

## **CHAPTER 6**

### **POLICIES RESTRICTING SMOKING IN PUBLIC PLACES AND THE WORKPLACE**

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## **Introduction**

Since the 1970s, the accumulating evidence on the health risks of involuntary smoking has been accompanied by a wave of social action regulating tobacco smoking in public places. Initiatives in the public sector and in the private sector have aimed at protecting individuals from exposure to sidestream smoke by regulating the circumstances in which smoking is permitted. Smoking in public places has been regulated primarily by government action at the local level and at the Federal level. Legislation has been the most common vehicle at the local and State level; agency regulations have predominated in the Federal Government. There has been relatively little judicial action to restrict smoking in public places; most cases have focused on nonsmoking employees' right to a smoke-free workplace (Feldman et al. 1978; Eriksen, in press; Walsh and Gordon 1966). Private sector initiatives have gained momentum in the 1980s. Businesses in a wide variety of industries have adopted smoking policies to protect employee health. Other private initiatives include no-smoking sections in restaurants, no-smoking rooms in hotels and motels, and smoking restrictions in hospitals.

Though this trend was fueled by growing evidence about the health effects of involuntary smoking, it also reflects the changing public attitudes about smoking since 1964, when public attention was focused on the health hazards of cigarette smoking by the Report of the Advisory Committee to the Surgeon General (US PHS 1964). The acceptability and desirability of tobacco smoking in public places has fallen dramatically over time, as reflected in public opinion surveys. A majority now support the right of nonsmokers to breathe smoke-free air and favor policies that ensure that right (ALA 1985b; Hanauer et al. 1966; BNA 1986; US DHEW 1969).

This chapter addresses the scope and impact of these diverse policies. It begins with a review of the current status of policies restricting smoking. Issues specific to smoking regulation in transportation vehicles and motels, restaurants, stores, schools, health care facilities, and the workplace are addressed. The effects of smoking policies on air quality, attitudes, and smoking behavior are considered.

## **Current Status of Restrictions on Smoking in Public Places**

Smoking regulations in public places represent a mix of public and private actions. A public place may be defined as any enclosed area in which the public is permitted or to which the public is invited. Smoking restrictions are generally limited to indoor enclosed spaces (Hanauer et al. 1986). This broad definition of a public place encompasses a diverse group of facilities that differ in the degree to which smoking is restricted, the ease of introducing new regulations,

and the methods by which new smoking restrictions have been proposed and adopted.

Smoking in Federal, State, and local government facilities has been addressed by legislative and regulatory action. These facilities include government offices, public schools and libraries, and publicly owned transportation, health care, cultural, and sports facilities. In public facilities under private ownership, smoking restrictions are a mixture of government-sponsored regulation and private initiative. These facilities include retail stores, restaurants and bars, hotels and motels, and privately owned transportation, health care, cultural, and sports facilities.

The extent and acceptability of smoking restrictions in public places is influenced by (1) whether ownership is public or private; (2) the historical acceptance of smoking in the facility; (3) the degree to which nonsmokers are exposed to involuntary smoking, determined by the facility's size, degree of ventilation, and ease of separating smokers and nonsmokers; and (4) the degree of inconvenience that smoking restrictions pose to smokers. Smoking restrictions are still most widespread and least controversial in facilities where smoking has traditionally been prohibited by fire codes, such as theaters or libraries, or where smoking is negatively associated with the activity taking place, such as gyms or health care facilities (Feldman et al. 1978). Small crowded areas with poor ventilation, such as elevators and public transit vehicles, are also frequently regulated. On the other hand, the strong association of smoking with eating and drinking contributes to the controversial nature of smoking restrictions in restaurants and bars.

## **Legislative Approaches**

### *Federal Legislation*

Congress has enacted no Federal legislation restricting smoking in public places, although bills have been introduced in Congress several times since 1973 (Feldman et al. 1978).

### *State Legislation*

Most legislation restricting smoking has been enacted at the State level. Although legislation regulating smoking for health reasons is largely a phenomenon of the past decade, cigarette smoking has been the subject of restrictive legislation for nearly a century. Early legislation had two different rationales. The first, a relatively noncontroversial rationale, was the protection of the public from fire or other safety hazards, largely in the workplace (Warner 1981b).

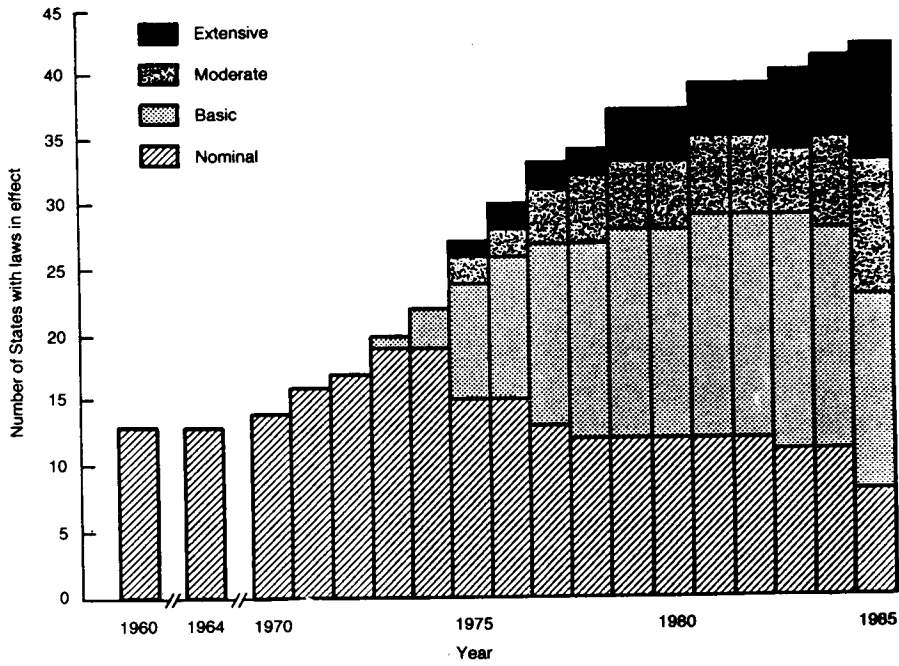
The second, more controversial motivation for early legislative action was a moral crusade against cigarettes similar in tone and coincident with the moral crusade against alcohol that emerged at

the turn of the century (Dillow 1981; Sobel 1978). Its goal was a total ban on cigarettes, which were blamed for social evils and physical ills, based largely on unfounded claims. By 1887, three States (North Dakota, Iowa, and Tennessee) had completely banned the sale and use of cigarettes. At the peak of the movement, cigarettes were banned in a dozen States (Nuehring and Markle 1974; Sobel 1978). Most were in the Midwest where cigarette consumption was low and anticigarette feeling high. The movement lost momentum when enforcing the regulations proved controversial. As part of the strong reaction to alcohol prohibition, all State laws banning smoking were repealed by 1927.

During the 1960s, as the health risks of smoking became widely recognized, public policy on smoking began to focus on encouraging the smoker to quit. However, the few existing State laws regulating smoking in public places were old and limited in scope. Even newly enacted laws--in Delaware (1960) and in Michigan (1967, 1968)--restricted smoking in limited areas: public buses and trolleys, elevators, and retail food establishments (US DHHS 1985b). Protecting the health or comfort of nonsmokers was not cited as a rationale of these laws. As of 1970, statutes restricting smoking were in force in 14 States (US DHHS 1985b).

In the early 1970s, a new wave of smoking legislation emerged. It covered smoking in a larger number of places and extended for the first time to privately owned facilities. The language became more restrictive, moving from permitting a no-smoking section to requiring one and making nonsmoking the principal or assumed condition. The language also changed to make it clear that the specific intent was the safety and comfort of nonsmokers.

The pace of new legislation increased in the mid-1970s. Between 1970 and 1974, 9 laws were enacted in 8 States; between 1975 and 1979, 29 new laws were passed and 15 additional States adopted smoking regulations. Minnesota passed its landmark Clean Indoor Air Act in 1975 "to protect the public health, comfort, and environment by prohibiting smoking in public places and at public meetings except in designated smoking areas" (Minnesota Statutes Annual 1985). It covered restaurants, private worksites, and a large number of public places, and soon became the model for other State legislation. Within the next 5 years, Utah, Montana, and Nebraska enacted similar comprehensive legislation (US DHHS 1985b). The language of statutes passed by 11 States during the 1970s made it clear that the specific purpose was to protect nonsmokers from involuntary smoking (US DHHS 1985b). Model legislation and advice about the successful enactment of State laws can be found in several sources (Hanauer et al. 1986; Feldman et al. 1978; Walsh and Gordon 1986).



**FIGURE 1.—Prevalence and restrictiveness of State laws regulating smoking in public places, 1960–1985**

NOTE: See appendix for definitions of restrictiveness of laws.

SOURCE: ASH (1986); OTA (1986); Tri-Agency Tobacco Free Project (1986); US DHHS (1985b).

The rate of enactment of State legislation increased throughout the seventies (Figure 1, Table 1). The pace of new legislation continues in the 1980s, with 23 new laws enacted by 16 States between 1980 and 1985 (Table 1). As of 1986, 41 States and the District of Columbia have enacted laws regulating smoking in at least one public place (Figure 1). Eighty percent of the U.S. population currently resides in States with some smoking restriction, compared with 8 percent in 1971 (Warner 1981b). Most of the nine States with no smoking legislation are concentrated in the southeast United States and include three of the six major tobacco-producing States (North Carolina, Virginia, and Tennessee) (Figure 2).

Current State legislation varies in comprehensiveness and language. The number of public places in which smoking is regulated by State law ranges from 1 (Delaware, Mississippi, and South Carolina regulate smoking on public transportation only) to 16 (Minnesota and Florida) (US DHHS 1985b, Tri-Agency Tobacco Free Project



**TABLE 1.—State laws restricting smoking, 1970–1985**

Year	Number of newly enacted laws	Cumulative number of States with laws in effect	Restrictiveness of newly enacted laws <sup>1</sup>	Average restrictiveness of laws in effect
1892–1969	—	14	—	.250
1970	0	14	—	.250
1971	2	16	.250	.250
1972	1	17	.250	.250
1973	3	20	.330	.263
1974	3	22	.417	.295
1975	12	27	.479	.389
1976	5	30	.563	.425
1977	6	33	.542	.462
1978	2	34	.625	.478
1979	4	37	.688	.507
1980	1	37	— <sup>2</sup>	.507
1981	6	39	.500	.513
1982	1	39	— <sup>2</sup>	.513
1983	4	40	.688	.538
1984	3	41	.667	.549
1985	8	42	.719	.619

<sup>1</sup> Index of Restrictiveness

0 = None; no statewide restrictions.

0.25 = Nominal; State regulates smoking in one to three public places, excluding restaurants and private worksites.

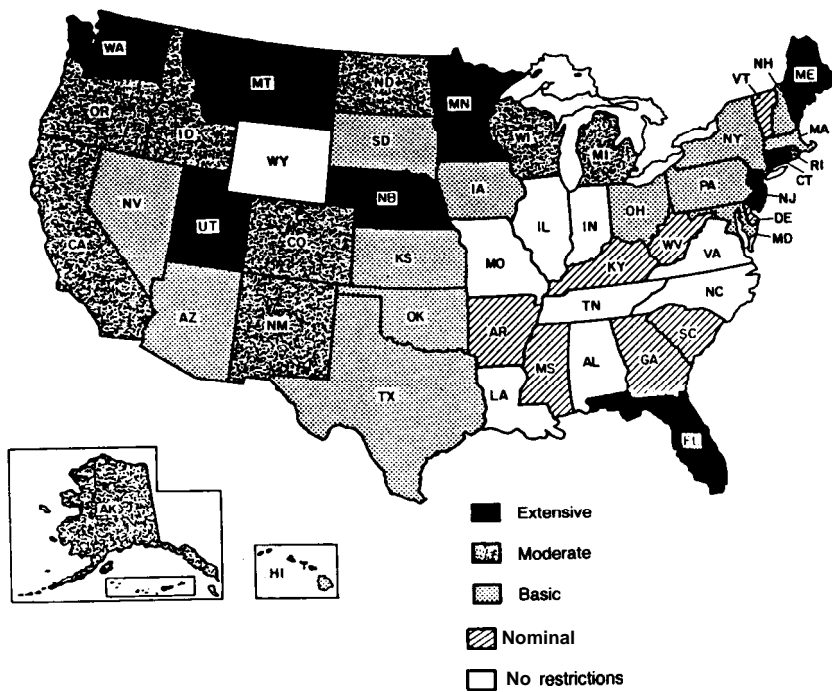
0.50 = Basic; State regulates smoking in four or more public places, excluding restaurants and private worksites.

0.75 = Moderate; State regulates smoking in restaurants but not private worksites.

1.00 = Extensive; State regulates smoking in private worksites.

<sup>2</sup> New California laws in 1980 and 1982 extended smoking restrictions to additional public places, but did not alter the restrictiveness of the State law (moderate).

1936). State laws most often restrict smoking in public transportation (35 States), hospitals (33 States), elevators (31 States), indoor cultural or recreational facilities (29 States), schools (27 States), public meeting rooms (21 States), and libraries (19 States) (Table 2). Other public places specifically mentioned in State smoking legislation are public restrooms and waiting rooms, jury rooms, polling places, prisons, hallways, stairwells, and stables. Most laws restrict smoking in these places to designated areas, thereby making nonsmoking the norm; in a few States smoking is banned entirely in these places. For example, smoking on public transportation is banned entirely in four States (Florida, Georgia, Massachusetts, and Washington) and one (Washington) bans smoking in theaters, museums, auditoriums, and indoor sports arenas. Smoking restric-



**FIGURE 2.--Geographic variability of State laws regulating smoking in public places, 1986**

NOTE See appendix for definitions of restrictiveness of laws.  
 SOURCE: ASH (1986); OTA (1986); Tri-Agency Tobacco Free Project (1986); US DHHS (1985b).

tions extend to restaurants and retail stores, which are largely privately owned, in 18 States.

Smoking at the workplace is restricted for public sector employees in 22 States and for private sector employees in 9 States. The provisions of worksite smoking legislation vary widely, making direct comparisons of their comprehensiveness difficult.

Currently enacted workplace smoking laws contain provisions to (1) require a written policy (5 States); (2) limit smoking to designated areas (8 States); (3) require the posting of signs (10 States); and (4) give preference to nonsmokers in resolving conflicts over the designation of a work area (2 States) (OTA 1986). Public or private worksites are included in the definition of public places in some States where worksites are subject to the general provisions for public places. Other States have written separate guidelines for the worksite, which are usually more stringent. Laws in four States apply only to State and local government employees; restrictions apply to the private worksite in an additional nine States.

**TABLE 2.—State laws regulating smoking in public places and worksites**

State	AL	AK	AZ	AR	CA	CO	CT	DE	DC	FL	GA	HI	ID	IL	IN	IA	KS	KY
Year(s) legislation enacted	—	1975 1984	1973 1981	1977 1985	1971,76 1980,81 1982	1977 1985 <sup>1</sup>	1973 1974	1960	1979	1983 1985	1975	1976	1985	—	1978	1975	1975	1972
<b>PUBLIC PLACES WHERE SMOKING IS PROHIBITED (EXCEPT IN DESIGNATED AREAS)</b>																		
Public transportation	X	X	X	(X) <sup>2</sup>	X <sup>3,4</sup>	X	X <sup>3</sup>	X	X	X <sup>3,5</sup>	X <sup>6</sup>	X	X	X	X	X	X	X
Elevators	X <sup>6</sup>	X	X	X	X	X	X <sup>6</sup>	X	X	X <sup>6</sup>	X <sup>6</sup>	X	X	X	X	X	X	X
Indoor recreational or cultural facilities <sup>6</sup>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Retail stores	(X) <sup>7</sup>	(X) <sup>7</sup>	(X) <sup>7</sup>	(X) <sup>7</sup>	(X) <sup>7</sup>	(X) <sup>7</sup>	X	X	X	X	X	X	X	X	X	X	X	X
Restaurants	X <sup>8</sup>	X <sup>8</sup>	X <sup>8</sup>	X <sup>8</sup>	X <sup>8</sup>	X <sup>8</sup>	X <sup>10</sup>	X	X	X <sup>8</sup>	X <sup>8</sup>	X	X	X	X	X	X	X
Schools	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Health care facilities	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hospitals	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Nursing homes	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Public meeting rooms	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Libraries	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Restrooms	X <sup>9</sup>	X <sup>9</sup>	X <sup>9</sup>	X <sup>9</sup>	X <sup>9</sup>	X <sup>9</sup>	X	X	X	X	X	X	X	X	X	X	X	X
Waiting rooms	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Other	X <sup>26,27</sup>	X <sup>27</sup>	X <sup>27</sup>	X <sup>27</sup>	X <sup>27</sup>	X <sup>27</sup>	X	X	X <sup>26,27,30</sup>	X	X	X	X	X	X	X	X	X
<b>WORKSITE SMOKING RESTRICTIONS<sup>16</sup></b>																		
Public worksites		D <sup>17</sup>			B	D <sup>1</sup>	B	B	B	B,D <sup>18</sup>	B <sup>1</sup>	B	B	D	D	D	D	D
Private worksites		A			B	D <sup>1</sup>	B	B	B	B,D	B <sup>1</sup>	B	B	D	D	D	D	D
<b>IMPLEMENTATION PROVISIONS</b>																		
Nonsmokers prevail in disputes		X																
No discrimination against nonsmokers																		
<b>ENFORCEMENT</b>																		
Penalties for violations	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Smoking	X <sup>23d</sup>	X <sup>23p</sup>	X <sup>23e</sup>	X <sup>23e</sup>	X <sup>23e</sup>	X <sup>23e</sup>	X <sup>23c</sup>	X <sup>23c</sup>	X <sup>23a</sup>	X <sup>23i</sup>	X <sup>23a</sup>	X <sup>23a</sup>	X <sup>23d</sup>	X <sup>23c</sup>	X <sup>23a</sup>	X <sup>23c</sup>	X <sup>23a</sup>	X <sup>23a</sup>
Failure to post signs	X <sup>24h</sup>	X <sup>24h</sup>	X <sup>24h</sup>	X <sup>24h</sup>	X <sup>24h</sup>	X <sup>24h</sup>	X <sup>24h</sup>	X <sup>24h</sup>	X <sup>24h</sup>	X <sup>24h</sup>	X <sup>24h</sup>	X <sup>24h</sup>	X <sup>24h</sup>	X <sup>24h</sup>	X <sup>24h</sup>	X <sup>24h</sup>	X <sup>24h</sup>	X <sup>24h</sup>
Overall State law restrictiveness: <sup>25</sup>	0	3	2	1	3	3	4	1	2	4	1	2	3	0	0	2	2	1

TABLE 2.—Continued

State	LA	ME	MD	MA	MI	MN	MS	MO	MT	NE	NV	NH	NJ	NM	NY	NC	ND	OH
Year(s) legislation enacted	—	1964 1981,83 1985	1957 1975	1924 1947 1976	1967 1968 1978	1971 1975	1942	—	1979	1979	1975	1981	1955 1979 1985	1985	1921 1976	—	1977	1981 1984
PUBLIC PLACES WHERE SMOKING IS PROHIBITED (EXCEPT IN DESIGNATED AREAS)																		
Public transportation		X	X	X <sup>6</sup>	(X) <sup>8</sup>	X	X	X	X	X	X	X	X	X	X		X	X
Elevators			X	X <sup>5</sup>	X	X												
Indoor recreational or cultural facilities <sup>9</sup>				X		X				X	X	X	X	X	X		X	X
Retail stores		X		(X) <sup>7</sup>	X	X				X	X	X	X <sup>12</sup>	X <sup>13</sup>			X	X
Restaurants				X	X	X <sup>11</sup>				X	X	X	X	X			X	X
Schools						X												
Health care facilities						X												
Hospitals		X	X	X	X	X												
Nursing homes		X	X	X	X	X												
Public meeting rooms				X		X												
Libraries						X												
Restrooms		X				X												
Waiting rooms		X				X												
Other		X <sup>10</sup>		X <sup>10</sup>		X <sup>26,27</sup>				X <sup>17</sup>	X	X <sup>19</sup>		X <sup>18</sup>				
WORKSITE SMOKING RESTRICTIONS <sup>16</sup>																		
Public workites		B,D				D <sup>17</sup>		D <sup>19</sup>	D <sup>19</sup>	D <sup>17</sup>	A <sup>22</sup>	D <sup>20</sup>	B,C <sup>17</sup>	B,C <sup>20</sup>	A <sup>21</sup>		C	C
Private workites		B,D				D <sup>17,21</sup>		D <sup>19</sup>	D <sup>19</sup>	D <sup>17,21</sup>	A <sup>22</sup>	D <sup>20</sup>	B,C <sup>17</sup>	B,C <sup>17</sup>	A <sup>21</sup>		C	C
IMPLEMENTATION PROVISIONS																		
Nonsmokers prevail in disputes						X								X				
No discrimination against nonsmokers		X																
ENFORCEMENT																		
Penalties for violations		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Smoking		X <sup>23d</sup>	X <sup>23h</sup>	X <sup>23j</sup>	X <sup>23k</sup>	X <sup>23h</sup>	X <sup>23b</sup>	X <sup>23c</sup>	X <sup>23i</sup>	X <sup>23a</sup>	X <sup>23a</sup>	X <sup>23l</sup>	X <sup>23g</sup>	X <sup>23c</sup>	X <sup>23a</sup>	X <sup>23a</sup>	X <sup>23a</sup>	X <sup>23a</sup>
Failure to post signs		X <sup>24e</sup>			X <sup>24e</sup>			X <sup>24c</sup>					X <sup>24g</sup>					
Overall State law restrictiveness: <sup>25</sup>	0	4	2	2	3	4	1	0	4	4	2	2	4	3	2	0	3	2

TABLE 2.—Continued

State	OK	OR	PA	RI	SC	SD	TN	TX	UT	VT	VA	WA	WV	WI	WY	Total
Year(s) legislation enacted	1975	1973,75 1977 1981	1947 1977	1976 1977	1937 1977	1974	—	1975	1976 1979	1892	—	1983	1913 1919 1985	1984	1984	N (%) 51 (100)
<b>PUBLIC PLACES WHERE SMOKING IS PROHIBITED (EXCEPT IN DESIGNATED AREAS)</b>																
Public transportation	X	X		X	(X) <sup>2</sup>	X	X	X	X			X <sup>3</sup>	X	X		35 (68.6)
Elevators	X	X		X		X	X	X	X			X <sup>4</sup>	X	X		31 (60.8)
Indoor recreational or cultural facilities <sup>5</sup>	X	X	X	X		X	X	X	X			X <sup>6</sup>	X	X		29 (56.6)
Retail stores		X	X	X			X	X	X			X <sup>6</sup>	X	X		18 (35.3)
Restaurants		X		X			X	X	X			X	X	X		18 (35.3)
Schools		X		X		X	X	X	X			X <sup>6</sup>	X	X		27 (52.9)
Health care facilities																
Hospitals		X	X	X		X	X	X	X			X	X	X		33 (64.7)
Nursing homes		X	X	X		X	X	X	X			X	X	X		29 (56.9)
Public meeting rooms		X					X	X	X			X <sup>6</sup>	X	X		21 (41.2)
Libraries	X			X		X	X	X	X			X	X	X		19 (37.2)
Restrooms												X	X	X		11 (21.6)
Waiting rooms		X										X	X	X		16 (31.4)
Other			X <sup>30</sup>	X <sup>31</sup>							X <sup>11</sup>					12 (23.5)
<b>WORKSITE SMOKING RESTRICTIONS<sup>12</sup></b>																
Public workites									D <sup>17</sup>		D	D	A <sup>18</sup>	D <sup>19</sup>		22 (43.1)
Private workites									D <sup>17,22</sup>	A <sup>18</sup>	D	D	A <sup>18</sup>			9 (17.6)
<b>IMPLEMENTATION PROVISIONS</b>																
Nonsmokers prevail in disputes									X							4 (7.8)
No discrimination against nonsmokers									X							2 (3.9)
<b>ENFORCEMENT</b>																
Penalties for violations	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	40 (78.4)
Smoking	X <sup>23a</sup>	X <sup>23b</sup>	X <sup>23c</sup>	X <sup>23d</sup>	X <sup>23e</sup>	X <sup>23f</sup>	X <sup>23g</sup>	X <sup>23h</sup>	X <sup>23i</sup>	X <sup>23a</sup>	X <sup>23j</sup>	X <sup>23k</sup>	X <sup>23l</sup>	X <sup>23m</sup>	X <sup>23n</sup>	39 (76.5)
Failure to post signs		X <sup>24a</sup>		X <sup>24b</sup>									X <sup>24c</sup>	X <sup>24d</sup>		9 (17.6)
Overall State law restrictiveness: <sup>15</sup>	2	3	2	3	1	2	0	2	4	1	0	4	1	3	0	

**TABLE 2.—Continued (Footnotes)**

- <sup>1</sup> Executive order.
- <sup>2</sup> School buses only.
- <sup>3</sup> Including school buses.
- <sup>4</sup> California stipulates that at least 50 percent of all passenger seats must be in nonsmoking areas on trains, airplanes, and street railroad cars departing from the State.
- <sup>5</sup> Smoking never permitted in this area.
- <sup>6</sup> Indoor recreational and cultural facilities: museums, auditoriums, theaters, and sports arenas.
- <sup>7</sup> Grocery stores only.
- <sup>8</sup> Restaurants seating 50 or more persons must have a no-smoking section.
- <sup>9</sup> Restaurants seating 50 or more persons must have a no-smoking section if the restaurant is in a publicly owned building.
- <sup>10</sup> Restaurants seating 75 or more persons must have a no-smoking section.
- <sup>11</sup> Restaurants must designate at least 30 percent of their seats as a no-smoking area.
- <sup>12</sup> Restaurants are encouraged to establish no-smoking areas.
- <sup>13</sup> Restaurants must designate at least 50 percent of their seats as a no-smoking area.
- <sup>14</sup> (Deleted).
- <sup>15</sup> No place other than a bar may be designated a smoking area in its entirety.
- <sup>16</sup> Worksite (only B, C, and D count as having a worksite policy in calculation of totals): A - Employer must post a sign prohibiting smoking at the worksite; B - Employer must have a (written) smoking policy; C - Employer must have policy that provides a nonsmoking area; D - No smoking except in designated areas.
- <sup>17</sup> Employer must post signs designating smoking and no-smoking areas.
- <sup>18</sup> Employer must post signs in smoking areas.
- <sup>19</sup> Employer must post either smoking or no-smoking signs, depending upon their policy.
- <sup>20</sup> Employer must post signs in no-smoking areas.
- <sup>21</sup> State does not restrict smoking in factories, warehouses, and similar places of work not usually frequented by the general public.
- <sup>22</sup> Prohibits smoking in any mill or factory in which a no-smoking sign is posted.
- <sup>23</sup> Persons who smoke in a prohibited area are subject to a fine or a penalty. Maximum fines or penalties, where applicable, are listed below: a = \$5; b = \$10; c = \$25; d = \$50; e = \$100; f = \$100/day; g = \$200; h = \$300; i = \$500; j = \$50 or up to 10 days in jail or both; k = \$50 or 90 days imprisonment; l = civil action; m = minor misdemeanor; n = petty misdemeanor; o = misdemeanor; p = petty offense.
- <sup>24</sup> Persons who are required to and fail to post smoking and/or no-smoking signs are subjected to a penalty. Maximum fines, where applicable, are listed in footnote 23.
- <sup>25</sup> Restrictiveness key: 0 = None, no statewide restrictions; 1 = Nominal, State regulates smoking in one to three public places, excluding restaurants and private workplaces; 2 = Basic, State regulates smoking in four or more public places, excluding restaurants and private workplaces; 3 = Moderate, State regulates smoking in restaurants but not private workplaces; 4 = Extensive, State regulates smoking in private workplaces.
- <sup>26</sup> Jury rooms.
- <sup>27</sup> Halls and stairs.
- <sup>28</sup> Stables.
- <sup>29</sup> Polling places.
- <sup>30</sup> Prisons, at prison officials' discretion.

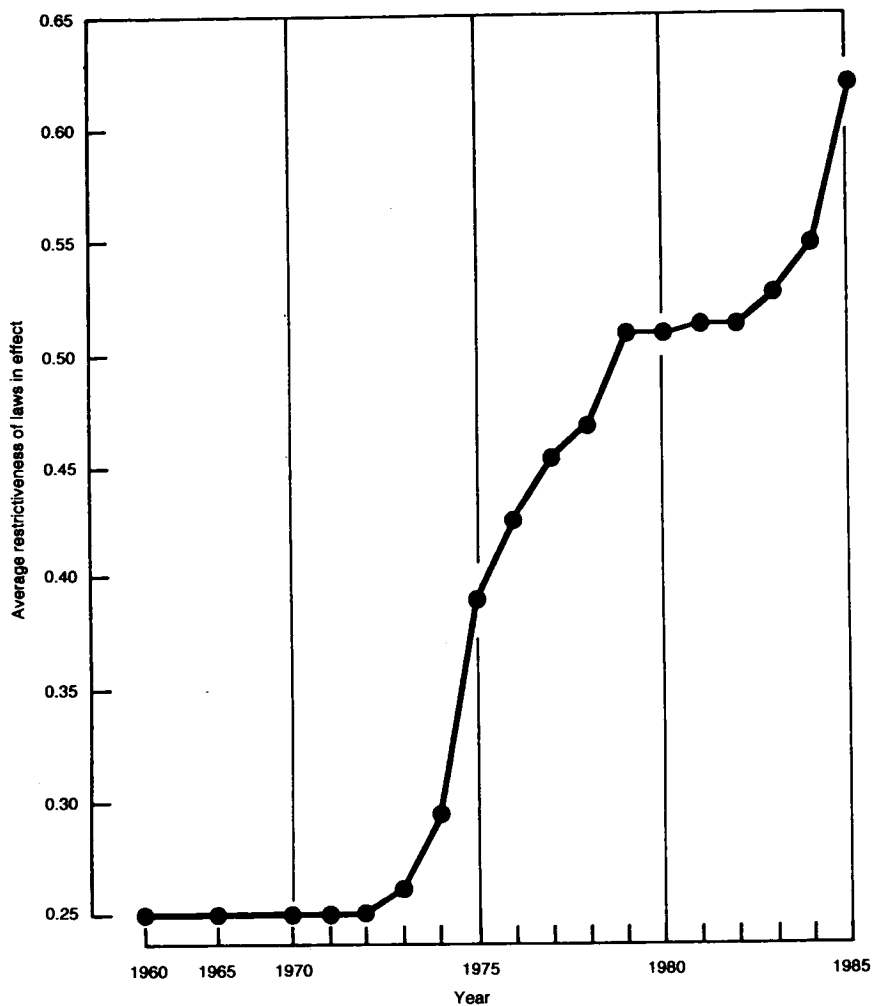
The least restrictive workplace laws simply empower the employer to restrict smoking in factories by posting signs. These statutes were enacted in the early 1900s. The weakest recent laws simply require an employer to issue a written smoking policy and to post signs. More restrictive laws require that employers designate no-smoking areas at work, implying that smoking is the norm. The most comprehensive laws prohibit smoking except in designated areas, making nonsmoking the norm. Seven States (Florida, Maine, Minnesota, Montana, Nebraska, Utah, and Washington) have this type of law. In several States, some worksites or some parts of a worksite (usually private offices) are exempted from the regulations. To prevent employers from complying with the letter but not the intent of the law, some States prohibit a workplace from being designated as entirely smoking.

State laws vary in their provisions for implementation and enforcement. In most States, the State health department is responsible for policy enforcement. Nearly all (39 of 42) States with laws provide penalties for smokers who violate restrictions; the maximum penalty is \$500. In two States violators can be jailed. Employers or others who fail to designate smoking areas can be fined in nine States.

The comprehensiveness of State laws, as defined by the number and nature of places where smoking is restricted or prohibited, has increased since 1970. In 1981, Warner (1981b) classified State laws according to their comprehensiveness (restrictiveness) and documented an increase in the average restrictiveness from 1971 to 1978. An updated and modified index of the comprehensiveness of State laws (described in the appendix) demonstrates that the phenomenon reported by Warner has continued into the mid-eighties. The comprehensiveness of newly enacted laws increased markedly during the mid-seventies, and the average restrictiveness of State laws in effect has increased more than twofold between 1972 and 1985 (Table 1, Figure 3). As shown in Figure 1 and Table 1, the increase in comprehensiveness of State laws occurred in two ways. The average comprehensiveness of first laws in additional States increased, and existing State smoking laws were replaced with more comprehensive legislation.

Warner also documented that both the prevalence and comprehensiveness of State laws enacted through 1978 varied by geographic region (Warner 1982). This has not changed (Table 3, Figure 2). Over 90 percent of the States in the Northeast and West have enacted at least one law regulating smoking, as have three-fourths of the North Central States. Southern States have fewer laws than other regions, and the laws they have are less comprehensive than laws in other regions. The six major tobacco-producing States, all located in the South, have less restrictive laws than do the other six Southern





**FIGURE 3.—Average restrictiveness of State laws in effect, 1960–1985**

NOTE: Coding of restrictiveness of law; Extensive = 1.00; Moderate = 0.75; Basic = 0.50; Nominal = 0.25. (See appendix for definitions of restrictiveness of laws.)  
 SOURCE: ASH (1986); OTA (1986); Tri-Agency Tobacco Free Project (1986); US DHHS (1985b).

States. Compared with other States, major tobacco States are less likely to have enacted smoking legislation and more likely to have enacted less stringent laws.

**TABLE 3.--Regional variation in State laws restricting smoking**

Region	Total States	States with laws <sup>1</sup>		Average effective date of first law	Average restrictiveness of laws in effect in 1985 <sup>2,3</sup>
	N	N	(%)		
Northeast	11	11	(100)	1944	.614
North Central	12	9	(75)	1976	.694
West	15	14	(93)	1968	.714
South	12	7	(58)	1955	.357
Major tobacco-producing States <sup>4</sup>	6	3	(50)	1961	.250
other southern States	6	4	(67)	1951	.438

<sup>1</sup>Differences in prevalence of laws among four regions: chi square; (3 df) = 3.67, P = 0.03; difference in prevalence of laws. South vs. all others: chi square (1 df) = 5.99, P = 0.04.

<sup>2</sup> Includes only States with laws in effect (see Table 1 for Index of Restrictiveness).

<sup>3</sup> Difference in restrictiveness, South vs. all others: t = 2.76, p = 0.03.

<sup>4</sup> North Carolina, South Carolina, Virginia, Kentucky, Tennessee, Georgia.

### *Local Legislation*

In the 1980s, the momentum of nonsmokers' rights legislation spread from the State to the local level, spearheaded by actions in California (Warner et al. 1986). Although not the first local action, the successful passage of San Francisco's Proposition P in 1983 in spite of heavily subsidized tobacco industry opposition attracted widespread publicity and was followed by the passage of comprehensive legislation in a number of other local communities (Doyle 1984).

Many local ordinances extend existing State policies to restaurants and worksites. According to a March 1986 survey, 74 California cities and counties have passed smoking ordinances, including 62 requiring no-smoking sections in restaurants and 54 restricting smoking in retail stores (Americans for Nonsmokers' Rights Foundation 1986). In the survey, 66 of these cities and counties require private employers to have a smoking policy or to identify no-smoking areas. As a result, 44 percent of California's population lives in communities that have enacted workplace smoking ordinances even though California has no State legislation covering the private workplace.

According to the Tobacco Institute, by the end of 1985, 89 cities and counties nationwide had restricted smoking in the private workplace. As stated above, three-fourths of these were in California (BNA 1986). Workplace smoking ordinances have also been passed in Cincinnati (Ohio), Kansas City (Missouri), Tucson (Arizona), Aspen

(Colorado), San Antonio, Austin, and Fort Worth (Texas), Newton (Massachusetts), and Suffolk County (New York). In New York City, a bill to prohibit smoking in all enclosed public places has been proposed by the mayor (New York Times 7/6/86).

## **Regulatory Approaches**

Administrative agencies have become involved in smoking regulation in two ways: (1) the enforcement of smoking legislation enacted by State and local government is commonly delegated to a specific agency, usually the public health department; or (2) an agency may initiate smoking regulation as part of the activities it has been authorized to supervise (Feldman et al. 1978). Agency regulations have been the major mode of regulation at the Federal level, where smoking by Government employees and by passengers in interstate transportation vehicles have been addressed. Smoking by State and local employees has also been addressed by the actions of administrators; e.g., smoking by municipal employees and in public areas of municipal buildings was banned by a recent mayoral order in New York City (New York Times 6/26/86).

## **Smoking Regulation in Specific Public Places**

### *Public Transportation*

Because high concentrations of environmental tobacco smoke can accumulate inside public transport vehicles, smoking is often restricted or banned in public transportation. Smoking is likely to be banned entirely in vehicles where smokers spend relatively little time (e.g., city buses), and confined to designated areas in situations where smokers spend several hours (e.g., intercity buses, trains, and airplanes). Such restrictions are relatively well accepted.

Smoking on interstate transportation vehicles is regulated by Federal agencies. The Civil Aeronautics Board, under its jurisdiction to "ensure safe and adequate service, equipment, and facilities," initially regulated smoking on airplanes, requiring, since 1972, that every commercial air flight provide a no-smoking section for all passengers requesting such seating (Feldman et al. 1978; Walsh and Cordon 1986). Airline control is currently part of the authority of the U.S. Department of Transportation. Likewise, the Interstate Commerce Commission has restricted smoking on buses and trains to designated areas since the early 1970s (Feldman et al. 1978; Walsh 1984).

Additionally, States and local governments have regulated smoking in public transportation vehicles. Thirty-one States have enacted legislation to restrict smoking to designated areas in public transit vehicles; an additional four (Florida, Georgia, Massachusetts, and

Washington) ban smoking entirely on these vehicles (Table 2). Local ordinances also frequently address public transportation.

### *Retail Stores*

In general, State and local legislation prohibiting smoking in retail stores is well accepted. Eighteen States currently prohibit smoking in retail stores (Table 2). Proprietors and their trade associations have generally supported smoking restrictions out of concern for the costs of cigarette burns to merchandise and facilities and for the image presented to customers by employees. Furthermore, their business is less likely to be affected than, for instance, the restaurant trade because smoking is not as closely associated with shopping as it is with eating and drinking.

### *Restaurants*

The average American, who according to National Restaurant Association (NRA) statistics eats out 3.7 times per week, has the potential for repeated environmental tobacco smoke (ETS) exposure (NRA 1986). This is a problem particularly in small restaurants, where ventilation may not be able to remove smoke and room size precludes a meaningful separation of smokers and nonsmokers. Public opinion polls document support for restaurant smoking restrictions among nonsmokers *and* smokers. Ninety-one percent of nonsmokers and 86 percent of smokers responding to a 1983 Gallup poll favored either restricting or banning restaurant smoking, with most preferring restriction (Gallup 1983). Similar results were reported by two regional polls in 1984 (UC SRC 1984, Hollander-Cohen Associates 1984). Roper polls in 1976 and 1978 demonstrated the growth in this sentiment during the mid-seventies; the proportion of respondents supporting restrictions grew from 57 percent to 73 percent in 2 years (Roper 1978). Yet little is known about how restrictions affect decisions to dine out or the choice of restaurant. A 1981 telephone survey of 949 individuals conducted by the NRA (1982) found that the existence of a no-smoking section was near the bottom of a list of 13 attributes influencing an individual's choice of restaurant. On the other hand, 47 percent of 1,038 adults answering a 1984 Gallup Monthly Report on Eating Out stated that one reason they did not eat out more was that they were bothered by smoke (Gallup 1984).

As in other privately owned facilities, smoking regulations in restaurants have come about through private initiative *and* public mandate. Private initiatives have sometimes occurred in anticipation of a local ordinance, but the number of restaurants that have voluntarily established no-smoking sections is not known. The

Ontario Restaurant and Food Services Association (1985) published a handbook of guidelines for establishing no-smoking sections.

In 1974, Connecticut became the first State to require restaurants to have no-smoking sections. By 1980, eight other States also regulated restaurant smoking. At present, laws in 18 States and an unknown number of localities regulate smoking in restaurants. Although a nationwide accounting of local regulations is not available, data are available for several States (Table 2). Most State and local ordinances specify (1) the minimum number of seats that must be included in a no-smoking section, (2) the smallest restaurant for which rules apply, and (3) the manner in which customers are to be informed about no-smoking sections. Bars that do not serve meals are uniformly excluded from restrictions. Most current State legislation specifies that a minimum of 30 percent of seats be designated as no-smoking and exempts facilities with fewer than 50 seats. Local ordinances are generally more restrictive, specifying that a higher percentage of seats be designated no-smoking and extending coverage to smaller establishments. Model ordinances (Hanauer et al. 1986) suggest that a minimum of 50 percent of seats be designated as no-smoking, require the posting of signs inside and outside the facility, and specify that owners ask patrons about smoking preference rather than respond only to customer requests.

There has been more opposition to smoking restrictions in restaurants than in other privately owned public places (Hanauer et al. 1986). Opposition has come primarily from restaurant associations and centers on three concerns: (1) government intrusion into business practice, (2) practical problems in coordinating seating of smokers and nonsmokers, and (3) losing the business of smokers who chose to leave a facility rather than to dine in a no-smoking section or wait for an available table in a smoking section. These concerns assume that the supply of no-smoking tables will exceed demand. While the proportion of tables allocated by most laws to no-smoking sections greatly underrepresents the proportion of nonsmokers, mixed parties of smokers and nonsmokers would have to decide which section to sit in. Restaurant owners appear to perceive little customer demand for no-smoking areas, or are unaware of the very high percentage of smokers and nonsmokers responding to public opinion polls who support smoking restrictions.

In anecdotal reports, the experience of restaurant owners who have implemented restrictions is that they are well accepted by customers and less difficult to implement than expected (Lehman 1984). There is little information on the extent of restaurant compliance with State and local laws. In Park City, Utah, the Chamber of Commerce polled its 32 member restaurants, and only 25 percent had complied with State law to set up no-smoking areas (Park Record 6/13/85). However, a random survey of Minneapolis

restaurants in 1976, 1 year after enactment of the comprehensive Minnesota Clean Indoor Air Act, found near-total compliance with the State's smoking regulations (Sandell 1984). In a 1978 Minnesota survey, 66 percent of nonsmokers and 81 percent of smokers felt that there were adequate no-smoking areas in that State's restaurants (Minneapolis Tribune 1978).

### *Hotels and Motels*

Over the past decade, hotel and motel operators have begun to offer guest rooms in which smoking is prohibited. In some facilities, no-smoking areas in lobbies and restaurants are also provided. Hotels are unique among public places in the manner and ease with which smoking has been addressed. Unlike the situation in restaurants, among hotels the no-smoking room policy is uniformly a private initiative, introduced by management in response to perceived customer demand (Linnell 1986). Hotel and motel rooms are not covered by State and local regulations and have not been addressed by nonsmokers' rights advocates.

Designating guestrooms as no-smoking began in the early 1970s in smaller hotel and motel chains. In the 1980s, the concept has spread to larger chains, including Hyatt Hotels in 1984 and Hilton Hotels in 1986 (Los Angeles Times 1986). According to a 1985 survey of 98 hotel and motel chains, 37 of 41 respondents provided no-smoking rooms, 23 by chainwide policy. The four respondents who did not offer no-smoking rooms were considering doing so (Linnell 1986). The percentage of rooms allocated as no-smoking varied from 5 to 30 percent, far less than the prevalence of nonsmokers in the adult population (70 percent). As a result, demand often exceeds supply, leading several chains to increase the percentage of no-smoking rooms (Linnell 1986; Vettel 1986). The only entirely no-smoking facility is the Non-Smokers Inn, a 134-room motel in Dallas, Texas, which has been open since 1982 and reports a 96 percent occupancy rate (Vettel 1986). Although there are anecdotal reports of problems with compliance, hotels do not have penalties for violators. The exception is the Non-Smokers Inn, where at check-in guests sign an agreement to abide by the rule; if the management detects smoking by occupants, \$250 is charged to cover the costs of cleaning.

Whether no-smoking guestrooms offer significant protection from sidestream smoke exposure is not clear. It is not known whether nonsmokers are exposed to significant quantities of ETS by staying in hotel rooms previously, but not currently, occupied by smokers. Rooms designated as no-smoking may primarily allow nonsmokers to avoid stale tobacco odors.

The regulation of smoking in hotels and motels is supported by public opinion. Fifty to sixty percent of respondents to recent opinion polls favor restrictions on smoking in hotel rooms, and an additional

7 to 18 percent favor outright bans on smoking (Gallup 1983, UC SRC 1984, Hollander-Cohen Associates 1984). In the 1983 Gallup poll, 60 percent of nonsmokers and 49 percent of smokers supported smoking restrictions in hotels, with an additional 15 percent of smokers and 7 percent of nonsmokers favoring outright smoking bans.

Hotel management regards such policy as a marketing tool. Cost savings do not appear to be a motivating force in the trend, in spite of anecdotal reports of reduced cleaning and maintenance costs in nonsmoking rooms (Linnell 1986). Preparing no-smoking rooms requires an up-front cost for the thorough cleaning of furnishings and often the repainting of walls. For instance, Quality Inns estimated that it spent \$138 per room when it allocated 10 percent of its rooms as nonsmoking in 1984 (Vettel 1986).

### *Schools*

Smoking by students in schools has been the subject of State legislation, State and local school board regulations, and individual school policies. Colleges and universities are not discussed in this section. In 27 States, schools are among the public places where smoking is restricted to designated areas (Table 2). School board policies often combine restrictions on tobacco use in schools with educational programs about the hazards of tobacco use. Smoking by teachers, for whom school is the workplace, is also regulated by many school boards.

Smoking has traditionally been regulated in schools for reasons other than concern about sidestream smoke exposure. The two rationales have been to comply with State law and to prevent the initiation of smoking by adolescents. The sale or use of tobacco by minors is prohibited in 35 States (Breslow 1982). Many of these laws are rendered ineffective by the availability of cigarettes in vending machines and by cultural norms that discourage the laws' enforcement (US DHEW 1969). Nonetheless, the laws do provide a legal incentive for schools to regulate student smoking. The second reason for restricting smoking in schools is that adolescents are making decisions about whether to begin smoking and the influence of peers as well as of adult role models who smoke is recognized to be important (US DHHS 1980, 1982).

Recognition of the health effects of involuntary smoking provides an additional reason to address smoking in schools and a reason to expand attention from students to faculty. For teachers and staff, the school is the worksite, a location with the potential for substantial ETS exposure (Repace and Lowrey 1985). For students, school is the site where they spend the most time outside of the home.



A total prohibition of smoking on school grounds provides the greatest protection from sidestream smoke exposure and unwanted role modeling effects. In practice, however, this policy has often proved difficult to enforce effectively (Rashak et al. 1986). In some cases it has created major discipline problems and required substantial time and personnel for enforcement. School officials, faced with the management of other social problems, may not wish to devote much of their resources to enforcement of a strict smoking ban. Consequently, many schools have established student smoking areas inside or outside the school building. Use of these areas often requires parental permission. Smoking areas for students are not popular with parents or teachers, according to survey data. Over three-fourths of 603 adults responding to a 1977 Minnesota poll opposed allowing school boards to establish smoking areas for students. Only 13 percent of 1,577 public school teachers responding to a 1976 nationwide survey thought students should be able to smoke on school grounds.

The nature and extent of school smoking policies nationwide is not known. Results of the few statewide surveys vary considerably. A Connecticut survey reported that 75 percent of the State's public high schools permitted smoking (Bailey 1983). In contrast, in Arizona, where State law requires schools to restrict smoking on school grounds, 92 percent of the State's 169 public and private secondary schools surveyed had written smoking policies for students, and most policies prohibited all tobacco use by students (Rashak et al. 1986).

Smoking by teachers at schools is generally prohibited in the classroom, but is often permitted in a lounge where students are not allowed. Ninety percent of Arizona schools permit smoking in teachers' lounges, 40 percent in private offices, and 19 percent in meetings (Rashak et al. 1986). Such policies attempt to avoid negative role modeling effects; however, they create a double standard that may be a barrier to student compliance with smoking bans. There has been little concern for protecting teachers from involuntary smoke exposure at the worksite. Since smoking is prohibited in the classroom, their exposure is limited to offices and lounges.

### *Health Care Facilities*

There are strong reasons for health care facilities to have particularly stringent restrictions on smoking. Many patients treated in these facilities suffer from illnesses whose symptoms can be worsened by acute exposure to tobacco smoke. Hospitals also convey messages about health to patients and visitors; permitting smoking on the premises may undermine the messages delivered to many patients about the importance of not smoking (Kottke et al. 1986).

Stringent restrictions on smoking in hospitals have been endorsed by the American Academy of Pediatrics (1986), the American Medical Association (1984), and the American College of Physicians (1986). Hospital smoking policies have been opposed by some who are concerned about inconveniencing smokers at times of illness and stress. Proponents of hospital no-smoking policies, on the other hand, are concerned about inconveniencing the *nonsmoking* patient or visitor at these stressful times.

Public opinion supports smoking restrictions in health care facilities. In the 1978 Roper survey, 69 percent of respondents favored a ban on smoking in doctors' and dentists' offices and waiting rooms (AMA 1984). Of the more than 3,000 individuals interviewed in hospitals and restaurants, 66 percent favored restricting or banning smoking in these areas (Barr and Lambert 1982). Over 80 percent of patients and faculty and 68 percent of employees agreed that "a smoke-free hospital would be an improvement in patient care" at the University of Minnesota hospital (Kottke et al. 1986).

Smoking in health care facilities has been addressed through State and local legislation, Federal regulation, and private initiative. In most States, hospitals and nursing homes are included among public places where smoking is restricted to designated areas (Table 2). In many cases, these legislative efforts have not led to strong protection of patients from involuntary smoke exposure because patient care areas may be included among the designated areas where smoking is permitted. Federally run hospitals have adopted increasingly stringent restrictions on smoking. For instance, Veterans' Administration hospitals and clinics adopted a new smoking policy in 1986, and a large number of Indian Health Service hospitals are now entirely smoke free (OTA 1986, Rhoades and Fairbanks 1985). Health care facilities run by some States, such as Massachusetts, have also adopted no-smoking policies (Naimark 1986). In nongovernment hospitals, most smoking restriction has been the result of private initiative, often spearheaded by the medical staff. Much of this action has taken place in the 1980s.

Hospital smoking policies can be complex. Within a single institution, smoking may be handled differently in inpatient, outpatient, and administrative areas. Patients, visitors, and employees may be subject to different sets of restrictions. Consequently, smoking policies vary widely among hospitals (Ernster and Wilner 1985). The least stringent policy prohibits smoking only where it is a safety hazard, such as near oxygen, and may permit the sale of cigarettes on the premises. Mild policies often assign patients to beds by smoking status, prohibit staff from smoking in patient care areas, and provide areas in cafeterias and waiting rooms for nonsmokers. Moderately stringent policies prohibit smoking in shared patient

rooms or in all patient rooms. Some hospitals permit patients to smoke with a doctor's written order. The most stringent policies, the so-called smoke-free hospitals, prohibit smoking throughout the facility or limit smoking to a single room away from patient care areas (Kottke et al. 1986). Enforcement of a smoking policy is usually the responsibility of the nursing staff. Guidelines for implementing hospital smoking policies have been formulated (Kottke et al. 1986; Ernster and Wilner 1985; AHA 1982).

In spite of anecdotal reports of the adoption of stringent smoking policies in individual hospitals (Andrews 1983), survey data indicate that smoking is still widely permitted in patient care areas. A survey of 360 randomly selected U.S. hospitals published in 1979 found few restrictions on smoking; fewer than half elicited the patients' smoking preference on admission or had no-smoking areas in cafeterias, waiting rooms, or lobbies, and smoking was permitted on 76 percent of the wards (Kelly and Cohen 1979). A 1981 survey of 1,168 community hospitals (Jones 1981) documented some change in policy prevalence. More than 90 percent of the hospitals had a written smoking policy, which restricted smoking to designated areas in 97 percent of cases. Over 85 percent of the hospitals offered no-smoking patient rooms, subject to availability (Jones 1981). A recent survey of 185 hospital administrators in Georgia reported that 70 percent continue to allow smoking in patient rooms, although only 6 percent permit it at nurses' stations (Berman et al. 1985). The proportion of hospitals allowing cigarette sales on the premises has declined from 56 to 58 percent in the late seventies (Kelly and Cohen 1979; Seffrin et al. 1978) to less than 30 percent in the eighties (Ernster and Wilner 1985; Jones 1981; Berman et al. 1985; Bertelsen and Stolberg 1981). While there are little data on the prevalence of smoking policies in private physicians' offices, guidelines for physicians wanting to provide assistance in smoking cessation are well developed (Lichtenstein and Danaher 1978; Shipley and Orleans 1982; US DHHS 1984).

### **Current Status of Smoking Regulations in the Workplace**

Policies regulating smoking at the workplace for the protection of employees' health are a trend of the 1980s. As of 1986, smoking is restricted or banned in 35 to 40 percent of private sector businesses (HRPC 1985; BNA 1986; US DHHS 1986) and in an increasing number of Federal, State, and local government offices (OTA 1986). Private sector workplace smoking is regulated by law in 9 States and over 70 communities (OTA 1986; US DHHS 1985b; ASH 1986). Actions to restrict or ban smoking at the workplace are supported by a large majority of both smokers and nonsmokers (Gallup 1985).

The workplace has become the focus of particular attention as evidence about the health hazards of involuntary smoking has accumulated. Urban adults spend more time at work than at any other location except home (Repace and Lowrey 1985). For adults living in a household where no one smokes (Harris 1985), the workplace is the greatest source of ETS exposure. Consequently, an individual's workplace ETS exposure can be substantial in duration and intensity. This is of particular concern for individuals also exposed to industrial toxins whose effects may be synergistic with tobacco smoke (US DHHS 1985c). Furthermore, individuals have less choice about their ETS exposure at work than they do in other places, such as restaurants or auditoriums.

The nonsmoker's right to clean air on the job has been supported by common law precedent (US DHHS 1985a; Walsh and Gordon 1986). Assuring clean air at work has received the growing attention of policymakers and nonsmokers' rights advocates. The worksite has also received attention because of its naturally occurring interpersonal networks and intrinsic social norms. Behavioral scientists have attempted to take advantage of the social milieu of the workplace to increase the success of smoking cessation programs (US DHHS 1985c). Smoking policies have the potential to alter worksite norms about smoking and thereby to contribute to reductions in employee smoking rates or the prevention of smoking onset. A substantial fraction of blue-collar workers who smoke report the initiation of smoking at ages coincident with their entry into the workforce (US DHHS 1985c).

### **Smoking Policies**

Legislation mandating smoking policies in the private sector workplace has been more controversial and less widespread than legislation covering public places. Because a worker's behavior off the job has traditionally been viewed as beyond the employer's legitimate concern, private employers have been reluctant to impose rules on behavior not directly related to employment (Walsh 1984; Fielding 1986). The concept of workplace smoking restriction has become more acceptable to employers and legislators as the hazards of involuntary smoking have become better known and as public attitudes about smoking have shifted. The rationale for policies has been reframed as guaranteeing an employee's right to a healthy work environment.

### **Prevalence of Smoking Policies**

Notwithstanding the recent attention, regulating smoking at work is not a new idea. There is a long and noncontroversial tradition of smoking restrictions to insure the safety of the worker, workplace, and product (OTA 1986). Employers have restricted smoking, to

prevent fires or explosions around flammable materials or to prevent product contamination. The policies were supported by State legislation dating back to 1892, when Vermont authorized employers to ban smoking in factories so long as a sign was posted (Warner 1982; US DHHS 1985b). New York, Nevada, and West Virginia had enacted similar legislation by 1921, and in 1924 Massachusetts banned smoking in stables because of the fire hazard (US DHHS 1985b).

Smoking restrictions remained uncommon throughout the 1960s. During the 1970s, workplace smoking regulations were included in the comprehensive clean indoor air legislation being proposed at the State level. In 1975, Minnesota became the first State to enact regulations for private worksites for the purpose of protecting employee health. Since then, eight other States have passed laws covering private sector workplace smoking (Tri-Agency Tobacco Free Project 1986; OTA 1986; ASH 1986; US DHHS 1985b). Fifteen percent of the U.S. population lives in these nine States. The scope of this legislative effort widened in the 1980s to include local government. It has been strongest in California, where ordinances in 66 communities cover 44 percent of the State's population (Americans for Nonsmokers' Rights Foundation 1986).

In spite of this legislative activity, surveys of employers through the 1970s reveal that worksite smoking regulations remained limited overall (Table 4). Those in place applied primarily to blue-collar areas and were motivated by safety concerns (NICSCH 1980a,b; Bennett and Levy 1980). Policies were more common in industries with product safety concerns (food, pharmaceuticals) or explosion hazards (chemicals) (HRPC 1985). Safety was the prime reason for smoking policies in a survey of 128 large Massachusetts employers in 1978-1979. The potential for an adverse impact on clients, especially in service industries, was also cited (Bennett and Levy 1980). Concerns about the impact of smoking on the health of employees or costs to employers-the focus of the current workplace smoking action-were not mentioned. Fewer than 1 percent of 855 employers answering a nationwide survey in 1979 had calculated the costs of employee smoking (NICSCH 1980a,b).

Five surveys of employers conducted between 1977 and 1980 document the situation just prior to the proliferation of workplace smoking policies. Estimates of the prevalence of smoking policies ranged from 14 to 64 percent, reflecting differences in types of businesses sampled and response rates (Table 4). A survey conducted by the National Interagency Council on Smoking and Health in 1979 had the largest sample size and the only random sample, but had a low response rate (29 percent) (NICSCH 1980a). Their estimate of a 50 percent prevalence of smoking policies is probably biased upward by the likelihood that companies with policies were more likely to

TABLE 4.--Surveys of worksite smoking policies

Survey name (pub. date)	Survey year	Business surveyed			Sampling method	Interview		Response rate N (%)	Restrict smoking (%)	Worksite cessation program (%)	Incentives for nonsmoking (%)
		Number	Workforce size	Location		Method	Who?				
Dartnell's Business (1980)	1977	250	Large	U.S. and Canada	?		office administrators	?	30	11	3
Bennett and Levy (1980)	1978-79	128	Large (>1000)	Mass.	All Mass. business with >1000 employees		Mail	88 (66)	64	12	
National Inter- agency Council on Smoking and Health (1980)	1979	3000	Three strata of 1000 small 50-499), medium (500-2200, large Fortune Double 500)	U.S.	Random sample stratified by size		Mail Top level and management phone and health officials	855 (29); same for each strata	50	15	1
Dartnell's Business (1980)	1980	325	Large	U.S.	?		Administrative managers	?	23	9	3
Administrative Management Society (Thomas 1980)	1989	500	?	U.S. and Canada	Nonrandom; representatives of AMS chapters		Mail Members of AMS	302 (60)	14		
Human Resources Policy Corp. (1985)	1984-85	1109	Large: Fortune 1000 and Inc's 100 fastest growing companies	U.S.	All members of two selected groups		Mail CEO or VP for Human Resources	445 (40)	32	43	8.5

**TABLE 4.--Continued**

Survey name (pub. date)	Survey year	Business surveyed			Sampling method	Interview		Response rate N (%)	Restrict smoking (%)	Worksite cessation program (%)	Incentives for nonsmoking (%)
		Number	Workforce size	Location		Method	Who?				
U.S. Department of Health and Human Services (1986)	1985	1600	Two strata: small (50-99), medium-large (> 100)	U.S.	Random sample stratified by size, location, and industry type	Phone		1358 (85)	38	19	
Bureau of National Affairs, Inc. (1986)	1986	1967	Predominantly small-medium 80% < 1000	U.S.	Random sample, selected group: Am. Soc. Pers. Admin. members	Mail	Personnel executives	662 (34)	36	41	4
Petersen and Massengill (1986)	1986	1100	Predominantly small-medium: 62% < 500; 16% - 500-1000, 22% > 1000	U.S., Canada, and Puerto Rico	?	Mail	?	577 (53)	56	50	5

TABLE 4.--Continued

Survey name (pub. date)	Correlates of having a smoking policy				Type of smoking policy (B = ban, R = restrict)	Reason for policy	Duration of policy	Comments
	Workplace size	Location	Business type	Other				
Dartnell's Business (1980)							42% ≤ 5 years	Employees raised smoking issue in 25%
Bennett and Levy (1980)	No	No	No	No		Protect products, equipment (91%). worker safety (37%), customer contact (17%), worker health (0%)		Cigarettes sold on premises of 95%
National Inter- agency Council on Smoking and Health (1980)	Large >small (54% vs 46%)			Blue-collar > white-collar areas	Blue-collar areas 42%R/28%B, white-collar areas 15%R/11%B, cafeterias 19%R/2%B, conference rooms 6%R/7%B, medical facilities 15%R/25%B	(<1% calculate costs due to smoking	64% adopted since 1964	Management- initiated policies with rare union role; 54% with policies impose Penalties



**TABLE 4.--Continued**

Survey name (pub. date)	Correlates of having a smoking policy				Type of smoking policy (B = ban, R = restrict)	Reason for Policy	Duration of Policy	Comments
	Workplace size	Location	Business type	Other				
Dartnell's Business (1980)					18% R to designated areas (usually open offices and public contact areas), 8% R in cafeterias, 5% limit smoking to breaks		69% ≤ 5 years	Employees rained smoking issue in 30%, 5% more than in 1977 survey
Administrative Management Society (1980)					Office areas 12%R/2%B B: reception areas (46%), security areas (35%), open offices (27%), hallways (16%), conference rooms (8%)			White-collar area survey only; 37% without Policy had employee complaints

TABLE 4.--Continued

Survey name (pub. date)	Correlates of having a smoking policy				Type of smoking policy (B = ban, R = restrict)	Reason for policy	Duration of policy	Comments
	Workplace size	Location	Business type	Other				
Human Resources Policy Corp. (1985)		West - 45%, NE - 36%, NC - 28%, South - 22%	>50%: insurance, pharmaceuticals, finance, publishing; < 20%: mining, consumer goods	Located where workplace smoking law in effect	3% B while working or on premises, 35% B by some employees, 5% do not hire smokers	Safety (25%), health (20%), comply with laws (16%). <b>employee</b> preference (16%) save money (3%). increase productivity (2%) Reasons reject policy: unacceptable to employees, employees settle own problem, implementation too difficult	51% ≤ 5 years	Sponsored by Tobacco Institute; management initiated policies; 70% encourage employees to settle own disputes
U.S. Depart- ment of Health and Human <b>Services (1986)</b>	Large > <b>small</b>		<b>Services</b> > other industry <b>types</b>	Not unionized or <b>blue-collar</b> %		Comply with regs (39%), <b>protect</b> nonsmokers (39%), protect equipment (14%), protect high risk employees (8%)		Data analysis still in progress

**TABLE 4.--Continued**

Survey name (pub. date)	Correlates of having a smoking policy				Type of smoking policy (B = ban, R = restrict)	Reason for policy	Duration of policy	Comments
	Workplace size	Location	Business type	Other				
Bureau of National Affairs, Inc. (1986)	Large >small (45% vs 33%)	West - 52%. EN - 42%, NC - 29%, South - 28%	Nonbusiness or nonmanufacturing >manufacturing	Located where workplace smoking law in effect	Open work areas 19%R/41%B, halls, conference rooms, restrooms, customer areas 56%- 66%B; cafeterias 58% partial B; total worksite 2%B; 1% hire only nonsmokers, 5% prefer nonsmokers	Comply with laws (28%), employee health, comfort (22%), employee complaints (21%). mandate by president (3%)	85% < 5 years 85%; 10% before 1982	2% to adopt policy in 1986; 21% considering policy; 23% penalties net; 32% procedures to resolve disputes
Petersen and Massengill (1986)	Only 33% of smallest (<50 employees) have policy		Health care (93%). retailing (83%). finance 61%), manufacturing (57%), transportation (50%), service (49%), insurance (18%)	Located where workplace smoking law in effect	Designated areas only 38%, client-contact area 13%B, 1%B entirely, 2% hire only nonsmokers	Employee pressure (21%), comply with laws (19%), protect employee health (19%), reduce insurance costs (9%)	43% <3 years, 53% <6 years	6% made structural changes; 27% use barriers or air purifiers; 45% discipline violators

respond. An even higher prevalence of smoking policies (64 percent) reported in a survey of large Massachusetts businesses may reflect similar biases or regional variation or both. Smoking policies were reported in only 14 percent of white-collar offices in a nonrandom survey (Thomas 1980) and in 23 to 30 percent of large corporations responding to two nonrandom surveys by the same group (Petersen and Massengill 1986).

These surveys found that smoking restrictions were moderate, worksite smoking cessation programs uncommon (9 to 15 percent), and incentives for nonsmoking rare (< 3 percent). Outright smoking bans and preferential employment of nonsmokers were not mentioned. However, employee complaints about smoking were reported by one-third of the businesses in two surveys (Petersen and Massengill 1986; Thomas 1980), suggesting a growing pressure on employers for change. Smoking policies were stricter for blue-collar workers and larger worksites (NICSH 1980b; Bennett and Levy 1980).

A second set of business surveys, conducted only 5 years later (1984-1986), shows a different picture (Table 4). Three large surveys, two based on random samples, reported a remarkably similar prevalence of workplace smoking restrictions, ranging from 32 to 38 percent (HRPC 1985; US DHHS 1986; BNA 1986). A fourth study reported that 56 percent of small and medium sized businesses had smoking policies, but only 38 percent of businesses restricted smoking to designated areas (Petersen and Massengill 1986).

Because of uncertainty in the earlier (1977-1980) estimates, it is difficult to conclude that the most recent estimates of policy prevalence represent an increase. However, there is suggestive evidence on this point: half or more of policies reported in the 1984-1986 surveys were adopted within 5 years, indicating that the policies are largely products of the 1980s; a sizable number of companies without policies are considering them; in addition to the 36 percent of companies reporting policies in one 1986 report, 2 percent were planning to implement a smoking policy in 1986 and another 21 percent were considering adopting a policy (BNA 1986). Finally, companies that adopt policies rarely reverse them: in the BNA 1986 survey, only 1 percent of companies without policies had ever had one and rescinded it. These data support a contention that workplace smoking policies are a growing trend.

The nature and scope of smoking restrictions also changed during the 1980s. The most common policy still restricted smoking to designated areas, but those areas appeared to be shrinking. Despite several well-publicized examples (Pacific Northwest Bell, Group Health Cooperative of Puget Sound), total workplace smoking bans were still rare (1 to 3 percent). An even more stringent smoking policy now being adopted, giving preference to nonsmokers in hiring or refusing to hire smokers, was not even considered less than a

decade before (BNA 1986; HRPC 1985; Petersen and Massengill 1986). Fewer than 5 percent of businesses have currently adopted such a policy. Workplace smoking cessation programs were more common, but incentives for nonsmoking remained rare.

The 1984-1986 surveys suggest that the diffusion of workplace smoking policies throughout the private sector is occurring in a nonuniform fashion. Companies with policies differ from those without policies in workforce size, geographic location, and type of industry. Smoking policies are slightly more prevalent in large companies than in small businesses (45 versus 33 percent) (Petersen and Massengill 1986, BNA 1986). Policies also differ by company location, being more common in the West and Northeast than in the North Central region or the South (BNA 1986; HRPC 1985). This geographic disparity is similar to the pattern of State smoking legislation, and may in part be explained by it. Businesses in States with workplace smoking laws are more likely to have adopted smoking policies than are companies located elsewhere (HRPC 1985; BNA 1986). Industries are adopting smoking policies at different rates, with more policies and more recent policies in nonmanufacturing industries (finance, insurance, health care, pharmaceuticals) (HRPC 1985; Petersen and Massengill 1986; BNA 1986). This represents a shift from the earlier blue-collar predominance of smoking restrictions and reflects the change in policy orientation from workplace safety to employee health.

Two factors may explain the growth of workplace smoking policies in the 1980s. Recently enacted State and local workplace smoking legislation is one factor influencing the private sector. Legal mandates are cited as a major reason for adopting policies, and as noted above, the prevalence of private sector smoking policies is higher in regions with legislation in place. Laws may encourage more rapid private action by putting smoking on the corporate agenda. A second factor is public support. Support for an employer's right to restrict smoking to a designated area at work grew from 52 percent to 61 percent during the 1970s (Roper 1978) and continued to increase in the 1980s (Gallup 1983, 1985). In 1985, 79 percent of U.S. adults, including 76 percent of smokers, favored restricting smoking at work to designated areas. Only 8 percent favored a total workplace smoking ban (Gallup 1985). These attitudes may also be manifest as employee pressures to restrict smoking (Petersen and Massengill 1986; BNA 1986; HRPC 1985).

### **Reasons for Adopting Smoking Policies**

It is not always easy to identify the motivations and goals for a specific workplace policy (OTA 1986). Explicit reasons for implementing policies, according to the most recent employer surveys, are (1) to protect the health of the employee--especially the nonsmok-

er--and assure a safe working environment, (2) to comply with State and local statutes mandating worksite smoking policies, and (3) to anticipate or handle demands from nonsmoking employees for a smoke-free working environment. Other reasons may be the fear of possible legal liability for illnesses caused by sidestream smoke exposure in the workplace (Fielding 1982; Walsh 1984), an opportunity to symbolize a company's concern for employee welfare (Walsh 1984; Eriksen, in press), as part of a general health promotion and wellness program, and the goal of saving the company money.

Although it is generally agreed that employees who smoke cost their employers more than do nonsmoking employees, there is as yet little evidence that implementing policies will reduce the extra smoking-related costs (OTA 1986; Fielding 1986; Eriksen, in press). Corporations are keenly interested in stemming the rapid rise in health insurance costs, but may not see smoking policies as a means to that end. The top management at Xerox, for example, rejected a proposed smoking policy because of concerns about the potentially adverse economic impact of excess smoking breaks on productivity (Walsh 1984). Actually, economic considerations do not appear to be a major reason why businesses adopt smoking policies, according to three recent surveys (HRPC 1985; BNA 1986; Petersen and Massengill 1986).

### **Barriers to Adopting Smoking Policies**

Both survey data and case reports give insights into reasons why employers have elected not to implement worksite smoking policies. According to a Tobacco Institute-sponsored survey, the 24 percent of large employers who had considered and rejected a smoking policy gave these reasons: policy not acceptable to employees (59 percent), employees can handle the problem on their own (58 percent), implementation too difficult (39 percent) or too costly (5 percent), policy not acceptable to clients (10 percent), and no employee complaints about smoking (29 percent) (HRPC 1985).

Fear of worker discontent or union opposition is the major reason cited by employers who have considered and rejected a workplace smoking policy. Surveys consistently indicate that smoking policies are initiated by management, and are often adopted with little or no employee or union input (HRPC 1985; BNA 1986; NIOSH 1980a,b). Although most businesses that have surveyed their employees have found strong support for smoking restrictions (Pacific Telephone 1983; Robert Finnigan Associates 1985; Addison 1984; Ziady 1986, Marvit et al. 1980), some unions have actively opposed employer-mandated policies, both in individual cases and at the national level. In 1986 the AFL-CIO Executive Council stated its opposition to unilateral policies and called for the case-by-case handling of workplace disputes between smokers and nonsmokers (BNA 1986).

Both employee organizations and employers find it difficult to simultaneously balance the wishes of all their constituents.

Another reason for reluctance to adopt smoking policies is concern about implementation (HRPC 1985). In some cases, this means concerns about how to enforce the policy (BNA 1986) or whether it is enforceable (Eriksen, in press). Other reasons cited by companies were questions about the legality of limiting employee smoking (BNA 1986) and the nonsupport of top management who are smokers (BNA 1986). Some companies are dependent on business relationships with tobacco companies and businesses with tobacco-related interests, which they do not want to jeopardize (Kristein 1984; Walsh 1984).

### **Types of Smoking Policies**

Private sector businesses have addressed the issue of employee smoking in a variety of ways. In addition to smoking policies, the umbrella concept of "worksite smoking control" can include educational campaigns to motivate workers to quit, self-help and organized smoking treatment programs, medical advice, and incentives to encourage nonsmoking (Orleans and Shipley 1982; Windsor and Bartlett 1984). Smoking programs are sometimes subsumed as part of broader corporate wellness programs. Worksite smoking cessation programs were reviewed in the 1985 Report on the Health Consequences of Smoking (US DHHS 1985c).

Businesses have taken a variety of approaches to a worksite smoking policy. The choices reflect the individual company's motive in adopting a policy and assessment of the potential for implementation and enforcement. When protection from fire or explosion was the primary motive, policies primarily applied to blue-collar areas; when the goal was to avoid antagonizing customers, smoking bans applied only to client-contact areas (Bennett and Levy 1980). A company's solution also reflects its particular social environment. Recent study indicates considerable variability among individual worksites in attitudes and norms about smoking cessation (Sorensen et al. 1986).

Because smoke travels, the desires of smokers and nonsmokers will inevitably come into conflict in common areas, and it is difficult to simultaneously maximize the goals of smoke-free air, minimum employee disruption, and minimum cost. A business adopting a policy primarily to avoid employee conflicts is likely to pay greater heed to smokers' wishes at the expense of smoke-free air, and may consider solving the problem with increased ventilation (to avoid the necessity of behavioral change) or may separate smokers and nonsmokers. A business whose primary goal is to reduce involuntary smoking hazards will be more willing to sacrifice smokers' convenience and may consider a total smoking ban. A business that aims

to reduce costs may choose a minimum of structural changes and a maximum likelihood that the policy will result in employee smoking cessation; a total ban on workplace smoking or the hiring of only nonsmokers would be more likely to achieve these goals. Alternatively, adopting no policy may also be *inexpensive*, so long as there are no employee conflicts over smoking.

The myriad of current smoking policies have been categorized in several ways (US DHHS 1985a; BNA 1986; OTA 1986, ALA 1985a,b). The range, in ascending order of protection for the nonsmoker, includes these:

- (1) No explicit policy (the “individual solution” approach)
- (2) Environmental alterations (separating smokers with physical barriers, using air filters, or altering ventilation)
- (3) Restricting employee smoking, a range with these extremes:
  - (a) smoking permitted except in designated no-smoking areas
  - (b) smoking prohibited except in designated areas
- (4) Banning employee smoking at the worksite
- (5) Preferential hiring of nonsmokers.

Options (1) through (3a) effectively state that smoking at work is acceptable behavior; options (3b) through (5) indicate to employees that nonsmoking is the company norm. Several groups have developed model policies of varying degrees of comprehensiveness to assist employers (ALA 1985a,b; GASP 1985; BNA 1986; Hanauer et al. 1986).

### ***The “Individual Solution” Approach***

According to surveys, having no explicit policy is still the most prevalent approach to smoking in the workplace (HRPC 1985; BNA 1986; US DHHS 1986). Smokers and nonsmokers work out differences on their own, using so-called common courtesy or finding an individual solution. According to a 1984 Tobacco Institute-sponsored survey, 70 percent of large employers encourage employees to work out differences on their own (HRPC 1985). When there is no explicit policy, there is the implicit message that environmental tobacco smoke does not represent a hazard. So long as there are few disputes and they are easily settled, this approach is expedient. However, it is not likely to be a successful long-term policy. Nonsmokers in the late 1970s may have been reticent to assert their rights and perceived a burden of confrontation (Roper 1978; Shor and Williams 1978), but there is a growing consensus, even among smokers, that supports abstention in the presence of nonsmokers and smoking restrictions at worksites (Gallup 1983, 1985).



### ***Environmental Alterations***

Environmental alterations range from simply separating smokers and nonsmokers to different areas of a room to installing improved ventilation systems to remove environmental tobacco smoke. The advantage of this approach is that it requires no behavioral change of smokers and satisfies some of the wishes of nonsmokers. However, because tobacco smoke easily diffuses beyond physical boundaries, simple barriers provide at best a slight reduction in involuntary smoke exposure (see chapters 3 and 4) (Olshansky 1982). More sophisticated ventilation systems can be prohibitively expensive, and even the best may not be able to clean the air adequately (Repace and Lowrey 1985; Lefcoe et al. 1983). Workplace modification has sometimes been utilized as a company's first step in the development of a more restrictive policy, as happened at the Control Data Corporation in Minneapolis (OTA 1986).

### ***Restrictions on Employee Smoking***

The most common workplace smoking policy is to restrict where employees may smoke (BNA 1986). This policy has broad public support, in a 1985 Gallup poll it was the approach favored by 79 percent of U.S. adults, including 76 percent of smokers (Gallup 1985). Policies differ in (1) the proportion of the workplace in which smoking is permitted, (2) whether the default condition is smoking, nonsmoking, or unspecified, (3) who has the authority to designate the smoking status of an area, and (4) whose wishes prevail when smokers and nonsmokers disagree. Policies often categorize the worksite into four areas that are subject to different rules: (1) private offices, (2) shared offices or work areas, (3) small common use areas (elevators, bathrooms), and (4) large common use areas (conference and meeting rooms, auditoriums, cafeterias).

The least restrictive policies permit smoking except in designated no-smoking areas, indicating that smoking is the company norm. Who has the authority to designate an area's smoking status and whether smokers' or nonsmokers' wishes prevail may not be explicit. The usual pattern is for common use areas to be designated either totally no-smoking (elevators, bathrooms, conference rooms) or partly no-smoking (cafeterias, auditoriums). Private offices are left to the discretion of the occupant, who is often given the authority to declare it no-smoking. In shared office areas, where the wishes of smokers and nonsmokers may conflict, each individual may be given the authority to designate his or her own immediate work area, or the policy may stipulate that a compromise be reached. However, this cannot ensure that an employee's self-designated no-smoking area is free of sidestream smoke. Because the majority of an employee's time is spent in the immediate work area rather than in

the no-smoking common use areas, a policy that does not specify no-smoking in shared work areas may not substantially reduce an employee's environmental tobacco smoke exposure. However, these policies may satisfy some nonsmokers' wishes with minimal disruption to smokers. In some cases, companies seeking to limit smoking have adopted this type of policy as a first step to more stringent restrictions or a total ban (e.g., Boeing, cited in OTA 1986).

The most restrictive policies specify that "smoking is prohibited except in designated areas," establishing nonsmoking as the workplace norm. In the strictest policies, smoking is prohibited in shared work areas (unless all occupants agree to designate an area "smoking permitted") and in most common use areas. Policies may limit the areas that can be designated "smoking permitted" and predetermine that the wishes of nonsmokers prevail when conflict occurs. Even stricter regulations stipulate not only the location in which but also the time when smoking is allowed (e.g., work breaks only). So long as the smoking areas do not contaminate the air of work areas, these policies provide greater protection of employees from sidestream smoke at the cost of greater inconvenience to smokers, who may perceive the restrictions as coercive. The productivity of smokers may suffer if they are permitted to take extra smoking breaks or if smoking areas are located too far from the work station.

The variability of smoking restrictions in common work areas was demonstrated in a 1985 survey conducted by the Bureau of National Affairs, Inc. (BNA). Of the 239 companies with smoking policies, 41 percent banned smoking in open work areas, and an additional 20 percent banned it if employees or supervisors wished. Only 8 percent permitted smoking in all open work areas, and 19 percent divided areas into smoking and no-smoking sections. There was more uniformity in treatment of common use areas. Over 50 percent of the companies banned smoking in hallways, conference rooms, rest rooms, and customer contact areas, and smoking was partially banned in 58 percent of cafeterias (BNA 1986).

In contrast to shared work areas, smoking was permitted in 56 percent of the private offices in that survey, with occupants often given the authority to designate the office as smoking or nonsmoking. This has the potential for charges of unequal treatment and problems with employee morale (BNA 1986).

### *Banning Smoking at the Workplace*

Some businesses--including large corporations, among them Pacific Northwest Bell and the Group Health Cooperative of Seattle have recently opted for total bans on smoking at work (US DHHS 1985a; Ziady 1986). Bans may be preceded over several years by progressively stricter smoking regulations. Notwithstanding these

well-publicized successful examples, smoking bans are rare and not widely supported by public opinion. Only 6 percent of companies with smoking policies (2 percent of all respondents) in a 1986 survey totally banned smoking (BNA 1986). Only 12 percent of adults (4 percent of smokers) agreed that “companies should totally ban smoking at work” in a 1985 Gallup poll. In spite of this hesitancy, smoking bans are gaining momentum among large employers such as Boeing, who recently announced an upcoming ban that will cover its 90,000 employees (Iglehart 1986).

Smoking bans provide the maximum protection for nonsmokers, at the cost of greater inconvenience for smokers. They send a clear message that nonsmoking is the company norm. They can reduce ventilation needs and maintenance costs due to smoking, but pose potential problems with enforcement and loss of employees who smoke. Thus, how a ban is planned, prefaced and introduced, and implemented and enforced is very important. Through a concern for employee well-being, assistance for smokers who wish to quit should be implemented along with bans (Orleans and Pinney 1984).

### *Preferential Hiring of Nonsmokers*

The most restrictive workplace smoking policy, preferential hiring of nonsmokers, was not even discussed several years ago. Explicit policies favoring nonsmokers are still uncommon. According to the 1986 report of the Bureau of National Affairs, Inc., 1 percent of businesses hire only nonsmokers, 5 percent give nonsmokers preference, and 10 percent permit supervisors to exercise a nonsmoking preference (BNA 1986). The majority either have no policy (43 percent) or do not permit such a preference (39 percent). On the other hand, data from small surveys indicate that personnel managers, the majority of whom are themselves nonsmokers, may preferentially hire nonsmokers (Weis 1981; Iglehart 1986). In a unionized setting, selective hiring of nonsmokers may need to be the subject of collective bargaining (Eriksen, in press).

Hiring only nonsmokers ensures a smoke-free work environment without conflicts over smoking and makes it clear that nonsmoking is the company norm. Since the nonsmoking workforce should be healthier, lower health insurance premiums may also result. On the other hand, such a policy limits the potential pool of new employees, raises the issue of what to do about currently employed smokers, and may present problems with verification of smoking status. Employers may be reluctant to adopt a policy in which off-the-job activity is a condition of employment (Walsh 1984).

Assuring compliance with workplace smoking policies is complex. Model policies usually include three enforcement provisions: (1) identifying who is responsible for policy enforcement, (2) designating penalties for noncompliance, and (3) ensuring the protection of an

employee bringing a complaint. These provisions are often not included in practice. Only 23 percent of the policies stipulated penalties for noncompliance and only 32 percent specified procedures for resolving disputes in the 1986 BNA survey. Approximately half of the policies outlined in two other business surveys had provisions for disciplining violators (Petersen and Massengill 1986; NICSH 1980a,b).

### **Implementation of Smoking Policies**

Worksites that have adopted smoking policies have differed in the ease with which policy was implemented. To aid employers, the American Lung Association and the Office of Disease Prevention and Health Promotion of the U.S. Department of Health and Human Services have developed guides with specific recommendations on how to adopt and implement worksite smoking policies (ALA 1985b; US DHHS 1985a). These are based on the experience of companies and can be extremely helpful even though they are not based on research.

The experiences of 12 corporations that considered smoking policies are described in a report of the Bureau of National Affairs, Inc. (1986). Case reports are also included in the guide from the Office of Disease Prevention and Health Promotion (US DHHS 1985a). According to these case reports, strong support from top management and having an advisory committee composed of a wide variety of employees (including both smokers and nonsmokers, managers, and employee representatives) are common to successful policies. Surveys of employees can assess distress caused by involuntary smoking and support for policy changes. As a rule, such surveys have generally documented widespread support for smoking restrictions from employees, the majority of whom are nonsmokers.

Another correlate of success is a well thought out and clearly articulated communication of the policy. A written document should give the rationale for the policy implementation, specify where smoking will be allowed or prohibited, and define responsibility and procedures for policy enforcement and penalties for violation. Successful policies avoid criticizing smokers or setting up an antagonistic situation between smokers and nonsmokers. They make it clear that the company is not requiring that employees quit smoking and will help smokers in adjusting to the new regulations. Giving smokers advance notice of the policy and providing help for those who want to quit smoking can help gain their support.

Careful plans for implementation are recommended. Allowing several months between the announcement of the policy and its effective date gives smokers time to prepare for the change and to attend smoking cessation programs if they wish to quit. This also provides time for the posting of adequate numbers of signs and for

making any structural alterations that may be necessary. After policy implementation, an advisory committee should monitor its effectiveness and enforcement. A followup survey is helpful to determine what, if any, adjustments need to be made.

### **Impact of Policies Restricting Smoking in Public Places and in the Workplace**

Policies that regulate where smoking is permitted may have a number of direct and indirect effects. In the short term, a policy that is adequately implemented and enforced will alter the behavior of smokers in areas where smoking is prohibited and should result in a reduced concentration of tobacco smoke in that area. Beyond these direct effects, there is the potential for smoking restrictions to have broader, indirect effects on smoking behavior and on public attitudes about tobacco use. This section outlines the possible impacts of smoking policies, addresses methodologic considerations, and reviews existing data that bear on these hypotheses.

### **Potential Impacts of Smoking Policies**

#### *Policy Implementation and Approval*

The degree to which a smoking policy or law has been implemented as written is an essential consideration in evaluating its effects on attitudes, behavior, and air quality. Successful *implementation* involves public awareness of the policy, compliance with its regulations, and enforcement of violations. Compliance requires not only that smokers refrain from smoking where prohibited from doing so, but also that appropriate decisionmakers develop written policies, designate areas as no-smoking, and post signs as stipulated. Enforcement requires that policy violations be dealt with, either by peer action or by penalties defined by the policy. Because smoking policies and laws are approved by the majority of individuals whose behavior they affect, they are generally held to be self-enforcing, obviating the need for active policing (Hanauer et al. 1986). When enforcement is needed, smoking policies and legislation rely primarily on peers, assuming that the nonsmoking majority of the population will enforce the policy or statute because it is in their best interest.

Nonsmokers can be expected to favor smoking restrictions, which offer the benefits of cleaner air and reduced health risks and require no change in their behavior. The opinions of smokers are expected to be less favorable because they stand to be inconvenienced. Some smokers may support the policy to assure themselves of having a location where smoking is clearly permitted, because of a desire to quit smoking, or because of concerns about the health hazards of involuntary smoking. The degree of smokers' support for a policy

may also depend on other factors, such as the degree of smoking restriction or the adequacy of policy implementation.

#### *Direct Effects: Air Quality and Smoking Behavior*

The evaluation of a specific policy or piece of legislation must address whether the policy achieved its stated goals and must also screen for other effects. The primary goal of policies regulating smoking in public places or in the workplace is the reduction of individuals' *exposure to environmental tobacco smoke*. Measures of air quality directly assess how well a policy meets this goal. Air quality also indirectly reflects the behavior of smokers and the degree of policy compliance.

Smoking policies may have both direct and indirect effects on smoking behavior. The direct effect of adequately implemented smoking restrictions is to limit where smoking is permitted, altering the behavior of smokers in those settings. Smoking policies may have indirect effects on smoking behavior if they influence the behavior of smokers outside these settings.

#### *Indirect Effects: Knowledge, Attitudes, Social Norms, and Smoking Behavior*

Policies that restrict or ban smoking in public places or the worksite convey potentially powerful messages about the role of cigarettes in society and help to reinforce nonsmoking as the normative behavior. Restricting smoking to protect nonsmokers may increase public *knowledge* of the health risks of smoking and of involuntary smoking. Smoking restrictions may also alter *attitudes* about the social desirability of smoking and the acceptability of smoking in public. Changes in the knowledge or acceptance of health risks combined with attitude shifts contribute to changing *social norms* about where smoking should and should not occur, as well as whether it is an acceptable social behavior.

Changes in social norms may influence *smoking behavior* by reducing pressures to smoke and increasing social support for nonsmoking and cessation. The combination of altered social norms and reduced opportunities to smoke may encourage smokers to quit and discourage experimentation among nonsmoking youth. Changing social norms may have their greatest impact on teenagers and young adults, who might be less inclined to experiment with a socially undesirable substance. Current smokers are likely to be prompted by changing social norms to move further through the stages of self-change that precede cessation (Prochaska et al. 1985).

Smoking restrictions may influence smoking behavior apart from their influence on social norms. By reducing opportunities for smoking, restrictions may decrease a smoker's daily cigarette

consumption. By reducing the range of settings where smoking occurs, they reduce the cues and alter the stimulus-response patterns that help to maintain smoking behavior and that contribute to relapse among ex-smokers (Orleans 1986). This could increase the success of quit attempts. Smoking restrictions, especially those at the workplace, may also help smokers to discover alternatives to smoking as a stress reduction tool. Likewise, new entrants into the workforce may not as easily learn to rely on cigarettes to cope with work-related stressors. This might blunt the increase in smoking prevalence that occurs at the time of workforce entry, especially among blue-collar workers (O'Malley et al. 1984; US DHHS 1985c).

Thus, the widespread adoption of smoking restrictions may have a profound impact on smoking behavior at many points in its natural history. Hypothesized consequences include reduced cigarette consumption, increased motivation and progress through the stages of self-change, increased rates of smoking cessation, and decreased rates of smoking initiation.

Smoking policies may have additional impacts beyond their effects on attitudes and smoking behavior, such as positive economic effects for employers by reversing the excess costs associated with employees who smoke. It is generally agreed that employees who smoke cost their employers more than nonsmoking employees because of excess absenteeism, increased health care utilization, and reduced productivity (OTA 1986; Fielding 1986; Eriksen, in press). This leads to greater use of sickness, disability, and health care benefits and ultimately, higher health insurance costs to business. Productivity losses to business are attributed not only to the individual smoker's time lost owing to on-the-job smoking, but also to increased maintenance costs due to cigarette-related damage and refuse. Estimates of the excess annual cost per smoking employee vary by an order of magnitude, but even conservative estimates are substantial: \$300 to \$600 (Kristein 1983, 1984; Solomon 1983; Weis 1981).

Reductions in health care costs are partly dependent on whether policies lead smokers to quit smoking. Even if smokers quit, the reduction in health care costs may not be seen in the short term. Some employers have been concerned that strict smoking bans may unfavorably alter employee turnover patterns or productivity. Smokers' productivity could decrease if, for example, they are permitted to take extra breaks away from their work stations in order to smoke (OTA 1986; Michigan Tobacco and Candy Distributors and Vendor Association 1986). Costs involved in adopting a smoking policy should also be considered. Assessment of these endpoints is useful because employers may consider them in deciding whether to implement smoking policies.

## **Methodologic Considerations in Policy Evaluation**

### *Study Design*

Evaluating a new smoking policy in a defined population is similar to evaluating a smoking cessation intervention, with the addition of nonsmokers. Impacts on beliefs and attitudes, as well as on behavior, can be assessed in the population at baseline and at intervals after implementation. Because smoking policies may influence smoking behavior gradually, designs must be able to measure delayed effects.

Simultaneous assessment of outcomes in a control population strengthens confidence in the validity of conclusions. With uncontrolled pretest/posttest designs, there is the possibility that changes in smoking behavior and attitudes are confounded by outside influences. Worksites, for example, may have concurrent smoking cessation programs that can affect attitudes and behavior. Populationwide trends in smoking behavior are another source of confounding. In practice, random assignment of whole populations will rarely be feasible, since researchers are rarely in a position to “assign” the intervention and must rely on natural experiments. Quasi-experimental designs, which include natural comparison groups, are the best alternative. Identifying and accessing such appropriate comparison populations may be difficult in practice.

Either longitudinal or cross-sectional sampling can be employed. Longitudinal designs, in which the same individuals are interviewed at two or more points in time, provide the best measure of changes in outcome measures, but depend on high rates of followup, which may be practically difficult. Furthermore, individuals’ behavior or attitudes may be influenced by repeated assessments in such studies. On the other hand, when attitudes and behavior are evaluated by repeated assessments of independently chosen cross-sectional samples, the possibility exists that smokers and nonsmokers will enter or leave the population at different rates as a consequence of smoking restrictions. Turnover needs to be followed to assure that changes in behavior or attitudes are a result of changes in individual behavior and not changes in the composition of the population.

Onetime comparisons of populations with and without policies can provide suggestive but not conclusive data about impact. The validity of differences detected in attitudes and behavior is dependent on the degree of similarity between the policy group and the control group. Uncontrolled one-time assessments done before or after policy adoption do not permit conclusions about the policy effects, although they may provide hypotheses for further work. Postimplementation surveys of a population can, however, provide useful information about the degree of policy approval, awareness, compliance, and enforcement.

Assessment of the impact of legislation on smoking behavior is more difficult because the unit of study is larger and more diverse.



Consequently, detailed behavioral or attitudinal data and repeated assessments are more difficult to obtain. Evaluations are often limited to analyses of aggregate measures such as smoking prevalence and tobacco consumption, which are collected for other purposes. This approach does not control for potentially confounding influences on tobacco use or smoking behavior, such as price fluctuations. Identifying and assessing control groups not subject to smoking legislation or regulation can strengthen the confidence in conclusions for the same reasons as above, but is often difficult to achieve in practice.

### *Assessing the Effects of Smoking Policies*

Ideally, *air quality* should be measured objectively, but current technology for measuring the concentration of tobacco smoke in indoor air is expensive and cumbersome. There is also uncertainty about which constituent of smoke is best to measure (See chapters 3 and 4 of this volume). Air quality can also be assessed subjectively. Ratings made by occupants of smoke-free areas can be compared with those of a control area or to ratings made prior to the ban. Measurement of an individual nonsmoker's actual exposure to secondhand smoke, using biochemical measures, is not a specific measure of the concentration of this smoke in a single area because an individual may have other sources of smoke exposure. Such measures might be useful for assessing the concentration of smoke in areas, like the worksite, that represent a primary source of exposure. They cannot be used to measure air quality in other places, like an auditorium, where an individual spends only a few hours.

Many markers of *smoking behavior* need to be examined in order to understand the multiple effects of smoking restrictions on behavior. In a defined population, a new policy may increase smokers' motivation to quit, confidence in their ability to quit, or the number, duration, and success of quit attempts. It may also reduce cigarette consumption among continuing smokers. Workplace policies may have different impacts on cigarette consumption at work and outside work. These variables should be separately assessed. As in other research in smoking behavior, biochemical verification of self-reported smoking status is desirable.

Public *knowledge* about the health risks of involuntary smoking and *attitudes* about smoking can be assessed by surveys. Data on *social norms* can be construed from survey items such as those measuring the social acceptability of smoking in public places or in the presence of nonsmokers, the rights of nonsmokers to smoke-free air, the perceived prevalence of smoking in the environment, and the perceived social support for cessation or nonsmoking.

The adequacy of a policy's *implementation* can be assessed by surveys that measure individuals' knowledge and compliance with a

policy. The degree of noncompliance and enforcement can also be assessed by observations of behavior in public places subject to smoking restrictions.

## **Review of Current Evidence on Impact**

### *Workplace Smoking Policies*

In 1982, Orleans and Shipley concluded that the evaluation of worksite smoking policies was limited to a few public opinion polls. Since then, many policies have been adopted, but evaluation remains rare. Most common are baseline surveys done by companies considering smoking policies. The best surveys utilize random or probability samples and achieve high rates of completion; they provide useful onetime data on attitudes and behavior prior to policy implementation. Unfortunately, few companies adopting smoking policies have done postimplementation surveys to assess impact. To date, the best evaluations of worksite smoking policies have been done in the health care setting. There are two controlled and two uncontrolled studies assessing the effects on employees of adopting a smoking policy for a hospital (Rigotti et al. 1986; Biener et al. 1986; Andrews 1983; Rosenstock et al. 1986).

One uncontrolled study was reported by Andrews (1983). He described the process by which the New England Deaconess Hospital in Boston adopted a restrictive smoking policy in 1977. Patients and employees were surveyed prior to the policy. Employees were surveyed again 20 months after the policy took effect. The survey method and response rate were not specified; presumably it was not a random sample. Policy approval and smoking behavior were assessed.

The second uncontrolled study (Rosenstock et al. 1986) evaluated the impact of a near-total smoking ban adopted in April 1984 by the Group Health Cooperative of Puget Sound, Washington, the fourth largest health maintenance organization in the Nation. Four months after the policy was adopted, they surveyed a systematic probability sample of 687 employees, assessing smoking behavior, attitudes toward the policy, and its effect on work performance. Employees were asked retrospectively about attitudes and behavior prior to the policy. The response rate was 65 percent.

The two controlled studies of the impact of adopting a restrictive hospital smoking policy are similar in design. Both involve prepolicy and postpolicy measurements of intervention and control groups and assess similar outcomes. Rigotti and colleagues (1986) studied the impact of a total ban on smoking adopted in November 1984 by the pediatric service at Massachusetts General Hospital in Boston. All nurses employed by the service were surveyed at baseline and at 4 and 12 months. Nurses working on the hospital's medical service, where no policy change occurred, were surveyed concurrently as

controls. Response rates to the surveys ranged from 55 to 75 percent; the prevalence of smoking among respondents and nonrespondents did not differ. Surveys assessed smoking behavior, attitudes about smoking, and perceived air quality in both groups. The pediatric nurses answered additional questions about approval, compliance, and awareness of the policy. Employment records were reviewed to assess employee turnover before and after the policy.

Biener and colleagues (1986) studied employees at two Providence, Rhode Island, hospitals where self-help smoking cessation programs were being introduced. At one, the Miriam Hospital, there was a concurrent change in smoking policy. Smoking was prohibited hospitalwide except in three locations as of August 1985. Separate random probability samples of 85 employees at each hospital were surveyed by telephone at baseline (2 to 4 weeks before the policy) and at 1, 6, and 12 months after the policy. Data were collected in both hospitals on smoking behavior, attitudes about smoking, and air quality. Information on policy awareness, compliance, and approval was obtained at the intervention hospital.

Results of these studies are included in the subsequent sections, which address the outcomes of workplace smoking policies.

### *Policy Implementation*

According to case reports, organizations that have adopted smoking control policies generally develop careful plans to introduce the policy, but rarely evaluate how effectively the policy has been implemented. The findings of Rosenstock and colleagues (1986) indicate that even careful implementation plans may fall short of their goals. In their survey of the Group Health Cooperative employees, only half of the respondents knew of the existence of the advisory group whose role was to provide information to employees. Only 36 percent of the smokers and 76 percent of the nonsmokers felt that they had had an adequate opportunity to express their views. Not all smokers knew that the decision to prohibit smoking was an irrevocable one.

Rigotti and colleagues (1986) found that awareness of the smoking ban on the pediatric service was high; at 4- and 12-month followups, over 90 percent of employees knew where smoking was not permitted. Employees noted smoky air or smoking in restricted areas on approximately 20 percent of days worked. Two-thirds of the employees who smoked admitted at least one personal episode of noncompliance during the year after the policy took effect. Although nonsmokers perceived themselves to be more assertive in enforcing smoking rules after the smoking ban, many were reluctant to confront a smoker, especially if the smoker was a coworker.

Biener and colleagues (1986) found a similar high level of policy awareness and better compliance among the employees of Miriam

Hospital in Providence. Six months after the adoption of a policy prohibiting smoking in all but three areas, 95 percent of the employees were aware of the policy and half had noted no evidence of noncompliance. There was no evidence that smokers perceived more pressure to abstain in the form of increased assertiveness by nonsmokers; the policy may have reduced the need for assertive behavior. Rigotti and colleagues (1986) reported that nurses in the control group described themselves as having to be more assertive about asking people not to smoke than nurses in the policy group.

Dawley and colleagues (Dawley et al. 1980; Dawley, Carrol et al. 1981; Dawley, Morrison et al. 1981; Dawley and Baldwin 1983; Dawley and Burton 1985) addressed the question of compliance with smoking restrictions at the New Orleans Veterans' Administration Medical Center. Their technique was to unobtrusively observe the smoking behavior of individuals occupying areas designated as smoking or no-smoking. In a series of 10-minute periods, an observer noted the proportion of people smoking among all individuals occupying a no-smoking area, which served as the measure of noncompliance. Posting no-smoking signs in a hospital lobby reduced the prevalence of smoking to one-third of its previous level (from 29 percent to 5 to 11 percent,  $p < 0.01$ ). There was a nonsignificant trend for better compliance with positively worded signs (e.g., "Please do not smoke") compared with negatively worded signs (e.g., "No smoking-Offenders subject to fine") (Dawley, Morrison et al. 1981). Posting signs designating a no-smoking area in a cafeteria resulted in a similar decline in smoking prevalence in the area. The combination of signs and enforcement (polite reminders from staff to noncompliant patients) achieved greater reductions in smoking prevalence than were achieved with signs alone; however, the incremental value of enforcement was not directly assessed in the study (Dawley and Baldwin 1983). Following a change to a more restrictive smoking policy (smoking prohibited except in designated areas, with provisions for enforcement), the noncompliance rate dropped to under 2 percent (Dawley and Burton 1985). Another study demonstrated that smoking models reduce compliance with smoking restrictions. The noncompliance rate doubled when a smoker was experimentally introduced into the no-smoking area (Dawley, Carrol et al. 1981).

These studies indicate that there has been good employee compliance with smoking policies in health care facilities, even though there may be some reluctance by employees to enforce restrictions. The implementation of smoking policies in other types of worksites has not been systematically evaluated. Descriptions of the adoption of policies in a number of worksites do not report major problems with compliance (BNA 1986).

### *Air Quality*

Three studies assessed air quality before and after hospitals adopted restrictive smoking policies. Both Rigotti and colleagues (1986) and Biener and colleagues (1986) used a subjective measure, the frequency that an employee was bothered by smoke at work. In the Rigotti group's study, perceived air quality was similar in the intervention group and the control group at baseline. It improved significantly at 4 and 12-month followup on floors where smoking was banned and did not change on control floors. At 12 months, 79 percent of the nurses on floors with the smoking ban reported noticing less smoke, and none noted an increase; in contrast, 87 percent of control nurses noted no change in air quality. Biener and colleagues found a similar pattern; there was a significant difference in employee assessments of perceived air quality between hospitals with and hospitals without a smoking policy.

At the New England Baptist Hospital in Boston, the distribution of respiratory particulates (RSP) was measured before and 1 year after the adoption of a restrictive smoking policy (Bearg 1984). At followup, RSP were lower in many hospital areas where smoking was restricted, most notably in patient care areas and an employee lounge, but remained high in the cafeteria. Because same-day measurements of outside air revealed low ambient RSP levels, Bearg concluded that the high levels inside the building were attributable to smoking rather than air pollution.

These studies suggest that hospital policies result in less smoking in work areas designated no-smoking, but that no-smoking areas in cafeterias may provide little protection from secondhand smoke exposure because of ventilation problems and the increased smoking in the few smoking-permitted areas.

### *Policy Approval*

A number of private and public sector organizations considering a smoking policy have assessed employee attitudes prior to implementation. Pacific Northwest Bell, Pacific Telephone, New England Telephone, Texas Instruments, and StrideRite are among businesses that have done employee surveys (R. Addison, personal communication, July 21, 1986; Pacific Telephone 1983; Robert Finnegan Associates 1985; BNA 1986; Ziady 1986). Public sector employers include the Hawaii and Massachusetts Departments of Public Health (Marvit et al. 1980; Naimark 1986). The findings of these surveys are remarkably similar. Over 60 percent of employees report being at least occasionally bothered by smoke at work (Robert Finnegan Associates 1985; Pacific Telephone 1983; Ziady 1986; R. Addison, personal communication, July 21, 1986). There is broad support for adopting a smoking policy, even among smokers (Pacific

Telephone 1983; Robert Finnegan Associates 1985; Marvit et al. 1980, Sorensen and Pechacek 1986).

Assessment of employees' approval of policies after implementation have been done primarily in health care settings. High rates of approval are the uniform finding, with smoker-nonsmoker differences. In the Rigotti group's study (1986), the overall approval of a smoking ban increased from 72 percent at baseline to 85 percent at 4 and 12 months. Most of the increase was a result of the improved opinions of the smokers. Only 35 percent of smokers supported the ban at baseline, but by 1 year this nearly doubled, to 67 percent. High rates of policy approval at followup by both smokers and nonsmokers were also reported by Biener and colleagues (1986) (69 percent smokers, 89 percent nonsmokers) and Andrews (1983) (83 percent smokers, 93 percent nonsmokers). Rosenstock and colleagues (1986) found high overall policy approval at 4 months (85 percent), but less support by smokers (36 percent). These data indicate that smoking policies in hospitals are well accepted by employees, and that smokers' initial reluctance diminishes as they gain experience with the policy. Generalization from these studies is limited by the nature of the population studied-health care workers. Followup surveys in industrial setting would be valuable.

Sorensen and Pechacek (1986) have examined correlates of smokers' approval of smoking restrictions. They surveyed smokers in eight Minnesota businesses without smoking policies, sampling a broad cross-section of employees, from blue-collar workers to professionals. Over three-fourths of the 378 respondents agreed that employers should establish separate smoking and no-smoking areas at work. Smokers who favored worksite smoking policies had greater interest in quitting and more concern for the health risks of smoking and saw their social environment as supportive of nonsmoking, as measured by a higher perceived coworker support for quitting and a greater perceived prevalence of nonsmokers.

### *Smoking Behavior*

Many smokers anticipate that their smoking behavior will change after a smoking policy is adopted at their worksite. At Pacific Telephone, 51 percent of the smokers expected that the policy would lead them to alter their smoking habits, either by cutting down (38 percent) or quitting (13 percent) (Pacific Telephone 1983). In the Rigotti group's study (1986) of a hospital smoking ban, 72 percent of the smokers expected the policy to change their habits. All expected to smoke less at work and most to smoke less outside work.

A successfully implemented smoking policy will provide a smoker fewer opportunities to smoke. Of course, the smoker may compensate for reduced smoking opportunities at work by more intense smoking (number of cigarettes, inhalation, puff topography) on

breaks or with increased smoking outside work to maintain a constant overall daily consumption. This is consistent with the addictive model of smoking behavior (Gritz 1980; US DHEW 1979). But if compensation does not occur, the smoker's lower rate at work would reduce overall daily smoking. Studies at present differ on which of these alternatives occurs. The results reported below are entirely self-reports; thus, they suffer from a lack of biochemical validation of smoking status as well as from an inability to detect compensation through altered smoking topography (US DHHS 1985c).

Compensation did not appear to occur in the Biener group's hospital study (1986). Among smokers in the "policy" hospital, the number of cigarettes smoked daily while at work fell from a baseline of 8.1 to 4.5 at 1 month and 4.0 at 6 months. Over the same time period, the at-work cigarette consumption in the control hospital rose slightly (7.6 to 8.1 cigarettes). The difference in smoking rates between baseline and 1-month followup in the "policy" group was significant ( $p=0.02$ ). At 6 months, the difference in smoking rates at work between hospitals (8.2 vs. 4.0) was also significant ( $p=0.01$ ). There were no significant changes in the smoking rate outside work. Smokers in the hospital study by Rosenstock and colleagues (1986) reported smoking a mean of 15.6 cigarettes daily, 2 fewer than before the policy ( $p<0.003$ ). These data suggest that smokers did not compensate for reduced smoking opportunities at work by increasing their smoking at home.

Rigotti and colleagues (1986) found indirect evidence for compensation. The nurses' self-reported cigarette consumption at work decreased in the policy group, but did not change in the control group. However, overall cigarette consumption in the policy group did not change. Both the degree of change and the number of smokers in the study were small.

In an earlier study, Meade and Wald (1977) compared the smoking behavior of three British employee groups. Smoking was prohibited at work for two groups. Smokers who were allowed to smoke at work had a somewhat higher self-reported average daily cigarette consumption. The maximum rate of smoking occurred at work in the afternoon, but for workers prohibited from smoking at work, the maximum rate occurred in the interval between leaving work and retiring at night.

There has been much speculation that smoking policies will increase the smoker's motivation and success in quitting. In the study by Biener and colleagues (1986), the percentage of smokers considering quitting in the next 6 months increased from 71 percent at baseline to 91 percent at followup, but there was no change in motivation in the control hospital group. Two-thirds of the smokers in Rosenstock and colleagues' uncontrolled study (1986) had a

definite desire to quit. However, Rigotti and colleagues (1986) found no difference in the motivation of nurses between the control group and the policy group.

Smokers' use of worksite smoking cessation programs before and after policies go into effect have been used as an index of their motivation to quit smoking. The results are mixed. In the 6 months after Pacific Northwest Bell adopted a smoking ban in October 1985, 1,044 employees, representing 25 percent of all smokers, enrolled in programs reimbursed by the company. This compared with 331 who attended free onsite programs in the previous 26 months. The cost to the company per smoker was \$142 (Martin 1986; K. Rowland, memorandum for Len Beil, April 25, 1986). At Texas Instruments (R. Addison, personal communication, July 21, 1986), 486 smokers enrolled in cessation classes within the first year after the announcement of a smoking policy; this compares with only 11 in 1982, the last year for which statistics were kept. In both cases, this enthusiastic response may in part be due to the employers' new willingness to pay for the classes, as well as to the incentive provided by a new policy. For example, only 8 of 148 smokers at the New England Deaconess Hospital who said they were interested in a smoking cessation program on their own time actually showed up (Andrews 1983). Even company sponsorship is not a guarantee of popularity. At the Group Health Cooperative, only two smokers aware of the company-sponsored cessation programs had participated within 4 months of policy adoption (Rosenstock et al. 1986). The signup rate for worksite-based self-help smoking cessation programs was no greater at a Rhode Island hospital with a new smoking policy than at one without (Biener et al. 1986).

It is not known whether the cessation rate of smokers who enroll in worksite programs is affected by the presence of a smoking policy at the worksite. Only uncontrolled studies with self-report measures are currently available. At Texas Instruments (R. Addison, personal communication, July 21, 1986), 34 percent of 354 employees enrolled in the first round of company-sponsored cessation classes quit smoking by the end of the program; in the second round of classes, 17 percent of 132 enrollees quit. At Pacific Northwest Bell, 44 percent of 639 respondents quit smoking in a survey of the 1,200 participants in a company-sponsored program. If nonrespondents are included as smokers, the cessation rate was 23 percent (Shannon 1986).

There is as yet no conclusive evidence that smoking policies are associated with increases in smoking cessation attempts or reductions in smoking prevalence. All reports are based on self-reported smoking behavior. There are anecdotal reports of smokers quitting in case reports of company policies (StrideRite, cited in BNA 1986) and in uncontrolled surveys (Rosenstock et al. 1986; Andrews 1983). Supporting evidence comes from the New England Deaconess



Hospital, where a two-part survey, before and 20 months after the adoption of a strict smoking policy, demonstrated a reduction in the prevalence of smoking among employees from 32 to 24 percent, along with an increase in the prevalence of ex-smokers (27 to 34 percent) (Andrews 1983). However, methodologic problems prevent an unequivocal conclusion. The first survey included both employees and patients, but the followup covered only employees; smoking rates for employees only are not provided. The survey method was not specified, but it did not appear to be a probability sample, thereby limiting generalizability of the finding to the entire group. Finally, because the same group of employees was not surveyed at followup, an alternate interpretation for the change in smoking prevalence is that the policy influenced employee turnover rates so that smokers left and were replaced by ex-smokers. The study did not assess employee turnover.

Controlled studies by Biener and colleagues (1986) and Rigotti and colleagues (1986) did not detect an increase in smoking cessation by employees of hospitals that adopted smoking policies. In the study by Rigotti and colleagues, nurses in the policy group did not differ from controls in their motivation to quit, or their expectation of doing so, or in the number or success of quit attempts. The prevalence of smoking in the policy group and in the control group was similar at baseline and did not change in the year after policy adoption. Similarly, employees in a Rhode Island hospital with a smoking policy were no more likely to try to quit or to succeed in quitting than were employees in a control hospital (Biener et al. 1986). The number of smokers in these two studies was small, and it is possible that the studies lacked adequate power to detect changes in behavior. Followup periods of greater than 1 year may also be required.

#### *Attitudes About Smoking*

There has been little assessment of the impact of worksite smoking policies on attitudes about smoking. The two controlled studies of hospital smoking policies assessed attitudes about the health risks of smoking and about involuntary smoking (Biener et al. 1986; Rigotti et al. 1986). There was no significant change in the smokers' beliefs about the health risks of smoking or about environmental tobacco smoke exposure.

#### *Management Issues*

There is only sketchy evidence about the impact of worksite smoking policies on absenteeism, health care costs, productivity, or employee turnover. No systematic analysis of economic impact has been done. There is an anecdotal report of cost saving by the Merle

Norman Cosmetics Company, which reported lower absenteeism and housekeeping costs and increased productivity in the year after it adopted a ban on smoking (ALA of San Diego 1984). In the 6 months after Pacific Northwest Bell adopted a total smoking ban, no employees left because of it (Martin 1986). Rigotti and colleagues (1986) reported no change in employee turnover in the year after the adoption of a hospital smoking ban. Rosenstock and colleagues (1986) found that self-reported work performance was unaffected in 75 percent of employees and improved in 21 percent. Costs involved in implementing a smoking policy have not been systematically measured, but appear from case reports to have been small (BNA 1986). Adverse impacts of worksite smoking policies have not been reported.

#### *Legislation Restricting Smoking in Public Places*

Legislation restricting smoking in public places has been less well evaluated than worksite smoking policies. Opinion polls in States and communities that have passed smoking control regulations provide some information on attitudes about smoking and smoking policies. There are no controlled studies of the impact of legislation on smoking behavior or attitudes.

#### *Policy Implementation and Enforcement*

Evaluation of the implementation of State or local smoking control statutes has been limited. In general, enforcement is delegated to a State or local agency, such as the department of public health. Enforcement is handled passively rather than actively; the responsible agency responds to complaints, but does not actively monitor policy compliance by surveying worksites, restaurants, or public places. Nonsmokers rights groups and individual activists are a major force for informing the public and aiding enforcement by bringing complaints (Sandell 1984).

The experience of cities like San Francisco and States like Minnesota contradicts tobacco industry estimates of the expense and intrusiveness required to enforce a smoking law (Martin 1986, New York Times 4/13/86; Sandell 1984). In the first year after San Francisco implemented a strict workplace smoking law in March 1984, only 124 complaints were processed and 1 citation was issued; there were no legal actions. No new employees were hired and no additional funds were required for enforcement. Policy enforcement required progressively less of a single employee's time over a 1-year period (Martin 1986). Minnesota enforces its 1975 State smoking law in a fashion similar to San Francisco's. State public health department officials estimate that they handle 1,200 to 1,400 complaints per year, with costs of enforcement estimated to be under \$5,000 per

year (Sandell 1984). A survey of 10 California cities with workplace smoking laws documented that complaint rates were low and enforcement of these laws was a low priority for all city governments. Officials indicated that they would spend any additional funds available for enforcement on a public education campaign to increase awareness of the law rather than initiate active surveillance (Linson 1986).

Because active monitoring of policy compliance is not done, a low complaint rate is often taken as evidence of a high compliance rate. Data from Minnesota suggest that this is not always true. In 1976, 1 year after the comprehensive Clean Indoor Air Act was enacted, 43 percent of respondents to a statewide poll felt that the law was not very effective in reducing smoking in public places; 38 percent found it somewhat effective and 12 percent, very effective (Minneapolis Tribune 1976). Six years after the law took effect, a survey of Minnesota businesses with 200 or more employees documented that only 46 percent of businesses had such a policy. Restaurants, however, had nearly uniformly conformed to the law within a year of implementation (Sandell 1984). A statewide opinion poll in 1978 demonstrated that over 70 percent of both smokers and nonsmokers felt that the Clean Indoor Air Act should be strictly enforced (Minneapolis Tribune 1978). Two years later, Minnesotans were of mixed opinion about the law's enforcement: fewer than half (43 percent) considered it very well enforced, 42 percent felt it was not so well enforced, and 10 percent said it was not enforced at all (Minneapolis Tribune 1980).

Randolph (1982) studied factors associated with compliance and enforcement of local ordinances regulating smoking. She assessed the implementation of a recently enacted San Rafael, California, smoking ordinance by interviewing proprietors of randomly selected businesses. Less than 1 year after the ordinance went into effect, 68 percent of 25 proprietors were aware of the policy, but only 44 percent of 30 businesses had complied with the requirement to post no-smoking signs. The major variable associated with compliance by businessmen was the type of business; restaurants, retail food stores, drug stores, banks, and movie theaters were generally posting signs as required, but department stores and small retail stores were not. City residents were less well informed. Fewer than half (45 percent) of 200 randomly selected residents surveyed by telephone were aware of the ordinance, and only 11 percent could describe its provisions.

Randolph's study (1982) of implementation also included a 1980 telephone survey of 600 randomly selected residents of three northern California cities, two with smoking ordinances and one without. Smokers were classified as compliers or noncompliers according to whether they refrained from smoking in supermarkets,

which was required by State law. Characteristics of smokers who complied were (1) lower daily cigarette consumption, (2) less perceived need to smoke, (3) greater perception of others' disapproval for tobacco smoking in public, (4) and greater support for policies restricting smoking in public places. Smokers' perception of pressures to refrain from smoking in public, awareness of the presence of a local smoking law, and the duration of the ordinance were not associated with compliance. Enforcement of smoking laws was studied in nonsmokers. The best predictor of enforcement behavior was a nonsmoker's degree of annoyance with tobacco smoke. Other characteristics associated with enforcement behavior were more negative attitudes about smoking in public places, greater intolerance of noncompliance, and higher educational level.

### *Policy Approval*

National and regional polls have surveyed public opinion about where smoking should be restricted or banned. Regional polls have often been taken when legislation is being considered. There are little data about public opinion on legislation after its enactment.

Nationwide public opinion about smoking in public places was assessed by Roper polls in 1976 and 1978 (1978), two Gallup polls (1978, 1983), and the Harris Prevention Index 85 (Harris 1985). The Roper polls asked separate questions about preferences for a smoking restriction or a total ban; the Gallup and Harris polls offered a choice between the two in the same question. In both Roper polls, a majority of respondents favored restricting smoking in all places mentioned: transportation vehicles (airplanes, buses, and trains), restaurants, workplaces, and indoor arenas. By 1978 three-fourths of the respondents favored restrictions in all places except the worksite. Total smoking bans were less popular but still the choice of at least one-fourth of the respondents.

The 1983 Gallup poll documented increased public support for smoking restrictions, particularly in restaurants. More than 80 percent of smokers and 90 percent of nonsmokers favored either banning or restricting smoking in airplanes, buses, and trains and restaurants. Over half of both smokers and nonsmokers favored restrictions in motels and at the worksite. Although bans were less popular than restrictions, they were twice as popular with nonsmokers as with smokers. In 1985, 80 percent of the respondents to the Harris poll supported restrictions or bans in public places in general. Regional polls generally support the conclusions of nationwide surveys.

Minnesota is one State where public opinion of existing legislation has been measured. Five years after enactment, public opinion of Minnesota's 1975 Clean Indoor Air Act remained high. Ninety-two percent of the 1,200 respondents to a statewide poll favored the act,

including 87 percent of heavy smokers (two packs per day) and a larger fraction of lighter smokers (Minneapolis Tribune 1980).

During the first year of the San Rafael, California, smoking ordinance, nearly 70 percent of 200 randomly selected residents agreed that there should be laws about smoking in public places and 77 percent said they would have voted for the ordinance had they had the opportunity (Randolph 1982). The reaction of local businesses was less favorable. Over half (52 percent) did not like the ordinance, but only 41 percent favored rescinding it. The most common reason for support was concern for smoking-related damage to property. Concerns about invading personal rights and fear of losing business were the major reasons for opposition.

### *Attitudes and Social Norms*

It has been suggested that smoking restrictions will alter public attitudes and norms about smoking behavior. There are few data addressing this hypothesis.

Randolph (1982) reported on attitudinal differences between residents of California communities with and without smoking ordinances. Smokers in two cities with laws had more negative attitudes about smoking in public places and were more likely to feel that there should be laws regarding tobacco smoking in public. However, there was no difference in smokers' perceptions of social pressures to refrain from smoking. Nonsmokers in cities with laws were more likely to believe that tobacco smoke should be regulated in public, but they were no more annoyed by tobacco smoke, intolerant of noncompliance, or disapproving of smoking in public places than residents of the city without a law. Although residents of communities with and without smoking ordinances did not differ in their personal support of smoking laws, residents of communities with laws perceived greater support for these laws by other residents of their communities. This cross-sectional study cannot differentiate whether these attitudinal variations were a cause or consequence of differences in community smoking ordinances.

Data from opinion polls demonstrate that negative attitudes about smoking generally preceded rather than followed legislation to restrict smoking in public places. The four Adult Use of Tobacco Surveys, a series of nationwide surveys conducted between 1964 and 1975, measured attitudes in the decade after the health hazards of smoking were first widely appreciated (US DHEW 1969, 1973, 1976). As early as the first survey in 1964, a majority of nonsmokers agreed with these statements: "It is annoying to be near a person who is smoking cigarettes" and "Smoking should be allowed in fewer places than it is now." By 1970, a majority of all respondents agreed with these statements. By 1975, a majority of smokers agreed with the idea of further restricting smoking, suggesting that there was wide

public support for restricting smoking well before the first comprehensive Clean Indoor Air Act was passed in Minnesota in 1975. As early as 1973, 73 percent of the nonsmokers in a Minnesota poll felt that they had the right to a smoke-free environment, and 65 percent wanted to ask others not to smoke (Minneapolis Tribune 1973). More recent opinion polls document that negative attitudes about smoking in public continue to grow. In a 1985 Gallup poll, 75 percent of the respondents (including 62 percent of the smokers) felt that smokers should refrain from smoking in the presence of nonsmokers.

However, nonsmokers' attitudes do not translate directly into action. A smaller proportion of nonsmokers are willing to confront a smoker whose smoke is bothersome. In three successive Roper polls between 1974 and 1978, fewer than 10 percent of the nonsmokers indicated that they would ask an individual smoking indoors to stop (Roper 1978). Only 32 percent of the nonsmokers in a 1974 Minnesota poll would complain when bothered by another person's smoking, although an additional 31 percent would take nonconfrontational action such as moving away or opening windows (Minneapolis Tribune 1974). These data suggest that in the mid-1970s, despite strong preferences, many nonsmokers did not perceive that asking a smoker to stop was socially sanctioned behavior.

Smokers, on the other hand, report an awareness of nonsmokers' concerns and a willingness to comply with restrictions. Over 90 percent of the smokers in a 1981 Iowa poll (Des Moines Register 1981) extinguished tobacco when they saw a no-smoking sign. Sixty percent of the smokers in a 1973 Minnesota poll (Minneapolis Tribune 1973) had at least some misgivings about smoking in the presence of nonsmokers, and 90 percent would not have been offended if asked not to smoke. Only 29 to 36 percent of smokers in three Roper polls (1974-1978) lit a cigarette without looking around, asking others, or refraining from smoking (Roper 1978).

There may be, therefore, an interaction between attitudes and policy development. These survey data suggest that attitudes about smoking in public preceded and may have contributed to the development of a public policy (Breslow 1982). At the same time, publicity surrounding campaigns for legislation may increase public awareness of an issue such as the hazards of involuntary smoking and therefore contribute to further changing attitudes.

### *Smoking Behavior*

The impact of legislation on smoking behavior has received little formal attention. There are no controlled studies in which smoking behavior has been tracked over time in the States or communities that have enacted smoking legislation. In Randolph's one-time assessment (1982) of smoking behavior in California communities with and without smoking control ordinances, there was no differ-

ence in smoking prevalence or mean daily cigarette consumption between the residents of a city with a recent ordinance and one without. A lower prevalence of smoking in one community with a longstanding ordinance was probably explained by demographic differences between that community and the other areas.

Uncontrolled reports of declining smoking prevalence or cigarette consumption in a State or community with a smoking law cannot establish a causal relationship. This was particularly the case during the 1970s, when both smoking prevalence and per capita cigarette consumption were declining nationally. Warner (1981a; Warner and Murt 1982) conducted a series of analyses of this decline. In separate analyses, he estimated the levels of smoking prevalence and cigarette consumption that would have been achieved if previous trends in these indicators had continued unabated through the 1960s and 1970s. Cigarette consumption in 1978, for example, would have been 36 to 41 percent higher had previous patterns continued. He ascribed the difference between observed and modeled values to the impact of the so-called antismoking campaign, defined as the combination of public events, legislative activity, and Federal regulations that affected cigarette price, counter-advertising, and the circumstances in which smoking was allowed.

To assess the relative contributions of components of the anti-smoking campaign to the decline in adult per capita cigarette consumption, Warner (1981a) developed a multivariate analysis that included independent variables to account for price fluctuations, adverse publicity about smoking, antismoking activities, and the effectiveness of the nonsmokers' rights movement. The percentage of adults residing in States restricting smoking in public places was used as an index of the strength of the nonsmokers' rights movement. This variable was strongly associated ( $p < 0.0001$ ) with decreases in consumption from 1973 to 1978.

In Warner's view, the temporal relationship between the growth in legislation restricting smoking in public places and the decline in cigarette consumption is so close that a causal relationship is unlikely. He attributed the decline in consumption to the changes in attitudes and social norms about smoking that were an earlier consequence of the entire antismoking campaign. He regarded the legislation as another reflection of changing social norms rather than the creator of them (Warner 1981b).

### Recommendations for Research

Policies restricting the circumstances in which smoking is permitted have been adopted by a broad range of institutions, mostly in the last decade. Smoking regulations affect the daily lives of a large and growing number of Americans. Consequently, these policies are of

interest to many individuals and groups. For instance, public health officials are concerned about the health effects of both active and involuntary smoking; they are most interested in whether these policies actually reduce a population's exposure to environmental tobacco smoke and whether they will alter the prevalence of smoking. Behavioral scientists, primarily concerned with smoking behavior and attitudes, are chiefly interested in how smoking policies alter these variables and how this knowledge can increase our understanding of the dynamics of smoking behavior. Businesses, unions, and government policymakers have different perspectives. They are faced with deciding whether to adopt smoking restrictions and how to improve the implementation and acceptability of existing ones. Information about the determinants of policy approval and compliance will be of most interest to them. Businesses may also be concerned about the economic and managerial impacts of smoking restrictions.

Understanding the effect of policies on smoking behavior is of widest interest and deserves attention. Policies may affect the natural history of smoking behavior at several points, and detailed behavioral information should be collected to distinguish among effects on rates of initiation, cessation, and relapse. Studying how smokers cope with enforced abstinence may provide additional insights into the maintenance of smoking behavior. Detailed studies of the influence of policy may advance the state of knowledge about the determinants of smoking behavior in general. The relationship between interventions at the social and individual levels is also of interest. Researchers should consider whether the effectiveness of individual treatment is enhanced by the presence of a smoking policy, and whether the impact of a policy is enhanced by the availability of individual treatment. Concurrent collection of information on attitudes about smoking may help to clarify the nature of the relationships among attitudes, smoking behavior, and smoking policies.

In addition to considering a variety of outcome measures, researchers should address the determinants of these outcomes. Characteristics of the policy, the institution, and the population should be considered. The components of a smoking policy and its implementation (such as restrictiveness, degree of advance notice, degree of support for the policy by affected groups, access to smoking cessation programs) that contribute to its effect--be it on behavior, attitudes, air quality, acceptability, or compliance--have generally not been analyzed. Because smoking policies vary widely in their provisions and implementation, they cannot be evaluated as a unitary intervention; i.e., better operationalization of "policy" interventions is needed. The relative strength of policy components on each outcome measure should be assessed in order to make informed



policy recommendations. For example, the degree of protection from involuntary smoke exposure afforded by policies of different degrees of stringency is not empirically known. To acquire this knowledge, researchers will need to develop and validate measures of such concepts as restrictiveness. The index described in the appendix to this chapter is a preliminary attempt to do that. The components of a policy that are most powerful in reducing cigarette consumption, inducing cessation attempts, preventing relapse, or reducing smoking initiation need to be identified.

Similarly, the components of a policy associated with maximal acceptability and compliance have been addressed only cursorily. Dawley and colleagues (Dawley, Morrison et al. 1981; Dawley and Burton 1985), for example, have examined variables such as the wording of signs or the presence of active enforcement. Guidelines for the implementation of smoking policies have not been experimentally derived. Research could empirically support or refute recommendations on the basis of experience. Interventions such as the training of managers to handle implementation problems might then be developed to increase policy acceptability and compliance.

Different types of organizations have presented different climates for the adoption of smoking regulations. In assessing policy impact, there may also be substantial interactions between the policy and type of facility in which it is adopted. Even within a single type of facility, there may be considerable variability in social norms, social supports, and characteristics of the population using it. Sorensen and colleagues (1986) have pointed out these differences among worksites. Policy evaluations should consider these variables.

Because smoking policies represent a recent social phenomenon, there is at present relatively little information about their impact. New policies are being adopted at a growing rate, providing researchers with the opportunity to study natural experiments that, up to now, have largely gone unevaluated. The variety of potential outcomes, number of interested parties, and current lack of information make efforts to collect systematic data on new public and private sector smoking policies a high priority for research. Controlled studies are desirable and permit the firmest conclusions, but with the current knowledge base, even limited efforts may yield valuable information. Uncontrolled case studies, for example, can provide suggestive data and generate hypotheses for further testing. In some cases, data are already partially collected. For example, many businesses considering smoking policies survey employees at baseline, but few repeat the survey after policy adoption. At the aggregate level, it may be possible to estimate the impact of legislation on smoking prevalence or cigarette consumption by relating national survey data on smoking behavior to smoking restrictions in geographic areas.

## Conclusions

1. Beginning in the 1970s, an increasing number of public and private sector institutions have adopted policies to protect individuals from environmental tobacco smoke exposure by restricting the circumstances under which smoking is permitted.
2. Smoking in public places has been regulated primarily by government actions, which have occurred at Federal, State, and local levels. All but nine States have enacted laws regulating smoking in at least one public place. Since the mid-1970s, there has been an increase in the rate of enactment and in the comprehensiveness of State legislation. Local governments have enacted smoking ordinances at an increasing rate since 1980; more than 80 cities and counties have smoking laws in effect.
3. Smoking at the workplace is regulated by a combination of government action and private initiative. Legislation in 12 States regulates smoking by government employees, and 9 States and over 70 communities regulate smoking in the private sector workplace. Approximately 35 percent of businesses have adopted smoking policies. The increase in workplace smoking policies has been a trend of the 1980s.
4. Smoking policies may have multiple effects. In addition to reducing environmental tobacco smoke exposure, they may alter smoking behavior and public attitudes about tobacco use. Over time, this may contribute to a reduction of smoking in the United States. To the present, there has been relatively little systematic evaluation of policies restricting smoking in public places or at the workplace.
5. On the basis of case reports and a small number of systematic studies, it appears that workplace smoking policies improve air quality, are met with good compliance, and are well accepted by both smokers and nonsmokers. Policies appear to be followed by a decrease in smokers' cigarette consumption at work and an increase in enrollment in company-sponsored smoking cessation programs.
6. Laws restricting smoking in public places have been implemented with few problems and at little cost to State and local government. Their impact on smoking behavior and attitudes has not yet been evaluated.
7. Public opinion polls document strong and growing support for restricting or banning smoking in a wide range of public places. Changes in attitudes about smoking in public appear to have preceded legislation, but the interrelationship of smoking attitudes, behavior, and legislation are complex.

## **APPENDIX**

## APPENDIX

### **The Comprehensiveness Index of State Laws**

To permit comparisons over time, an index of the comprehensiveness of each State's smoking law was created. Laws were classified on the basis of the number and nature of places where smoking was restricted or prohibited. The overall principle was that stronger measures are those that reduce exposure to ETS to the greatest degree. More comprehensive laws were considered to be those that restrict smoking in a larger number of public places, extend to privately owned facilities, and cover places where individuals spend a large amount of time.

Laws regulating smoking in private worksites were considered to be the the most comprehensive, and States with such laws were assigned the extensive category. Because individuals spend more time at work than in any other place outside the home, worksite legislation has the potential for marked reductions in public exposure to involuntary smoking. Worksite laws also represent an extension of legislation to the private sector, considered a further evidence of their comprehensiveness. Nine States are categorized as having extensive restrictions; the average number of public places covered by their legislation was 11.0.

The next most stringent category, moderate, was assigned to States that regulated smoking in restaurants. Restaurants were chosen because they represent privately owned public places and because laws covering them have been controversial to enact. It was felt that States regulating restaurants but not the private workplace had moderately comprehensive restrictions. The 10 States in this category also regulated smoking in a large number of public places (9.5).

The last two categories, nominal and basic, were defined for States that did not regulate smoking in restaurants or in the private workplace. They differed in the number of public places covered. States restricting smoking in one to three public places were considered to have nominal restrictions. Those restricting smoking in four or more public places were classified as basic.

This number of public places covered by smoking restrictions increases with increasing comprehensiveness of categories.

<u>Category</u>	<u>Number of States</u>	<u>Mean number of public places covered</u>
Extensive	9	11.0
Moderate	10	9.5
Basic	15	6.6
Nominal	8	1.4
No policy	9	0

For the calculation of the comprehensiveness index, categories were weighted as follows:

<u>Category</u>	<u>Weight</u>
Extensive	1.00
Moderate	.75
Basic	.50
Nominal	.25
No policy	.00

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