

Private Worksites

Governments have been slower to mandate smoking restrictions for private worksites than for their own employees. State laws in 13 States now require various levels of smoking restrictions at private sector worksites. Additionally, as discussed above, a growing number of city and county laws are also restricting smoking in private businesses. These actions have encouraged and supported ongoing initiatives by private businesses to restrict smoking, which are described in detail in the next section.

Judicial Actions

Decisions by both Federal and State courts have supported the authority of State and local governments to restrict or ban smoking in public places because of the health hazards, so long as the restrictions reasonably achieve desired results (Reynolds 1984). In a review of court opinions on workplace smoking restrictions, the Bureau of National Affairs found that challenges to the legality of governmental limitations have been rare (BNA 1987).

One widely publicized exception was the case of smoking regulations promulgated by the New York State Public Health Council in 1987. These broad restrictions on smoking in public places, restaurants, and workplaces were declared void by the highest level of State court on the grounds that the Public Health Council had usurped the legislature's prerogative to establish public policy (BNA 1987). Subsequently, the State legislature seriously considered several no-smoking bills, and New York City adopted a strong no-smoking ordinance (New York City Department of Health 1988).

Effects of Government Actions to Restrict Smoking

A summary of potential effects of smoking restrictions, methodological issues in their assessment, and the status of current evidence is included in Chapter 6 of the 1986 Surgeon General's Report (US DHHS 1986b). The following updates that discussion.

Implementation, Compliance, and Enforcement

No-smoking laws passed by State and local governments are generally implemented by health, rather than police, departments. Neither the adequacy of implementation nor the level of public compliance has been well studied. Their impact on smoking behavior and air quality has not been evaluated. These policies are often said to be "self-enforcing." This implies that the majority of smokers, being law abiding, obey smoking restrictions and that individuals assume responsibility for requesting compliance, thereby freeing the government from the need to actively monitor compliance or provide enforcement. Such a strategy requires substantial public awareness about the provisions of smoking laws or regulations, appropriate placement of signs, and the willingness, on the part of the public, to confront violators.

There has been little formal evaluation of the adequacy of implementation or level of compliance with smoking laws. Most available data are anecdotal. For example,

newspaper accounts of the smoking ban on the LIRR reported the perception of railroad officials that cars were cleaner 2 weeks after the ban. After a well-publicized violation on the day that the ban went into effect, compliance appeared to be good (Schmitt 1988).

Prior to the implementation of New York City's no-smoking law in April 1988, a number of restaurant owners were interviewed. They anticipated great difficulty complying with the requirement that 50 percent of their seating capacity be nonsmoking. When these restaurateurs were reinterviewed 6 months after the law went into effect, they reported few problems with compliance. The city's Health Department reported receiving only a small number of complaints. Through August 24, 1988, only five hearings or complaints had been held, and only 700 dollars in fines were levied (Burns 1988).

One systematic study of implementation examined San Francisco's workplace smoking law. The city found that implementation required only a declining fraction of a single employee's time. Compliance was monitored passively; the city responded to complaints rather than doing active surveillance and equated the lack of complaints with good compliance (Martin 1988). This study's finding does not support the tobacco industry claim that smoking laws would be expensive to implement and enforce (Tobacco Institute 1983).

The implementation of a 1987 local ordinance restricting smoking in Cambridge, MA, was also studied systematically (Rigotti et al. 1988). To inform the public about the new law, the Health Commissioner relied on the news media; to inform city businesses about their new responsibilities, he mailed a brochure. The one employee in the Commissioner's office designated to handle communication about the ordinance kept a telephone log. Analysis of the log revealed a peak of calls in the first few weeks after the ordinance took effect, followed by a rapid decline. Most early calls were for information; later calls were to report complaints. Over the first 3 months, no individual or business was fined, and no judicial actions were taken.

Compliance was measured by direct observations of retail stores, which were required to ban smoking and to post signs. At 3-month followup, there was little smoking observed in stores but there were also very few signs. Only 22 percent of stores had no-smoking signs, and only 3 percent had signs worded as required by law. Compliance was also measured by a random survey of city residents. At 3 months, one-third of residents had recently noticed smoking where it was not permitted; the most common response to seeing a violation was to ignore it. The authors concluded that the reluctance of city residents to respond to violations of the law called into question the notion that the law was self-enforcing (Rigotti et al. 1988).

Public Opinion

As described in Chapter 4, a number of public opinion polls report that the majority of both smokers and nonsmokers favor restrictions on smoking in public places and workplaces. However, there have been relatively few surveys of residents of cities and States that have adopted a new policy. There is almost no information about what effect smoking laws have on knowledge of or attitudes about smoking.

The few existing surveys of public opinion after the implementation of a smoking law indicate that these policies are popular, especially with nonsmokers. Nearly three-quarters (73 percent) of a random sample of 676 New York City residents interviewed 3 months after the city's smoking law took effect were in favor of the law. This included 84 percent of nonsmokers and 43 percent of smokers (New York Times 1988). Similar results were found in Cambridge, MA: 77 percent of a random sample of 400 residents surveyed 3 months after the law became effective approved of the law. Although the policy was more popular among nonsmokers, 41 percent of smokers also approved of it. A separate survey of business managers in the city, also conducted 3 months after the law went into effect, found that the majority (64 percent) favored the law requiring the development of a smoking policy at the worksite (Rigotti et al. 1988). As noted above, the California State law banning smoking on intrastate airline flights was well accepted by both airline passengers and crew surveyed at the San Francisco airport (Journal of the American Medical Association 1988b).

Smoking Behavior

Smoking policies will be regarded as successful if they achieve their aim of reducing nonsmokers' exposure to smoke. They will assume added public health importance if, in so doing, they encourage cessation by smokers and discourage the initiation of smoking. Although there are suggestions that smoking restrictions may have these effects, evidence is lacking because the impact of these policies on attitudes or smoking behavior has not been systematically evaluated in controlled trials. In the previously mentioned study of the Cambridge smoking ordinance, there was no change over 3 months in smokers' self-reported actions or desire to quit and no change in smoking prevalence (Rigotti et al. 1988). Behavior change may require a longer time to occur. Furthermore, because of the relatively greater time that smokers spend at work compared with public places, worksite smoking restrictions may have a greater potential to change the behavior of smokers (US DHHS 1986b).

As noted previously, surveys of Armed Forces personnel indicate a drop in smoking prevalence in all services between 1985 and 1987, coincident with the adoption of a militarywide nonsmoking policy and an aggressive antismoking intervention program (Kimble 1987). The precise contribution of the policy to the overall decline is not possible to determine.

Lewit (1988) reported a relationship between smoking behavior and residence in a community having a State or local law restricting smoking. Using NHIS data, he compared the smoking prevalence and cigarette consumption of individuals living in communities with smoking laws to the smoking behavior of individuals living in areas without these laws. He reported that residence in a town with a highly restrictive ordinance (restricting smoking in restaurants and the worksite) was associated with a rate of smoking cessation that was up to 10 percentage points above the rate expected on the basis of personal characteristics alone. This applied to teenagers and young adults, as well as to the general adult population. Lewit found less of a relationship between the laws and daily cigarette consumption by continuing smokers. This is the first evidence of an association between smoking laws and smoking behavior and requires

confirmation. Furthermore, as Lewit observed, the direction of causality between the existence of laws and reduced smoking, if any, is uncertain.

This assessment has been reinforced by new work by Chaloupka (1988) and Chaloupka and Saffer (1988) that concludes that, while smoking and the existence of laws are inversely related, the association reflects the higher probability of laws being passed in States with relatively low levels of smoking. Once this relationship was controlled, the authors found no significant effect of passage of the laws on smoking rates. They observed, however, that this did not mean enactment of laws would not decrease smoking, but rather that, thus far, laws have been passed primarily by States with low levels of smoking.

Summary

The Public Health Service's 1990 Health Objectives for the Nation included this goal:

By 1990, laws should exist in all 50 States and all jurisdictions prohibiting smoking in enclosed public places, and establishing separate smoking areas at work and in dining establishments (US DHHS 1980).

As this Section has documented, there has been a rapid increase in the number of State and local government actions to restrict smoking in public places and worksites. Since 1980, 5 of 13 States without public place smoking laws have enacted them; similarly, 13 of 40 States without restaurant laws in 1980 have adopted them; and 9 of 46 States without worksite restrictions have passed such laws. However, gaps in statewide legislation remain. Eight States currently have no smoking restrictions at all, 27 States do not include provisions for restaurants, and 37 States do not have laws restricting smoking at private worksites. Although both the number and comprehensiveness of Statewide laws have grown rapidly since 1980, it is unlikely that this 1990 Health Objective will be fully achieved by the target date.

Some of the present gaps in State legislation are now being filled by community ordinances. A recent analysis estimated that, as of August 1988, there were 321 local smoking ordinances nationwide, covering a total population of over 45 million (ANR 1988b). Another compilation counted 380 local laws (Tobacco-Free America Project 1988c). Local ordinances restricting smoking at the worksite now cover over half of California's population (ANR 1988a). If this trend occurs in other States, the level of protection for nonsmokers will increase and in certain States supplant the need for stronger State legislation. However, because of the potential for differing regulations, a patchwork of local legislation may be less desirable than broader State or Federal action. In the U.S., Federal actions have restricted smoking in transportation facilities and Federal offices. The first congressional action, the 1988 ban on smoking on short commercial airline flights, will expire in 1990 without congressional action to extend it. Actions by the General Services Administration (GSA) and DOD have restricted smoking in the majority of Federal offices.

It appears that the trend toward increasingly comprehensive State and local smoking restrictions, identified in the 1986 Surgeon General's Report, is continuing. Additional legislation is being adopted, and with one exception (Beverly Hills, CA), none has

been rescinded or substantially weakened. If present trends continue, smoking restrictions in cities and States can be expected to be the norm by the end of the century. A potential obstacle to the growth of local legislation is the inclusion in State legislation of a provision prohibiting cities and towns from taking stronger actions than has the State. This has occurred in at least three States (Florida, New Jersey, and Oklahoma).

Currently, little is known about the effects of no-smoking laws on attitudes toward smoking or smoking behavior. As smoking laws become more common, public health interest may shift from enactment to implementation of these laws and address issues of compliance and impact on smoking behavior.

Smoking Restrictions in the Private Sector

In 1986, the Surgeon General's Report noted the new development of policies regulating smoking in the private sector, particularly policies restricting smoking in the workplace (US DHHS 1986b). Evidence accumulated since then indicates that this trend, which began in the early 1980s, is continuing and possibly accelerating. A growing number of businesses, schools, health care facilities, and other institutions have adopted smoking policies to protect the health of employees, students, teachers, and patients. Not only are more private institutions adopting smoking policies, but also the policies they are adopting are further limiting the areas in which smoking is permitted. Survey data summarized in Chapter 4 demonstrate that this trend is strongly supported by public opinion.

The previous section summarized smoking restrictions that have been adopted as a result of government actions at the Federal, State, and local levels. This Section addresses smoking restrictions adopted voluntarily, that is, by private initiative. However, surveys on smoking restrictions in the private sector often do not distinguish between restrictions adopted voluntarily and those adopted to comply with legislation. This Section focuses on activities of businesses, schools, and health care facilities, because trends in these areas are the best recorded. Similar efforts are also being made for public transportation, restaurants, hotels and motels, and other sites; these are covered in the previous Report (US DHHS 1986b).

Workplace Smoking Restrictions

Walsh and Gordon (1986) cite a number of reasons for labeling the worksite as a "lightning rod" for those concerned about the health consequences of involuntary smoking. Along with growing evidence about the adverse health effects of involuntary tobacco smoke exposure (Eriksen, LeMaistre, Newell 1988; US DHHS 1986b), there is appreciation that the workplace is a major source of involuntary smoke exposure for all employed adults and is the most important source of exposure for adults who live in nonsmoking households (CDC 1987a). Furthermore, employees have less choice about their place of work, and hence their ETS exposure at work, than they do about where they spend time outside work. From the employer's standpoint, there are medical, legal, legislative, and economic reasons to consider workplace smoking control initiatives (Eriksen 1986). Nonsmokers' right to clean air at work has been supported by

common law precedent (US DHHS 1985c; Walsh and Gordon 1986). Smoking policies have also attracted the interest of behavioral scientists interested in the potential of the worksite as a base for activities that alter worksite norms about smoking, restrict opportunities to smoke, and increase motivation to quit (US DHHS 1985d).

A broad range of smoking policies has been developed by businesses. A taxonomy of these policies is presented and discussed in the 1986 Surgeon General's Report (US DHHS 1986b). Briefly, the options can be categorized as follows: (1) no explicit policy, (2) environmental alterations, (3) restricting smoking to designated areas, (4) banning smoking at work, and (5) preferential hiring of nonsmokers. In addition to these actions to control workplace smoking, private businesses have also developed worksite-based smoking cessation programs (Chapter 6).

History and Prevalence

There is a long tradition of smoking restrictions in the workplace to protect the safety of the worker, workplace, and product from hazards such as fires, explosions, or contamination. Such policies were supported by State legislation as far back as 1892. Although there are very few systematic data about prevalence or nature of workplace policies prior to the late 1970s, available data indicate that at the time of the 1964 Surgeon General's Report, there were essentially no restrictions on smoking in the workplace except where restrictions were needed because of fire or explosion hazards or sensitive equipment (US DHHS 1986b).

During the 1970s, workplace smoking regulations for the sake of employee health and comfort were included in clean indoor air legislation proposed at the State level and adopted by private businesses. By the late 1970s, private consulting firms, universities, and public health agencies began to assess the prevalence and characteristics of these policies. Most surveys have included large businesses only; consequently, less is known about the prevalence of smoking restrictions in smaller businesses.

The Dartnell Corporation (1977), a private organization that conducts survey research for businesses, made one of the first attempts to estimate the prevalence of workplace smoking policies. In its 1977 survey of U.S. and Canadian office administrators, the organization reported that 30 percent of U.S. and 25 percent of Canadian offices had smoking policies. Since then, a number of State and national surveys have been conducted. The prevalence of policies reported by surveys done in the 1970s ranged from a low of 8 percent in California (Fielding and Breslow 1979) to a high of 64 percent in Massachusetts (Bennett and Levy 1980). During the 1980s, the estimates of workplace smoking policies have ranged from a low of 32 percent (Human Resources Policy Corporation 1985) to a high of 54 percent (BNA 1987).

Attempts to compare the results of different surveys are complicated by differences in survey design, types of companies studied, definitions of "policy," measurement instruments, and analytical techniques. Furthermore, the low response rate of some surveys limits their generalizability. Particularly in the earlier surveys, the variability in results may have been attributable as much to differences in research methodology as it was to differences in the actual prevalence of policies. The 1986 Surgeon General's Report includes a comprehensive review of the results and methodological limitations

of the surveys measuring the prevalence of workplace smoking policies (US DHHS 1986b). It concluded that the prevalence of worksite smoking policies was increasing. Recently, Walsh and McDougall (1988) reviewed the trends in workplace smoking policies, noted the methodological limitations, and tentatively concluded that about 30 percent of employers have some type of smoking policy.

The conclusion that worksite smoking policies are becoming more common is supported by the results of two surveys conducted by the Bureau of National Affairs (BNA). These were two national surveys, in 1986 and 1987, of random samples of members of the American Society of Personnel Administration (BNA 1986, 1987). Although the generalizability of the results is limited by low response rates (34 percent in 1986 and 29 percent in 1987), the similarity of the two surveys' methodologies permits limited comparisons between years and provides an indication of general trends. In 1986, BNA reported a 36-percent prevalence of workplace smoking policies; in 1987, the estimate was 54 percent. Taken together, these results indicate a 50-percent increase in the proportion of companies with policies between 1986 and 1987. This conclusion was supported by the finding that 85 percent of companies with a smoking policy in 1987 reported that it had been adopted in the past 3 years (1985 to 1987). In addition to the companies that had a policy in 1987, 4 percent of companies were planning to establish a policy by the end of 1988, and 21 percent were considering workplace smoking restrictions at the time of the survey. Thus, only 22 percent of responding companies did not have either a smoking policy in place or one under consideration.

These results are consistent with those from a large random sample survey of U.S. businesses participating in the 1985 National Survey of Worksite Health Promotion Activities. Of the 35 percent of companies that had smoking control activities, over three-quarters (76.5 percent) reported having a formal smoking policy in place (US DHHS 1987c). Formal smoking policies were the most common component of workplace smoking control programs. The one discrepant result was obtained by a survey restricted to New York City businesses (CDC 1987a). Done in August 1986, it reported that only 4 percent of 573 companies responding to the survey had written smoking policies. It is notable that this is the only one of these surveys to include a large number of smaller businesses. Half of the sample consisted of businesses with fewer than 10 employees, and they were less likely than larger companies to have a smoking policy. Another possible explanation for the discrepancy is that businesses were asked about having a written smoking policy. Some small businesses may have unwritten policies in place.

A separate line of evidence supports these estimates of worksite smoking policy prevalence. The 1986 Adult Use of Tobacco Survey provides an estimate of the extent of worksite smoking policies from the employee's, not the employer's, perspective (CDC 1988). The results are based on a national probability sample of over 13,000 adults. Of employed adults, 45 percent reported having some smoking restrictions at their place of work; smoking was restricted for 42 percent and banned for 3 percent. Of the 55 percent working in places without smoking restrictions, two-thirds reported at least some exposure to ETS (CDC 1988).

Most surveys of workplace smoking policies have assessed their prevalence in private businesses. Recently, however, there have been some attempts to assess the prevalence

of smoking policies at public worksites. The 1987 BNA survey reported that organizations classified as "non-business" tended to establish their smoking policy before their business counterparts did; however, the opposite was reported in a systematic random-sample survey of private businesses and public agencies in Texas (Gottlieb, Hedl, Eriksen et al., in press). In that survey, over 50 percent of both private and public employers reported having a restrictive smoking policy, with only minor differences between them. These Texas surveys were conducted at the same time as the national BNA survey (1987), and each reported the prevalence of restrictive smoking policies to be over 50 percent. In another study of public agencies, Timmins (1987) surveyed a random sample of public agency personnel managers and reported that 38 percent had either formal or informal personnel policies dealing with smoking at work. This percentage is consistent with the prevalence of workplace smoking policies reported for private corporations in 1986 (BNA 1986). Although there are some small differences in rationale and timing, there appear to be more similarities than differences between public and private workplaces regarding the establishment of restrictive smoking policies. Overall, smoking restrictions currently exist in approximately one-half of large American businesses.

Level of Restrictiveness

Not only the prevalence but also the restrictiveness of worksite smoking policies is increasing. According to the BNA surveys (1987), the proportion of company smoking policies that stipulated a total ban on smoking in all company buildings doubled from 1986 to 1987, from 6 to 12 percent. The proportion of company policies that prohibit smoking in all open work areas also increased, from 41 percent in 1986 to 51 percent in 1987. In addition to open work areas, smoking was more likely to be prohibited in 1987 than in 1986 in each of six specific areas addressed in the surveys, including hallways, conference rooms, and private offices. When workplace smoking policies are revised, the revisions are typically more restrictive, sometimes becoming total smoking bans. In the 1987 BNA survey, 13 percent of companies had revised their policies since first being adopted and another 17 percent were anticipating changes before 1989, with the "vast majority" becoming more restrictive than the original ones (BNA 1987). The most restrictive smoking policy, the preferential or exclusive hiring of nonsmokers, is uncommon. According to the BNA survey (BNA 1987), only 12 percent of companies give a hiring preference to nonsmokers and only 1 percent restrict hiring to nonsmokers. There was no indication that this trend is increasing over time.

Reasons for Adopting Smoking Policies

In their review of current smoking policies, Walsh and McDougall (1988) identify reasons businesses have adopted restrictive smoking policies: (1) to protect equipment; (2) to impress customers; (3) to protect the health of smoking employees; (4) to reduce the health risks of involuntary smoke exposure for nonsmoking employees; (5) to respond to employees' complaints; (6) to comply with regulations; and (7) to avert insurance and productivity losses.

As noted above, the first workplace smoking policies were implemented primarily for safety and productivity reasons (Bennett and Levy 1980), whereas the majority of the recent policies have been implemented to protect employee health (Walsh and McDougall 1988). According to the National Survey of Worksite Health Promotion Activities (US DHHS 1987c), the major reasons companies established restrictive smoking policies were to protect the health of nonsmoking employees (40.4 percent) and to comply with regulations (39.5 percent). Of secondary importance was the need to protect equipment (12.7 percent). In the 1987 BNA survey, the leading reason reported for adopting a smoking policy was a concern for the comfort and health of employees. The second most common reason was in response to employee complaints, followed by the need to comply with State or local law. Both surveys illustrate the impact of the nonsmokers' rights movement and the flurry of local and State legislation on the adoption of workplace smoking policies.

The most common barrier to adopting a restrictive smoking policy is perceived lack of employee demand. In the 1987 BNA survey, two-thirds of the companies without policies cited insufficient employee demand as the reason for not adopting a policy, twice the proportion citing anticipated enforcement problems and lack of support from top management, the next most common reasons given. In addition, some employers fear a negative reaction from smoking employees, conflict between smokers and nonsmokers, and the possibility of legal action and grievances by smokers demanding the right to smoke at work (Thompson, Sexton, Sinsheimer 1987; US DHHS 1987c). Also, sometimes unions have not supported smoking policies, a fact that may have discouraged management in some companies from adopting smoking restrictions (BNA 1986). However, in a recent survey, 82 percent of union members favored smoking restrictions (Brown et al. 1988).

Another reason employers may be reluctant to implement a restrictive smoking policy is concern about its impact on workplace norms. Until recently, smoking was sanctioned at work and many aspects of the work environment actually reinforced smoking. Smoking breaks were times for employee socialization and were often included in collective bargaining agreements. Concern for smokers' needs to satisfy their addiction to nicotine and the fear of productivity losses resulting from frequent smoking breaks outside the immediate work area may also deter some employers from implementing a restrictive smoking policy (Schilling, Gilchrist, Schinke 1985). On the other hand, there is some indication that societal norms about smoking are changing rapidly in the work environment. For example, a 1987 *Wall Street Journal* article (Freedman 1987) cited anecdotal evidence to support the notion that cigarette smoking could serve as a barrier to the career development of white-collar workers.

Correlates of Worksite Smoking Policies

Worksite smoking policies are more common in larger businesses. In a survey of personnel managers (BNA 1987), 63 percent of those with 1,000 or more employees reported having a smoking policy, compared with 52 percent of companies with fewer employees. In the same survey, smaller companies were half as likely as larger ones to have a policy under consideration (12 vs. 24 percent). Similar findings were reported

by the National Survey of Worksite Health Promotion Activities, in which larger worksites were more likely than smaller ones to report smoking control activities (US DHHS 1987c). As noted above, in a survey of private New York City businesses, only 4 percent (21/539) of companies with fewer than 100 employees had a written smoking policy (CDC 1987a).

The prevalence of smoking policies also varies by type of industry. In general, companies with the greatest potential for respiratory hazards (manufacturing and processing) and the highest prevalence of smoking employees (US DHHS 1985c) are also the ones least likely to have smoking policies (Administrative Management Society 1986; BNA 1986, 1987). One study has shown a relationship between the smoking status of the top administrator and the likelihood of having a smoking policy. A business whose manager was a current smoker was less likely to have a written smoking policy (CDC 1987a).

Health Care Facilities

Like the worksites described above, health care facilities, especially hospitals, have become focal points of private efforts to restrict smoking. There are compelling reasons for these facilities to adopt strong smoking restrictions (US DHHS 1986b). Many patients treated in health care facilities have smoking-related illnesses; nonsmoking is part of their treatment. Permitting smoking in hospitals may undermine the advice given by physicians to patients to stop smoking. Other patients have illnesses whose symptoms can be worsened by exposure to tobacco smoke. The majority of hospital fires are caused by smoking in bed. Furthermore, hospitals are also workplaces; like any other worksite, employees have numerous reasons for having smoking restrictions. Smoking restrictions in health care facilities are supported by surveys of patients (Kotke et al. 1985) and have been endorsed by numerous medical organizations (US DHHS 1986b).

Despite the strong rationale and favorable public attitudes, smoking restrictions in health care facilities have lagged behind those in private businesses. This has occurred despite the fact that, much more often than businesses, health care facilities have been required by State and local laws to have smoking restrictions. As noted in the previous Section, two-thirds of States now require hospitals to restrict smoking to designated areas. These legislative efforts have not led to strong protection of patients in many cases because the laws do not specify the nature or size of smoke-free areas. Most smoking restriction has been the result of private initiative, often beginning with the medical staff (US DHHS 1986b).

Two recent surveys indicate that almost all hospitals have adopted some smoking restrictions. A survey of 774 hospital administrators by the American College of Healthcare Executives (ACHE) (1988) reported that 90 percent of hospitals currently restrict smoking and another 6 percent are currently developing a smoking policy. Similar results were obtained in a study of hospitals accredited by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO): 93 percent of the 2,165 responding hospitals reported having a formal written smoking policy (Holland 1988).

Although these national surveys of hospital administrators indicate that nearly all hospitals restrict smoking in at least some areas, they do not indicate the extent of these smoking restrictions. Other surveys suggest that patient care areas are not uniformly free of smoke. For example, over 90 percent of Indiana hospitals allow inpatients, outpatients, and visitors to smoke, at least in designated areas (Torabi, Seffrin, Brashear 1987). In Texas, where 78 percent of hospitals have written smoking policies, only two-thirds of hospitals provide smoke-free rooms, and even then, smoke-free rooms are often available only on a "when available" basis, and patient requests are often denied (Zamrazil 1984).

A number of hospitals are beginning to ban smoking entirely. In the ACHE survey, 7 percent (28/394) of the responding hospitals with current smoking restrictions reported that smoking was entirely prohibited, although some of these hospitals allowed smoking by patients under the written order of a physician. Although the survey of JCAHO-accredited hospitals did not ask if the facility was smoke free, by analyzing the response to questions regarding smoking in specific areas, the authors estimate that approximately 5 percent of surveyed hospitals are smoke free. In Minnesota, 26 percent of hospitals have already banned smoking in preparation for compliance with a recently enacted State law that will require all hospitals to become smoke free by 1990 (Kim 1988). All 20 of the nation's comprehensive cancer centers are or will soon become mostly or totally smoke free (Neville 1988). The requirement that a doctor's order be written before a patient is allowed to smoke appears to be becoming a common component of hospital smoking policies. These are intended for use in unusual situations, for example, in the case of terminal patients. It is not clear how often this option is used when available. For example, at Saint Cloud Hospital in Minnesota, only 10 doctors' smoking orders were written in the 18 months following the effective date of the smoking ban (ACHE 1988).

Health care facilities report somewhat different reasons for adopting smoking restrictions than do other worksites. The national survey of ACHE members indicated that the most often cited rationale for smoking restrictions was that they were a moral obligation of health care providers. Other reasons included improvement of employee health and air quality.

Hospital policies other than smoking restrictions also discourage smoking. In one recent survey, 3 percent of hospitals reported that they do not hire smokers (ACHE 1988). Most hospitals prohibit the sale of cigarettes. In 1976, a survey of hospital administrators found that 58 percent of Indiana hospitals sold cigarettes. When a similar survey was repeated in 1986, the proportion of hospitals selling cigarettes had dropped to 13 percent (Torabi, Seffrin, Brashear 1987). In Texas, 26 percent of surveyed hospitals never sold cigarettes; as of 1984, 28 percent of hospitals continue to sell them (Zamrazil 1984). Voluntary (nonpolicy) efforts by health care professionals to discourage smoking are discussed in Chapter 6.

There is virtually no information about the prevalence of smoking restrictions in physician offices. One small study of primary care physician offices reported that ashtrays were found in 9 of 51 waiting rooms and that "no smoking" signs were posted in only 20 of 51 offices (Radovsky and Barry 1988). Medical organizations are themselves also beginning to restrict smoking in their facilities. In an informal telephone

survey conducted by the American Medical Association (AMA), 45 of the 65 medical organizations represented in the AMA House of Delegates had some type of smoking policy (Journal of the American Medical Association 1988a; Goldsmith 1988).

Many pharmacies sell tobacco products, in addition to dispensing medications for the treatment of smoking-related illnesses. Only 11 of 100 San Francisco pharmacies surveyed in 1978 did not sell tobacco products (Schroeder and Showstack 1978). The extent to which this situation may have changed in the subsequent decade is unknown. During that time, pharmacists have been exhorted to stop selling tobacco products (Richards and Blum 1985), and at least one advocacy group compiles an ongoing list of pharmacists who have made this decision (New Jersey GASP 1988). The American Pharmaceutical Association has endorsed the position that pharmacists should not sell tobacco products (Taylor, Richards, Fischer 1987). A survey of 136 pharmacists in Georgia in 1986 revealed that 74 percent sold cigarettes (Taylor, Richards, Fischer 1987).

Schools

Secondary schools have traditionally regulated smoking by students, but for reasons other than concern about involuntary smoke exposure (US DHHS 1986b). School smoking restrictions are part of broader societal efforts to prevent children and adolescents from starting to smoke by educating them about the hazards of tobacco use and by restricting their access to tobacco products. Because most smokers start smoking before age 20 (Chapter 5), efforts to reduce the initiation of smoking have focused on schools. As noted in Part I, school education about the health consequences of smoking is mandated by law in 20 States (Lovato, Allensworth, Chan, in press) and has also been the result of voluntary efforts by individual schools (Chapter 6).

Smoking by secondary school students is also restricted by State laws and regulations. Currently, 32 States restrict or ban smoking in schools (Table 19). Smoking by students is banned in schools in 15 States and restricted to designated areas in an additional 17 States (Tobacco-Free America Project 1988a). Furthermore, as discussed in the next section, laws in 43 States and the District of Columbia prohibit the sale of cigarettes to minors below a designated age; in most cases this is age 18 years or higher. In 16 States, not only the sale but also the use or possession of tobacco products is banned with respect to minors. Consequently, secondary schools have banned student smoking for at least two major reasons: to comply with State law and to discourage the initiation of smoking by students.

Recognition of the health effects of involuntary smoke exposure provides an additional reason for school smoking restrictions and a reason to expand attention from students to teachers. Smoking by teachers has traditionally been permitted only in areas away from students, partly out of concern that teachers' smoking could serve as role model behavior for students. Available evidence indicates that there are far fewer restrictions on smoking by teachers and other school staff than on smoking by students. Nearly as many States restrict faculty smoking as restrict student smoking; however, whereas 15 State laws totally ban smoking by students, only 1 State, Kansas, bans smoking by teachers. A history and description of school smoking policy restrictions can be

found in the 1986 Surgeon General's Report (US DHHS 1986b). There is little information about smoking restrictions in colleges and universities. In 1988, the American College Health Association adopted a statement endorsing stringent smoking restrictions and a prohibition of tobacco sales and advertising on college and university campuses (ACHA 1988).

The most comprehensive and recent information about the prevalence of school smoking policies was reported by the National School Boards Association (NSBA), which surveyed a stratified random sample of 2,000 school districts nationwide in 1986 (NSBA 1986, 1987). The 36-percent response rate, although relatively low, was consistent with response rates reported for other workplace surveys (Walsh and McDougall 1988). Eighty-seven percent of the responding school districts reported having written policies or regulations on smoking in schools. Nearly half of the districts (47 percent) had a comprehensive policy that prohibited student smoking in school buildings, on school grounds, and at school-sponsored functions. There were fewer restrictions on smoking by faculty and staff. Although 91 percent of school districts prohibited student smoking in school buildings, these restrictions applied to teachers in only 10 percent of the districts. Most school districts (81 percent) provided designated smoking areas in school buildings for faculty and staff. Overall, only 2 percent of the school districts prohibited school-related tobacco use for students, faculty, and administration. The NSBA survey addressed school smoking policies only; it did not assess rules about smokeless tobacco usage.

School smoking policies, like those in other worksites, are becoming more restrictive. According to the NSBA survey (1986, 1987), 37 percent of school districts have revised their policies since 1981, with 80 percent instituting stricter rules for students and 56 percent strengthening restrictions for faculty and staff. The major reason given by school districts for implementing smoking policies was concern about health, followed by problems associated with smoking behavior (42 percent) and State or local legislation (35 percent). The reason for adopting smoking policies differed by location; rural districts tended to be influenced more by the belief that adult role models change student smoking behavior, whereas urban districts were influenced by municipal or State antismoking legislation.

Public Transportation

As noted in a preceding section, as of April 1988, smoking was banned by Federal legislation on all domestic U.S. airline flights scheduled for 2 hr or less. Shortly before that ban took effect, one airline, Northwest Airlines, the Nation's fifth largest carrier, adopted a policy stricter than the law required; it banned smoking on all its domestic flights, regardless of flight time, excluding those between Hawaii and the mainland (Northwest Airlines 1988). According to company information, the action was at least partially a marketing decision to capitalize on changing social norms related to smoker and nonsmoker rights (Northwest Airlines 1988). Little is known about private initiatives to ban smoking on trains or buses. In 1987, Air Canada, that nation's largest carrier, voluntarily banned smoking on a trial basis on selected flights within Canada and to the United States. This action preceded parliamentary action in June 1988 to ban

smoking on all flights of 2 hr or less. Subsequently, in July 1988, Air Canada announced a ban on smoking on all its North American flights (Boston Globe 1988b).

Effects of Smoking Restrictions

Policies restricting smoking at the worksite have a number of possible direct and indirect effects that are outlined here (US DHHS 1986b). An adequately implemented smoking policy has the direct effect of limiting the circumstances in which smoking is permitted, thereby altering the behavior of smokers and eliminating or reducing the concentration of ETS in areas in which smoking is banned. Successful policy implementation requires that employees and managers be aware of the policy, comply with its provisions, and enforce it against violations. For smokers, the result is fewer opportunities to smoke during working hours, which should reduce cigarette consumption at work, may reduce overall consumption, and may trigger attempts at cessation. For nonsmokers, worksite restrictions have the potential to reduce an important source of involuntary smoke exposure, because adults spend more time at work than at any other place outside the home.

Beyond these direct effects, worksite smoking policies may have broader, indirect effects on public attitudes about tobacco use and smoking behavior outside work. Policies that restrict or ban smoking at work convey strong messages about the social acceptability of cigarettes and reinforce perceptions that nonsmoking is the norm. The combination of altered social norms and reduced opportunities to smoke has the potential to make a strong impact on smoking behavior at many points in its natural history. For worksite policies, hypothesized effects include reducing overall cigarette consumption and increasing the number and success of cessation attempts. The effects on behavior may be enhanced by a coexistent smoking cessation program. Worksite smoking restrictions may have other impacts, such as economic benefits, that are of interest to employers (US DHHS 1986b).

Smoking policies in schools may alter attitudes about the desirability of smoking and reduce social pressures to smoke, thereby discouraging smoking initiation. As in business, the impact may be enhanced by concurrent health education programs. In health care settings, smoking restrictions have the potential to influence smoking by patients, in addition to any impact on employees. Patients who develop acute illness, particularly cardiovascular disease manifestations, are more likely to quit smoking (Rigotti and Tesar 1985). Smoking restrictions in hospitals may enhance the effect of illness on smoking cessation and increase the effectiveness of health professionals' advice to stop smoking (US DHHS 1986b).

Although smoking policies have been increasingly adopted at worksites, especially in recent years, few have been subject to evaluation. Some businesses have conducted baseline surveys of employees to assess attitudes and behavior prior to policy implementation, but few have followed these with postimplementation surveys to assess their effects. Methodological issues in evaluation are reviewed in detail in the 1986 Surgeon General's Report and elsewhere (US DHHS 1986b; Rigotti 1989). The ideal study would assess variables before and after a policy is adopted and include a comparison group for whom no change occurs. This would permit controlling for con-

current outside influences on smoking behavior and attitudes, such as populationwide trends that are now occurring (Chapter 4), which may confound results. Such controlled evaluations are rare. Most available information is drawn from uncontrolled studies, often done retrospectively. The first evaluations of worksite smoking policies were done in a health care setting (Rigotti et al. 1986; Biener et al. 1989; Andrews 1983; Rosenstock, Stergachis, Heaney 1986). Evaluations of policies at other workplaces have begun to appear recently. The following section, which updates a review in the 1986 Surgeon General's Report, will describe the current state of knowledge about the impacts of smoking restrictions at worksites, schools, and health care facilities.

Implementation and Compliance

There has been little systematic evaluation of the degree of worksite smoking policy compliance by managers and employees, although descriptions of policy adoption by individual companies have not reported major problems (US DHHS 1986b; BNA 1986). On the other hand, data from the 1986 Adult Use of Tobacco Survey indicate that the presence of a policy does not guarantee smoke-free air (CDC 1988). A policy that is poorly implemented or enforced will result in little restriction of smoking and can be expected to have slight effect on air quality or smoking behavior. Model smoking policies for worksites and health care facilities and guidelines for implementation have been developed by several groups (BNA 1986, 1987; US DHHS 1985c; Kottke et al. 1986; American Hospital Association 1988).

Attitudes and Norms

Available studies indicate that smoking restrictions are well received by most employees. They are uniformly more popular with nonsmokers than with smokers. Four months after a stringent smoking policy was adopted at the Group Health Cooperative, a large health maintenance organization in the Pacific Northwest, 85 percent of surveyed employees approved of the decision to prohibit smoking, including nearly all nonsmokers and 36 percent of smokers. The level of approval of both smokers and nonsmokers was higher after implementation than it was when the policy was first announced, suggesting that policy implementation is better received than the initial policy announcement (Rosenstock, Stergachis, Heaney 1986). Rigotti and colleagues (1986) reported similar results among pediatric nurses after a smoking ban.

In another study of hospital employees by Biener and coworkers (1989), over 90 percent of the nonsmokers and two-thirds of the smokers approved of a smoking policy at both 6 and 12 months following its implementation. In another hospital, Andrews (1983) reported that 93 percent of the nonsmokers and 83 percent of the smokers, surveyed 20 months after the adoption of a strict smoking policy, approved of it. Outside the health care setting, similar results have been reported. Petersen and colleagues (1988) found that 67 percent of nonsmokers and 19 percent of smokers in an insurance company felt that a restrictive smoking policy had an overall positive impact on the work environment. At Ranier Bank (1986), headquartered in Seattle, the majority of all employees felt the company's smoking policy was effective and fairly implemented.

The attitude of smokers toward smoking policies depends on the restrictiveness of the policy and characteristics of the individual smoker. As would be expected, a policy is less popular with smokers when smoking is prohibited in work areas, as at the Connecticut insurance company (Petersen et al. 1988) and Group Health Cooperative (Rosenstock, Stergachis, Heaney 1986), than when the policy calls for designated smoking areas, as in the first phase of the Ranier Bank policy (1986) and the Rhode Island hospitals study (Biener et al. 1989). Thompson, Sexton, and Sinsheimer (1987) surveyed all employees in a Pacific Northwest high technology company that had recently implemented a restrictive smoking policy. Among smokers, those most likely to oppose the policy were females and heavy long-term smokers with fewer positive health practices. In addition, on discriminant analysis, a low desire to quit and a low probability of quitting were also significantly associated with opposition to the policy. These findings agree with another study associating support for smoking policies with greater interest in quitting, more concern for smoking health risks, and greater social support for nonsmoking (Sorensen and Pechacek 1989).

Although most studies have found the majority of smokers and nonsmokers to favor restrictive policies, both prior to and following policy implementation, there is little information available about the effect of policies on attitudes about smoking in general. In one case, Biener and associates (1989) found little change in nonsmokers' attitudes toward secondhand smoke or their assertiveness in confronting smokers after a restrictive smoking policy was adopted.

Smoking Behavior

Currently available studies indicate that worksite smoking restrictions reduce cigarette consumption at work, but there is little evidence about effects on overall smoking. All studies are limited by reliance on self-reports of smoking behavior. They tend to validate the hypothesis that implementation of a restrictive smoking policy has a positive effect on overall smoking behavior. Early studies monitored smokers' compliance with no-smoking signs (Dawley and Baldwin 1983; Dawley and Burton 1985) and oral reminders not to smoke in designated nonsmoking areas (Jason and Liotta 1982) and found these techniques to be effective.

Expanding upon these observational studies, researchers began to use survey methodology to investigate the impact of restrictive smoking policies on representative samples of an entire work force. Some of the earliest evidence of the impact of smoking policy on smoking behavior came from Group Health Cooperative of Puget Sound following the prohibition of smoking in its 35 facilities (Rosenstock, Stergachis, Heaney 1986). Four months after policy implementation, 29 percent of the surveyed current smokers reported they were smoking less and attributed the reduction to the policy. The average reduction, 2 cigarettes a day, was small but of statistical significance. However, prepolicy tobacco consumption was assessed after the policy took effect. Such retrospective assessment is subject to possible respondent bias that might overestimate the actual change. Four percent of the surveyed smokers reported that they quit smoking in association with the implementation of the policy; however, be-

cause it was only 4 months following the program, it is difficult to evaluate the long-term impact on cessation.

For these health maintenance organization employees, a smoking ban had relatively little impact on cessation rates, but contributed to reductions in the amount smoked. This relationship has also been reported among insurance company and hospital employees. Three months after a work area smoking ban was adopted by an insurance company in Connecticut, employees reported no increase in cessation rates, but an average reduction of 32 percent in the amount smoked. The average daily cigarette consumption fell from 0.95 pack per day to 0.67 pack per day, with 44 percent of smokers reporting a decrease in consumption (Petersen et al. 1988). The proportion of smokers reducing the amount smoked is similar to the decreases projected for employees in studies by Eriksen (1985) and Millar (1986).

Furthermore, there was a direct correlation between the amount smoked and the likelihood of reporting a consumption decrease in the Petersen study (1988). The heaviest smokers were the ones most likely to report a reduction in the amount smoked, with 93 percent of those who smoked at least 2 packs a day reporting a reduction following the policy. However, the conclusions of the study are limited by major weaknesses in design. First, employees reported their current and previous smoking behavior at the same time and on the same questionnaire. The retrospective assessment of prepolicy smoking behavior introduced the possibility of recall bias. Second, the survey instrument was administered to employees as they entered the company cafeteria. Using this technique, researchers reached 56.6 percent of all employees; however, because the respondents were not randomly selected, they are not necessarily representative of the entire work force and the findings cannot be generalized beyond the respondents. In fact, compared with the average company employee, the survey respondents were more likely to be white (87 vs. 82 percent), be college educated (69 vs. 59 percent), and have professional or technical jobs (63 vs. 52 percent).

The study with the strongest research design, that of Biener and colleagues (1989), used random, cross-sectional samples of employees to examine the impact of a restrictive smoking policy on hospital employee smoking behavior. Telephone interviews were conducted at baseline and 6 and 12 months in experimental and comparison hospitals. They found no difference in quit rates between the two hospitals, but a reduction in the number of cigarettes smoked during work in the experimental group. Because there was no apparent change in the number of cigarettes smoked outside of work, the authors conclude that there was a net reduction in the daily amount smoked. In their study of hospital nurses, Rigotti and coworkers (1986) also reported a significant reduction in the number of cigarettes smoked at work, but no change in the overall daily amount smoked.

In another hospital-based study, Andrews (1983) surveyed 36 percent of the hospital staff 20 months after the implementation of a restrictive smoking policy and reported a major impact on both cessation and reduction of smoking: 26 percent of those surveyed had stopped smoking and 33 percent smoked less since the policy went into effect. However, methodological problems prevent an unequivocal conclusion that change was attributable to the policy.

In summary, the current data about the impact of worksite smoking policies on smoking behavior are equivocal, and firm conclusions await studies with stronger designs. The conclusion of one study reporting an effect on cessation was weakened by methodological problems (Andrews 1983). Three studies reported no impact on cessation, but reductions in the amount smoked (Petersen et al. 1988; Rosenstock, Stergachis, Heaney 1986; Biener et al. 1989), and one study showed no effect on overall smoking behavior (Rigotti et al. 1986). The conclusion of the 1986 Surgeon General's Report still holds: "There is as yet no conclusive evidence that worksite smoking policies are associated with increases in smoking cessation attempts or reductions in smoking prevalence" (US DHHS 1986b).

Even less information is available about the effect of school smoking policies on smoking behavior. One study (Porter 1982) has linked smoking policies with reduced smoking initiation. Another study (Murray, Kiryluk, Swan 1984) found student smoking behavior to be associated with teacher smoking, along with other organizational variables. As with worksites and health care facilities, there are few studies that have attempted to determine the relationship between smoking policy and associated behavior.

Participation in Cessation Programs

Smoking control efforts are the most prevalent worksite health promotion activity, according to the National Survey of Worksite Health Promotion Activities (US DHHS 1987c). In 1987, over half (54 percent) of companies responding to the 1987 BNA survey were planning future activities to encourage employee smoking cessation, a doubling of the 1986 rate (27 percent). However, data on the level of program participation are mixed, and data on outcomes are virtually nonexistent.

Companies with smoking policies are much more likely (64 vs. 38 percent) to have attempted to help their employees to quit smoking than are companies without policies (BNA 1987). It has been hypothesized that the adoption of a smoking policy will increase participation in company-sponsored smoking cessation programs, reflecting the potential of smoking policies to increase smokers' motivation to quit smoking. However, the data on the influence of a workplace smoking policy on participation in a worksite smoking cessation program are mixed. In the Group Health Cooperative study, only 2 percent of surveyed smokers participated in a smoking cessation class offered during the implementation period (Rosenstock, Stergachis, Heaney 1986). In the Rhode Island hospital study (Biener et al. 1989), implementation of a restrictive policy did not lead to an increase in enrollment in a self-help smoking cessation program when compared with employee enrollment in a comparison hospital (13 vs. 14 percent). In the Connecticut insurance company study (Petersen et al. 1988), only 20 smoking employees (about 4 percent of the eligible smokers) enrolled in a company-subsidized smoking cessation program, and no smokers requested support through a volunteer buddy system. On the other hand, over 25 percent of the smoking employees at Pacific Northwest Bell participated in a company-sponsored smoking cessation program that was offered in conjunction with a ban on workplace smoking (Martin 1988; Walsh and McDougall 1988).

Air Quality

The primary goal of worksite smoking policies is to reduce individuals' involuntary tobacco smoke exposure, but the degree to which policies achieve this goal has been measured infrequently and only indirectly. Air quality has been assessed only by subjective measures, which ask employees to rate the concentration of smoke in the air. These studies have found improvements in perceived air quality after policy adoption in most cases. After establishing designated smoking areas as the first phase in an eventual prohibition of smoking, Ranier Bank (1986) surveyed over 3,300 employees regarding their reaction to the policy. Nearly two-thirds of all employees, smokers and nonsmokers alike, felt that the amount of smoke in common areas decreased following implementation of the policy. In the Rhode Island hospital study (Biener et al. 1989), employees in the hospital with a restrictive policy were less likely to report being bothered by smoke at work than were employees in the comparison hospital. This was true for offices and staff lounges, but not for lavatories, suggesting that this was an area of noncompliance in the policy hospital. Rigotti and colleagues (1986) reported a significant improvement in air quality for nurses 1 year following a smoking ban.

Data from the 1986 Adult Use of Tobacco Survey (CDC 1988) suggest that a substantial proportion of employees at worksites with smoking restrictions or bans are still exposed to tobacco smoke. Among employees working where smoking was restricted, 53 percent reported at least some exposure to ETS, compared with 65 percent of respondents from worksites without restrictions and 21 percent from worksites with complete smoking bans.

Other Effects

There is little empirical evidence about the economic impact of worksite smoking policies because systematic analyses have not been done. Employee absenteeism, productivity, turnover, or health care costs have rarely been assessed. Biener and colleagues (1989) investigated the effect of a restrictive smoking policy on work performance. Although the majority of smokers and nonsmokers felt the policy had no impact, 21 percent of the nonsmokers felt that their work had improved, whereas 19 percent of the smokers felt their performance had deteriorated. However, there is little evidence of negative impact from even the most restrictive policies. For example, there have been no lawsuits, grievances, or dismissals associated with a total ban on smoking at Pacific Northwest Bell (Martin 1988).

Summary

Available survey data on smoking policies in businesses, hospitals, and schools strongly suggest that the previously identified trend toward greater prevalence and increasing restrictiveness (US DHHS 1986b) is continuing, and may have accelerated since 1986. According to the BNA survey, 85 percent of the worksite smoking policies in place in 1987 were adopted within the last 3 years. Furthermore, there is no sign of reversal; policies that have been revised nearly always become more restrictive than

the original ones (BNA 1987). The same situation holds for smoking restrictions in schools. Half of the school districts enacted their current smoking policies within the last 6 years, and virtually all policy revisions are becoming more restrictive and are expanding to include smoking by teachers and staff (NSBA 1986).

The growing number of State laws and community ordinances mandating smoking restrictions in the private sector worksite has contributed to this trend. For example, in the city of Cambridge, MA, 31 percent of businesses with a smoking policy had adopted it in the 6 months after the city passed a no-smoking ordinance requiring employers to have a smoking policy (Rigotti et al. 1988). Laws requiring smoking policies have also helped to overcome fears about loss of business for companies in service industries. For example, some hospitals have been reluctant to ban smoking for fear that some smokers might choose to be admitted to hospitals that will allow them to smoke. To eliminate this problem, the State of Minnesota passed a law prohibiting smoking in health care facilities, effective January 1, 1990 (Kim 1988). By requiring every hospital to prohibit smoking (except for chemical dependency and mental health patients or under a physician's written order), this legislation avoids potential economic reasons for not restricting smoking.

Observers have noted that the tobacco industry is downplaying the existence and importance of the trend toward smoking restrictions in the hope that this may slow the momentum toward restrictive policies (Walsh and McDougall 1988). However, there is no evidence to support the industry's assertion of retrenchment and there is every indication to refute it (BNA 1987; US OTA 1986). If present trends in the prevalence of smoking restrictions continue, it can be expected that smoking will be permitted in fewer and fewer areas at work, in health care facilities, and in schools.

The impact of these restrictions on air quality and the behavior of smokers is less certain and probably will depend on the restrictiveness of the policy and the degree to which the policy is implemented as written. Current evidence permits no definitive conclusion about the actual impact of restrictive smoking policies on smoking behavior. The limited data available suggest that policies contribute to reductions in cigarette consumption by smokers, but not to cessation. However, comprehensive programs that include smoking restrictions along with other environmental changes and other health promotion activities may have a major impact on smoking prevalence, especially among high-risk employees (Shipley et al. 1988). Similarly, the same type of comprehensive program that aims to influence environmental factors may contribute to positive health outcomes in schools, including the prevention of smoking (Simons-Morton, Parcel, O'Hara 1988).

If worksite smoking policies, by themselves or in conjunction with health promotion programs, are shown to reduce tobacco consumption or smoking prevalence, they will need to reach high-risk groups and populations with high smoking rates to have a major impact upon public health. Blue-collar employees are an example of such a group. Data indicate that these employees are more likely to be occupationally exposed to respiratory hazards and are more likely to smoke (US DHHS 1985d). These employees are also less likely to work in the type of industry in which restrictive smoking policies are currently in force (Administrative Management Society 1986; BNA 1986, 1987).

Restrictions on Children's Access to Tobacco

Because only a very small percentage of smokers begin smoking as adults (Chapter 5), efforts at prevention must focus on children. Individuals who start smoking early have more difficulty quitting, are more likely to become heavy smokers, and are at higher risk for developing a smoking-related disease (US DHHS 1986e).

As reviewed in Chapter 4, surveys of adolescents indicate that many of those who start to smoke do not understand the nature of tobacco addiction and are unaware of or underestimate important health consequences of smoking. Their decision to smoke is, therefore, not a fully informed choice (Leventhal, Glynn, Fleming 1987). The difficulty that teenagers report in quitting smoking demonstrates that nicotine addiction can quickly become established in children (US DHHS 1988). Among 15-year-olds surveyed in Britain, 51 percent of those smoking 5 or more cigarettes per day had failed in their efforts to stop smoking, and 27 percent thought they would not be able to stop no matter how hard they tried (Revill and Drury 1980). A survey of American high school seniors found that 47 percent of those who were smoking daily would like to quit; however, only 17 percent of teenagers who smoked regularly quit by the time they were high school seniors (Johnston, O'Malley, Bachman 1987). The tenacity of smoking behavior appears to have changed little since the mid-1960s, when 80 percent of the teenagers who smoked regularly continued to smoke as adults (McKinnell and Thomas 1967).

Given both the addictive nature of tobacco use and its health consequences, it is important to protect children and adolescents from using tobacco until they are capable of making a mature and informed decision. Policies to do this seek to reduce children's and adolescents' opportunities to experiment with tobacco products, and thereby develop a regular pattern of use, by making these products less available. Efforts to eliminate the availability of tobacco to children are supported by numerous medical and public health groups (WHO 1975, 1979, 1985; Hades 1983; ACP 1986; AAP 1987; AMA 1987; DiFranza et al. 1987; Stanwick et al. 1987). It has been suggested, though not proved, that strict observance of prohibitions against the sale of tobacco to children might be the most powerful means for reducing the initiation of smoking by children (Reid 1985).

Restricting children's access to tobacco is only one approach to prevent the initiation of smoking. Other policies that specifically target children include prohibiting smoking in schools, mandating school curricula on the health effects of tobacco, and banning the promotional distribution of cigarettes to children. Additionally, policies such as increased excise taxation or proposed restrictions on advertising affect both adults and children, but may have a disproportionate impact on children and on the decision to smoke. Finally, restrictions on smoking in public places apply to children as well as to adults. These policies are discussed in other sections of this Chapter. They work synergistically with voluntary efforts (Chapter 6) to prevent the initiation of smoking. The remainder of this Section will focus on laws intended to prevent children from obtaining and using tobacco.

How Do Children Obtain Tobacco Products?

Recently, researchers have surveyed children and adolescents who smoke in order to determine how they obtain tobacco products. Although the published evidence is limited, these studies suggest that retailers, not parents or friends, are the primary sources of tobacco used by children. According to one Minnesota survey, the most common sources of cigarettes for 10th graders were gas stations, convenience stores, and vending machines, followed by friends, grocery stores, and drug stores. Only 19 percent of respondents reported that they commonly obtained cigarettes from home (Forster, Klepp, Jeffery, in press). In a survey cited by Slade (1988a), 90 percent of 472 adolescents between 12 and 18 years of age reported that they bought their own cigarettes. In another survey, 92 percent of 172 suburban New Jersey high school students who smoked reported that they had purchased their last pack of cigarettes in a retail store; 5 percent had used a vending machine; and 3 percent had obtained their last pack from a friend (Slade et al., unpublished manuscript). A Canadian survey revealed that although older children tended to purchase their own cigarettes, children from 8 to 15 years of age were more likely to rely on other children as a source of cigarettes. The youngest children were the most likely to use vending machines, presumably because of greater difficulty in purchasing cigarettes from a store clerk (Stanwick et al. 1987).

Thus, purchases from retailers or vending machines, either by the child or the child's friends or siblings, appear to represent the main source of cigarettes for children. This conclusion is consistent with studies, discussed below, in which the majority of retail stores were observed to sell cigarettes illegally to minors who requested them (DiFranza et al. 1987; Altman et al. 1989; Slade et al., unpublished manuscript).

Children also obtain cigarettes and other tobacco products as free samples distributed for promotional purposes. Although the tobacco industry's voluntary codes prohibit the distribution of cigarette samples to individuals under 21 years of age (Tobacco Institute 1981) and the distribution of smokeless tobacco to children under 18 (Smokeless Tobacco, Inc. 1986), there is evidence of widespread violation of this code (Davis and Jason 1988). Even in a State where the free distribution of tobacco to minors is illegal, 4 percent of elementary school children and 20 percent of high school students reported having received free samples (Davis and Jason 1988). In another survey of suburban New Jersey high school students, one-third of over 500 current and former smokers had received free cigarette samples before age 16 (Slade et al., unpublished manuscript).

Consistent with these apparent trends, policies intended to reduce the availability of tobacco products to children include those that (1) restrict the sale and free distribution of these products to minors, (2) ban the use or possession of tobacco by minors, and (3) ban or limit the location of vending machines.

History of Tobacco Access Laws

The Federal Government has taken no action to regulate the access of minors to tobacco. Almost all restrictions are the result of legislation by States. Every State in the Union has at one time restricted the sale of tobacco to children. The right of States to

do so was established at the turn of the century by the U.S. Supreme Court, which ruled that it is within a State's authority to ban the sale of tobacco (*Austin v. Tennessee* 1900). Several decades later the authority of local officials to ban the sale of cigarettes from vending machines was upheld by the Federal Court of Appeals, which ruled that such sales could be prohibited to prevent "the evil . . . of the purchase of cigarettes by immature minors" (*Illinois Cigarette Service Co. v. City of Chicago* 1937).

In 1964, when the first Surgeon General's Report on smoking was released, 48 States and the District of Columbia had active laws prohibiting the sale or gift of tobacco to children (Hawkins 1964). Two States, Louisiana and Wisconsin, had repealed their tobacco access laws before 1964 on the grounds that the laws were neither enforced nor enforceable. Louisiana did so in 1942, when the State legislature concluded that enforcement was impossible (Jacobs 1974). Wisconsin followed suit in 1955; the rationale was that because the law was not being enforced, it invited a disrespect for authority (Hawkins 1964). In the 48 State laws in effect in 1964, the minimum age for the purchase of tobacco ranged from 15 to 21. Eighteen States differentiated among various forms of tobacco, reflecting the belief that cigarettes were more dangerous than other tobacco products; 14 States restricted the sale of cigarettes but not that of cigars, pipe tobacco, or snuff, and 4 other States set the minimum age for the purchase of cigarettes higher than that for other forms of tobacco.

Since 1964, tobacco access laws have been rescinded in several other States and subsequently reinstated in only a few. More States have lowered the minimum age for sales of tobacco to children than have raised it. In addition, enforcement of laws in effect declined during the 1970s, when many high schools established student smoking areas (Jacobs 1974). In some cases this occurred in States where children were not legally permitted to purchase or possess tobacco.

There are fewer restrictions on child tobacco use now than at any time in many decades, despite what has been learned since 1964 about the dangers of tobacco use, its addictive nature, and the early age of its initiation. This situation is in sharp contrast to virtually all other tobacco-related public policy measures, which have been strengthened since the release of the 1964 Surgeon General's Report.

Current Tobacco Access Laws

As of January 1, 1988, 43 States and the District of Columbia had some legal restriction on the sale of cigarettes to children, while 7 States allowed children of any age to purchase tobacco in any form (Table 21). Since that time, Wisconsin enacted a law scheduled to take effect in 1989, and several other States have strengthened existing restrictions. The most common provision of State laws is to ban the sale of cigarettes to minors below a specified age. All State access laws have this provision, except South Dakota, whose law applies only to smokeless tobacco. In 11 States, the vendor must post signs wherever cigarettes are sold stating that it is illegal to sell tobacco to minors. In 36 States, the ban on sales extends beyond cigarettes to apply to all tobacco products (cigarettes, cigars, pipe tobacco, chewing tobacco, and snuff). Laws in 21 States also restrict the distribution of some types of smoking paraphernalia, such as cigarette papers or pipes. All of these laws address tobacco *sales*. Sixteen States have a broader ban,

TABLE 21.—State laws restricting minors' access to tobacco products (as of January 1, 1988)

	AL	AK	AZ	AR	CA	CO	CT	DE	DC	FL	GA	HI	ID	IL	IN	IA	KS
Minimum age for sale or possession	19 ^a	16	18	18	18		16	17	16	18	17	15	18	18	18	18	18 ^a
Prohibits use or possession of tobacco by minors			X										X	X	X		X ^a
Prohibits the sale of all tobacco products to minors			X	X	X		X	X	X	X	X	X	X	X	X	X	
Prohibits the sale of cigarettes to minors	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X
Prohibits the free distribution of tobacco to minors	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X
Prohibits all free distribution of tobacco																	
Prohibits cigarette vending machines accessible to minors													X				
Requires signs posted at point of sale					X									X	X		
Requires a license to sell tobacco	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Provides for license revocation												X					
Penalties ^b	B	B	F	B	B		F	B	B	B		F	B	B	F	B	B
Enforcement provisions										X ^c							X ^c

TABLE 21.—Continued

	KY	LA	ME	MD	MA	MI	MN	MS	MO	MT	NE	NV	NH	NJ	NM	NY	NC
Minimum age for sale or possession			18	16	18	18 ^d	18	18			18	18	18	16		18	17
Prohibits use or possession of tobacco by minors						X	X				X		X				
Prohibits the sale of all tobacco products to minors			X		X	X	X				X	X	X	X		X	X
Prohibits the sale of cigarettes to minors			X	X	X	X	X	X			X	X	X	X		X	X
Prohibits the free distribution of tobacco to minors			X	X	X	X	X	X			X	X	X	X			X
Prohibits all free distribution of tobacco							X										
Prohibits cigarette vending machines accessible to minors																	
Requires signs posted at point of sale					X		X						X			X	
Requires a license to sell tobacco	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Provides for license revocation											X	X					
Penalties			F	B	F	B	B	B			B	F	F	F		B	B
Enforcement provisions											X ^c						