can be searched through a user-friendly interface. Ads for the truth campaign can be seen on the Foundation's website at [www.thetruth.com](http://www.thetruth.com). The digital library is found at <http://legacy.library.uscf.edu/>.

## FDA Regulation

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The original agreement negotiated by the state attorneys general and the tobacco companies contained a provision allowing the FDA to regulate tobacco. Because that agreement was not approved by Congress, the MSA did not contain such a provision. There are many advantages to giving regulatory authority over tobacco to the FDA. Until 2009, there were no legal restrictions concerning ingredients in tobacco smoke or on labeling or advertising concerning health claims by the companies. There is evidence, for example, that companies manipulated nicotine levels in tobacco to promote addiction, and they added ammonia to increase the effect of the nicotine. Tobacco smoke contains toxic chemicals such as nitrosamines and arsenic in addition to the tars known to be carcinogenic.<sup>27</sup> It also contains radioactive polonium, which is not widely recognized.<sup>34</sup> In fact, the American Legacy Foundation has focused on some of these toxic ingredients in their antismoking ads.

Finally in 2009, after previous attempts had failed, Congress passed and President Obama signed the Family Smoking Prevention and Tobacco Control Act.<sup>35</sup> The law gives the FDA authority to regulate tobacco products and to restrict advertising and promotion. It requires larger and more graphic warning labels on cigarette packages, and it forbids tobacco companies from sponsoring sporting events. The law requires the disclosure of ingredients of cigarettes, as is done with food. It gives the FDA authority to require the removal of harmful ingredients, and to regulate health-related claims made by the companies, insisting that such claims be proven. The truth-in-advertising provision makes it possible for cigarettes to be made safer, so that smokers who cannot or will not quit would suffer less harm. Unless the government has the authority to verify claims, tobacco companies could continue to label their products "light" or "safer" without needing to actually reduce the hazards of smoking. One proposed advantage of giving the FDA regulatory authority would be to allow the agency to gradually reduce the amount of nicotine allowed in cigarettes to make them less addictive and to taper smokers off the addictive drug.<sup>13</sup>

The new law bans candy-flavored cigarettes, designed to appeal to young people. However, there was controversy about whether to also ban menthol flavoring, which masks the harshness of inhaled smoke and appears to ease the initiation of smoking among youths. Menthol is also popular among African American smokers, three-quarters of whom smoke menthol cigarettes, while only 25 percent of white smokers choose the menthol flavoring.<sup>36</sup>

"The key to public health action on the tobacco front seems to lie in combining strategies to discourage children from smoking and in producing a safer and less addictive cigarette for those who cannot, or will not, resist the temptation to smoke," wrote the ethicist George Annas in

January 1997,<sup>37(p.307)</sup> when the possibility of a negotiated settlement was first being considered. Whether Congress or the courts or both will finally make possible the demotion of tobacco as public health enemy number one remains to be seen.

## Conclusion

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Cigarette smoking is the leading actual cause of death in the United States. The fact that smoking causes lung cancer has been known since the 1950s, and the behavior has been responsible for an epidemic of lung cancer, the leading cause of cancer death among both men and women. Smoking also causes cardiovascular disease, chronic lung disease, low birth weight in infants, and a number of other unhealthy conditions.

Since the surgeon general's *Smoking and Health* report was published in 1964, summarizing the evidence about the harm caused by smoking, public health advocates have been attacking the habit in as many ways as possible. Cigarette consumption in the United States peaked in the early 1960s and has declined since then, demonstrating significant success from the public health efforts. In the 1990s, however, there was a leveling off of the percentage of adults who smoke. Currently about 20 percent of the adult population smoke cigarettes, down from over 42 percent in 1965.

Public health has fought the tobacco industry on many fronts. In the 1960s, Congress passed legislation that required that cigarette ads on radio and television be balanced by counter-advertising about the harmful effects of smoking. This publicity, together with warning labels on cigarette packages, helped to persuade many people to quit. Tobacco companies have become increasingly sophisticated about marketing their products, especially to children, and public health has had to work hard to oppose them. Since nicotine in tobacco is addictive, it has become clear that the most effective approach to reducing smoking is to prevent young people from taking up the habit.

Public health interventions that have demonstrated some success in preventing the onset of smoking and in reducing its prevalence include the enactment and enforcement of laws prohibiting the sale of tobacco to minors, restrictions on indoor smoking, and—most effectively—increases in cigarette prices through imposition of taxes.

California was a leader among states in imposing a tax on cigarettes to be used for tobacco control programs. Evaluation of its mass media advertising campaign has helped anti-smoking activists to understand what messages are most effective in persuading youths not to smoke. California was also a leader in legislation to ban smoking in public places.

In the mid- and late-1990s, legal and regulatory attacks on the tobacco industry were launched by the Clinton administration and a number of states. The MSA between the attorneys general of 46 states and the tobacco industry contained restrictions on tobacco advertising aimed at young people and provided billions of dollars to the states to compensate them for medical costs they incurred for treating smoking related illnesses. It also provided funds to establish the American Legacy Foundation, which has run an effective media campaign to discourage young people from smoking.

In 2009, Congress passed and President Obama signed a law authorizing the FDA to regulate tobacco products. It is hoped that the agency will devise ways to rein in the industry's deceptive practices, wean smokers off their addiction to nicotine, and reduce demand for cigarettes.

The battle continues. It seems that progress is being made, but prospects for victory in public health's battle against the powerful tobacco industry are uncertain.

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