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Surveillance of Work-Related Asthma in Selected U.S. States Using Surveillance Guidelines for State Health Departments — California, Massachusetts, Michigan, and New Jersey, 1993–1995

and

State Laws on Tobacco Control — United States, 1998

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*Abbreviations

ATSDR	Agency for Toxic Substances and Disease Registry
CIO	Centers/Institute/Offices
EPO	Epidemiology Program Office
IHPO	International Health Program Office
NCCDPHP	National Center for Chronic Disease Prevention and Health Promotion
NCEH	National Center for Environmental Health
NCEHIC	National Center for Environmental Health and Injury Control
NCID	National Center for Infectious Diseases
NCIPC	National Center for Injury Prevention and Control
NCPS	National Center for Prevention Services
NIOSH	National Institute for Occupational Safety and Health
NIP	National Immunization Program

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Surveillance of Work-Related Asthma in Selected U.S. States Using Surveillance Guidelines for State Health Departments — California, Massachusetts, Michigan, and New Jersey, 1993–1995

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Abstract

Problem/Condition: Cases of work-related asthma (WRA) are sentinel health events that indicate the need for preventive intervention. WRA includes new-onset asthma caused by workplace exposure to sensitizers or irritants and preexisting asthma exacerbated by workplace exposures.

Reporting Period: This report reviews cases of WRA identified by state health departments from January 1, 1993, through December 31, 1995, as well as follow-up investigations of cases and associated workplaces conducted through June 30, 1998.

Description of the Systems: State-based surveillance and intervention programs for WRA are conducted in California, Massachusetts, Michigan, and New Jersey as part of the Sentinel Event Notification Systems for Occupational Risks (SENSOR) cooperative agreement program, initiated by CDC's National Institute for Occupational Safety and Health (NIOSH).

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Results: From 1993 through 1995, a total of 1,101 cases of WRA were identified by SENSOR surveillance staff members in California, Massachusetts, Michigan, and New Jersey. Of these 1,101 cases, 19.1% were classified as work-aggravated asthma, and 80.9% were classified as new-onset asthma. Objective evidence substantiating asthma work-relatedness was documented in the medical records of 3.4% of WRA cases identified in the two states (Michigan and New Jersey) where medical records are routinely reviewed for this information. Indoor air pollutants, dusts, cleaning materials, lubricants (e.g., metalworking fluids), and diisocyanates were among the most frequently reported causes of WRA. In addition, a well-recognized cause of occupational asthma — natural rubber latex — was identified in a new setting, the health-care industry. The most common industries associated with WRA cases included transportation equipment manufacturing (19.3%), health services (14.2%), and educational services (8.7%). Air sampling for agents known to induce occupational asthma was performed in Michigan for comparison with established federal time-weighted average exposure limits. Sixteen (13.4%) of 119 workplaces tested had airborne concentrations exceeding NIOSH recommended exposure limits (RELs); 11 (9.1%) of 121 workplaces had concentrations exceeding permissible exposure limits (PELs) of the Michigan Occupational Safety and Health Act (MIOSHA) program.*

Interpretation: The surveillance data findings confirm well-recognized causes of asthma and have identified new putative causes (e.g., cleaning materials and metalworking fluids). Because the surveillance program depends on physicians' recognizing asthma work-relatedness and reporting diagnosed cases, the data are considered an underestimate of the magnitude of the WRA problem. The data also indicate that physicians are not commonly performing objective physiologic tests to substantiate a WRA diagnosis. Workplace findings suggest a need to evaluate existing exposure standards for specific agents known to induce occupational asthma (e.g., diisocyanates). Case-based surveillance can help improve the recognition, control, and prevention of WRA. The SENSOR model also provides a mechanism for workers and physicians to request workplace investigations aimed at primary prevention for other workers.

Public Health Action: NIOSH and state health department representatives are working to establish a long-term agenda for state-based surveillance of work-related conditions and hazards. The results from the SENSOR WRA programs described in this report support inclusion of WRA as a priority condition warranting surveillance at the state level.

INTRODUCTION

Asthma is a chronic inflammatory disease of the airways characterized by recurrent respiratory symptoms (e.g., wheezing, breathlessness, chest tightness, coughing) and variable airflow obstruction that is reversible either spontaneously or with treatment. The inflammatory process causes the airways to become hyperresponsive to various chemical, biologic, or physical stimuli. A diagnosis of work-related asthma (WRA) is

* Occupational Safety and Health Administration (OSHA) PELs and NIOSH RELs do not exist for all agents for which air sampling was performed. Thus, the number of workplaces where an OSHA PEL for a sampled substance existed was different than the number of workplaces where a NIOSH REL existed.

warranted when there is evidence of an association between the pattern of airways obstruction and workplace exposure to a precipitating factor.

With funding from CDC's National Institute for Occupational Safety and Health (NIOSH), WRA surveillance and prevention/intervention programs have been implemented in four states — California, Massachusetts, Michigan, and New Jersey. These programs use the Sentinel Event Notification Systems for Occupational Risks (SENSOR) model (*1*). The primary data source for all four states is physician reports. Surveillance staff members collect additional information related to each case-patient (e.g., detailed work and medical histories, including work-relatedness information), and they direct prevention and intervention activities toward individual workers, physicians, unions, and potentially hazardous workplaces. In 1987, SENSOR WRA programs were initiated in Massachusetts, Michigan, and New Jersey (the same year of the SENSOR program's inception), whereas California's program began in 1992. This report summarizes the WRA surveillance data collected in California from March 1, 1993, through December 31, 1995, and in Massachusetts, Michigan, and New Jersey from January 1, 1993, through December 31, 1995. Follow-up investigations of cases and associated workplaces were carried out through June 30, 1998. A report has been published previously on Michigan and New Jersey's 1988–1992 surveillance data (*2*); another published report summarizes Michigan's surveillance data from 1988 through 1994 (*3*).

METHODS

Case Identification

Details on how SENSOR cases were identified in Michigan and New Jersey have been published previously (*1,2,4*). The primary data source for all four states is physician reports. Physician case reports are solicited in Massachusetts, Michigan, and New Jersey. California has a passive surveillance system based on Doctor's First Reports (DFRs) of Occupational Injury or Illness — a longstanding, statewide physician-reporting system directly linked to physician reimbursement for medical services. All four states have legislation mandating physician reporting of occupational disease,* which includes WRA. Hospital reporting is also mandated in Michigan and New Jersey. Hospital reports and discharge records† are actively solicited to identify potential WRA cases.

Occupational disease reports have been actively solicited in the following ways:

- Potential cases are identified through a review of hospital discharge data files, and follow-up is conducted to assess work-relatedness.
- State SENSOR staff members periodically conduct educational outreach to physicians likely to encounter patients with WRA (e.g., pulmonologists, occupational medicine physicians, allergists, and members of the state thoracic society)

*Legislation mandating clinical reporting of WRA became effective in 1973 in California, 1978 in Michigan, 1990 in New Jersey, and 1992 in Massachusetts.

†Cases are identified for potential follow-up based on hospital discharge summaries that report a primary or secondary diagnosis of a) asthma (*International Classification of Diseases, Ninth Revision* [*ICD-9*], code 493) with workers' compensation as the expected payer or b) respiratory conditions due to chemical fumes and vapors (*ICD-9* 506.0–506.9) regardless of the expected payer.

to alert them to occupational disease reporting laws in their states, encourage them to report cases, and educate them about objectives and activities of the SENSOR program.

- State SENSOR staff members develop and distribute occupational disease newsletters to physicians to provide them with up-to-date educational materials on selected occupational conditions and summary information about SENSOR surveillance and intervention activities.
- Newly licensed physicians receive a letter informing them of their reporting requirements and telling them how to report cases.

Case Follow-Up

Surveillance staff members in state health departments administer follow-up questionnaires to patients with suspected WRA to collect information about their reported conditions (e.g., the association with workplace exposures and the industry and occupation of the affected person). This information helps identify specific workplaces to target for prevention and intervention activities. In Michigan and New Jersey, medical records also are routinely reviewed for objective physiologic findings to substantiate a WRA diagnosis. Industry and occupation data are coded using the 1987 Standard Industrial Classification and the 1990 U.S. Bureau of the Census codes, respectively.

Case Definition and Classification

This report updates previously published guidelines for conducting surveillance for occupational asthma (*1,2,4*). The current guidelines address cases of preexisting asthma exacerbated by workplace exposures as well as cases of new-onset asthma induced by occupational exposure to irritants or sensitizers (Box 1). The new surveillance guidelines have three components — the reporting guidance (Box 2), the surveillance case definition (Box 3), and the decision logic scheme for case classification (Figure 1). The reporting guidance is designed to help physicians and other health-care professionals determine what types of clinical cases should be reported to the surveillance system. The surveillance case definition, decision logic scheme for case classification, and case classification criteria list (Box 4) are designed to assist

BOX 1. Overview of work-related asthma (WRA) surveillance categories

WRA Surveillance Categories

1. Work-Aggravated Asthma
2. New-Onset Asthma
   - a) Reactive Airways Dysfunction Syndrome (RADS)
   - b) Occupational Asthma
     - Known asthma inducer* with objective evidence†
     - Known asthma inducer without objective evidence
     - Unknown asthma inducer with objective evidence
     - Unknown asthma inducer without objective evidence

*Agents previously documented in the medical literature to cause occupational asthma.
†Objective physiologic tests to substantiate asthma work-relatedness.

surveillance staff members in classifying cases consistently over time and across states. These guidelines are not intended as the sole criteria for establishing clinical diagnoses; additional clinical, exposure, and laboratory data might be needed to establish a diagnosis of WRA.

The WRA surveillance case definition (Box 3) requires a health-care professional's diagnosis of asthma (or a related diagnosis consistent with asthma) and an association between symptoms of asthma and work. Cases meeting these criteria are considered WRA for surveillance purposes.

WRA cases are classified (Figure 1) to distinguish between work-related exacerbations of a preexisting asthma condition (work-aggravated asthma) and asthma induced by workplace exposures (new-onset asthma). Workers with a history of symptomatic or treated asthma within 2 years of entering a new occupational exposure setting and who experience an increase in symptoms or an increase in the use of asthma medication upon entering the new work setting are classified as having work-aggravated asthma. Workers with no history of asthma or who had preexisting asthma (e.g., childhood asthma) that had been asymptomatic for at least 2 years before entering the workplace where asthma was diagnosed are considered to have new-onset asthma. The WRA classification system distinguishes between two types of new-onset asthma — reactive airways dysfunction syndrome (RADS) (i.e., persistent asthma symptoms induced by a one-time, high-level irritant exposure at work) (*5*) and occupational asthma (e.g., classic sensitizer-induced asthma and irritant-induced asthma not meeting the RADS criterion). Occupational asthma is further subclassified according to whether the suspected agent is a known asthma inducer (i.e., an agent previously documented in the medical literature to cause occupational asthma) (*6,7,8*) and whether any objective physiologic testing has been done to substantiate asthma work-relatedness. To facilitate consistency in agent coding across the participating states, putative causes of WRA are coded by using the Association of Occupational and Environmental Clinics' (AOEC) hierarchical exposure coding scheme (*9*). To promote consistency in subclassifying cases of occupational asthma, agents known to induce occupational asthma have been flagged in the AOEC scheme with the letter "A."

Workplace Follow-up

Surveillance staff members in each state program have developed their own criteria for determining which workplaces to target for follow-up investigations. Workplaces are selected, in part, on the basis of an individual program's needs, interests,

BOX 2. Work-related asthma (WRA) reporting guidance for state health departments

WRA Reporting Guidance for State Health Departments

State health departments should encourage health-care professionals to report all diagnosed or suspected cases of asthma that are caused by or exacerbated by workplace exposures or conditions. Reported cases should include asthma caused by sensitizers or irritants and should include cases of reactive airways dysfunction syndrome (RADS).*

*Brooks SM, Weiss MA, Bernstein IL. Reactive airways dysfunction syndrome (RADS): persistent asthma syndrome after high level irritant exposures. Chest 1985;88:376–84.

and experience, which can vary over time. Workplaces associated with occupational asthma commonly take priority over those associated with RADS or work-aggravated asthma. Workplaces with multiple cases usually take priority over those with one case. In California, follow-up priority is also given to industries with a high WRA incidence rate, based on California SENSOR WRA data, even if that rate is based on a small number of reported cases. Other criteria include whether a) the affected person indicates that a new chemical or process introduced into the workplace contributed to the symptoms, b) the affected person describes poor work conditions or lack of concern by the employer, c) a request for workplace assessment has been made by the affected person or by the referring physician, d) a previously unrecognized cause of asthma could be identified, and e) an industrywide intervention could result from the investigation of a particular workplace (e.g., asthma identified in a work setting not previously associated with the disease). All workplace follow-up investigations in Michigan are conducted under the Michigan Occupational Safety and Health Act (MIOSHA) program. In New Jersey, Massachusetts, and California, workplace follow-up investigations are conducted by state health department industrial hygienists. In Massachusetts, industrial hygienists at the Department of Labor and Workforce Development also conduct workplace evaluations. WRA education and prevention

BOX 3. Work-related asthma (WRA) surveillance case definition for state health departments

WRA Surveillance Case Definition for State Health Departments

A. Health-care professional's diagnosis consistent with asthma.*

AND

B. An association between symptoms of asthma and work.†

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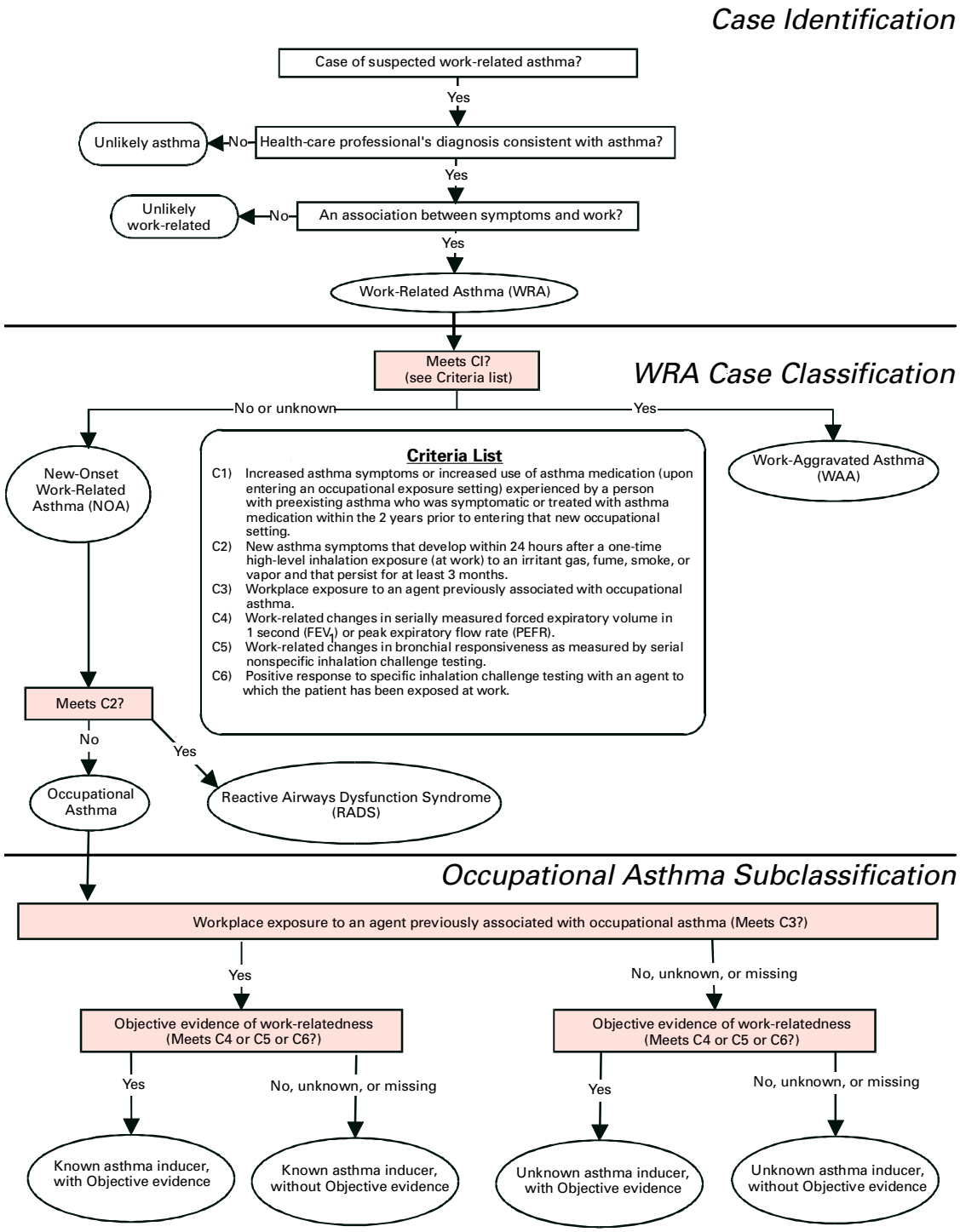
* Asthma is a chronic condition characterized by inflammation of the tracheobronchial tree associated with increased airway responsiveness to a variety of stimuli (*a*). Symptoms of asthma include episodic wheezing, chest tightness, cough, and dyspnea or recurrent attacks of bronchitis with cough and sputum production (*b*). The primary physiologic manifestation of airways hyperresponsiveness is variable or reversible airflow obstruction. It is commonly demonstrated by significant changes in the forced expiratory volume in 1 second (FEV_1) or peak expiratory flow rate (PEFR). Airflow changes can occur spontaneously, with treatment, with a precipitating exposure, or with diagnostic maneuvers such as nonspecific inhalation challenge.

† Patterns of association can vary and include a) symptoms of asthma that develop or worsen after a worker starts a new job or after new materials are introduced on a job (a substantial period can elapse between initial exposure and development of symptoms), b) symptoms that develop within minutes of specific activities or exposures at work, c) delayed symptoms that occur several hours after exposure (e.g., during the evenings of workdays), d) symptoms that occur less frequently or not at all on days away from work and on vacations, e) symptoms that occur more frequently when a worker returns to work, and f) symptoms that are temporally associated with workplace exposure to an agent with irritant properties. Work-related changes in medication requirements can accompany these symptom patterns.

Sources:

a. Anonymous. Standards for the diagnosis and care of patients with chronic obstructive pulmonary disease (COPD) and asthma. This official statement of the American Thoracic Society was adopted by the ATS Board of Directors, November 1986. Am Rev Respir Dis 1987;136:225–44.
b. Chan-Yeung M, Lam S. Occupational asthma. Am Rev Respir Dis 1986;133:686–703.

FIGURE 1. Decision logic and case classification scheme for work-related asthma



BOX 4. Work-related asthma (WRA) surveillance case classification criteria for state health departments

WRA Surveillance Case Classification Criteria for State Health Departments

Code	Criteria
C1)	Increased asthma symptoms or increased use of asthma medication (upon entering an occupational exposure setting) experienced by a person with preexisting asthma who was symptomatic or treated with asthma medication within the 2 years prior to entering that new occupational setting.
C2)	New asthma symptoms that develop within 24 hours after a one-time high-level inhalation exposure (at work) to an irritant gas, fume, smoke, or vapor and that persist for at least 3 months.
C3)	Workplace exposure to an agent previously associated with occupational asthma.*
C4)	Work-related changes in serially measured forced expiratory volume in 1 second (FEV_1) or peak expiratory flow rate (PEFR).†
C5)	Work-related changes in bronchial responsiveness as measured by serial nonspecific inhalation challenge testing.§
C6)	Positive response to specific inhalation challenge testing¶ with an agent to which the patient has been exposed at work.

* Many agents can induce occupational asthma via a specific hypersensitivity mechanism. A comprehensive list of these asthma inducers (*a,b,c*) is used for this criterion. Known asthma inducers have been integrated into the Association of Occupational and Environmental Clinics' (AOEC) coding scheme and have been flagged with the letter "A" (*d*).

† Spirometric measurements (e.g., FEV_1) can be obtained before and after a person's work shift (i.e., cross-shift spirometry). However, many cases of occupational asthma can fail to demonstrate a significant cross-shift reduction in FEV_1, either because of a delayed bronchoconstrictor response or because of intermittent exposure patterns. Cross-shift spirometry testing on multiple days might help confirm the association with work. Alternatively, PEFRs can be measured serially throughout the day using a portable peak flow meter.

§ Changes in bronchial responsiveness can be measured by serial inhalation challenge testing with nonspecific agents (e.g., using methacholine or histamine). Evidence of work-relatedness is manifested by increased bronchial responsiveness (i.e., bronchoconstriction at lower inhaled doses of methacholine or histamine) following work exposures and decreased or normal bronchial responsiveness after a period away from work.

¶ Specific inhalation challenge testing has distinct objectives, including the following: a) identifying previously unrecognized causes of occupational asthma, b) confirming a diagnosis of occupational asthma, and c) identifying the causative agent when more than one allergen is present in the occupational environment and identification of the causative agent is essential for management. Specific inhalation challenge testing is potentially dangerous and should be performed by experienced personnel in a hospital setting where resuscitation facilities are available and frequent observations can be made over sufficient time to monitor for delayed reactions. Specific inhalation challenge testing is usually not necessary for clinical diagnosis of occupational asthma.

Sources:

a. Chan-Yeung M, Malo J-L. Compendium 1: table of the major inducers of occupational asthma. In: Bernstein IL, Chan-Yeung M, Malo J-L, Bernstein DI, eds. Asthma in the workplace. New York, NY: Marcel Dekker, Inc., 1993:595–623.
b. Chan-Yeung M, Malo J-L. Aetiological agents in occupational asthma. Eur Respir J 1994; 7:346–71.
c. Malo J-L, Chan-Yeung M, Occupational agents. In: Barnes PJ, Grunstein MM, Leff AR, Woolcock AJ, eds. Asthma. Pennsylvania, PA: Lippincott-Raven Publishers, 1997:1217–44.
d. Hunting KL, McDonald SM. Development of a hierarchical exposure coding system for clinic-based surveillance of occupational disease and injury. Appl Occup Environ Hyg 1995;10:317–22. The exposure coding scheme is available on the Internet at <http://occ-env-med.mc.duke.edu/oem/aoec.htm>. Accessed February 26, 1999.

materials are given to selected workplaces, including those investigated and some that are not investigated. These materials include brochures on occupational asthma, a recommended medical screening protocol for workers exposed to occupational allergens, and a list of occupational allergens.

RESULTS

Epidemiology

From January 1, 1993, through December 31, 1995, a total of 1,101 WRA cases were identified by surveillance staff members in California, Massachusetts, Michigan, and New Jersey (Table 1).* Of these 1,101 cases, 891 (80.9%) were classified as new-onset asthma and 210 (19.1%) were classified as work-aggravated asthma. Overall, 123 (11.2%) of cases were classified as RADS and 768 (69.8%) as occupational asthma. By state, new-onset WRA cases varied from 65.8% of all cases in California to 90.1% in Michigan.

Michigan and New Jersey surveillance staff members routinely review medical records of WRA case-patients for objective physiologic evidence substantiating a WRA diagnosis. Only 29 case-patients in Michigan and New Jersey (5.2% of the 562 case-patients in these two states) had medical record documentation of pulmonary function testing. Of these, only 19 case-patients (3.4% overall) had medical record documentation of pulmonary function testing to substantiate asthma work-relatedness. Objective evidence of work-relatedness was documented through cross-shift spirometry in 13 cases and through serial peak expiratory flow rates (PEFRs) in six cases.

Of the 768 occupational asthma cases identified across all four states, 301 (39.2%) were associated with exposures to known asthma inducers, and 467 (60.8%) were associated with exposures not recognized as known asthma inducers.

Physician reports of occupational illness represented the sole case identification source in California and Massachusetts and the primary case source in Michigan and New Jersey. Hospital discharge data were used to identify 17.9% of WRA cases in Michigan and 9.5% of those in New Jersey. In Michigan, 4.7% of cases were identified from other sources (e.g., workers' compensation, federal regulatory agencies, and coworkers of the index case-patient whose WRA was subsequently diagnosed).

The mean and median ages of the WRA case-patients overall were both 41 years (age range: 18–71 years). Overall, 56.4% of WRA case-patients were female, and 43.6% were male.

The 10 most frequently reported putative agents associated with the 1,101 WRA cases (Table 2) were indoor air pollutants (86 cases); mineral and inorganic dust, not otherwise specified (NOS) (79 cases); chemicals, NOS (73 cases); lubricants, NOS (57 cases, including metalworking fluids); cleaning materials, NOS (51 cases); smoke, NOS† (50 cases); solvents, NOS (43 cases); toluene diisocyanate (41 cases); stainless steel welding fumes (37 cases); and diisocyanates, NOS (36 cases). Many of the agents

*The case identification period for California was March 1, 1993, through December 31, 1995. The case identification period for Massachusetts, Michigan, and New Jersey was January 1, 1993, through December 31, 1995.

†Includes pyrolysis products other than incinerator fume or cigarette, plastic, marijuana, or lead-containing smoke.

TABLE 1. Number of cases of work-related asthma by case classification category and state — California, Massachusetts, Michigan, and New Jersey SENSOR programs, 1993–1995*

Classification	California		Massachusetts		Michigan		New Jersey		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Work-aggravated asthma	131	34.2	20	12.8	44	9.9	15	12.9	**210**	**19.1**
New-onset asthma†	252	65.8	136	87.2	402	90.1	101	87.1	**891**	**80.9**
Reactive airways dysfunction syndrome	24	6.3	16	10.3	47	10.5	36	31.0	**123**	**11.2**
Occupational asthma	228	59.5	120	76.9	355	79.6	65	56.0	**768**	**69.8**
Known asthma inducer§	28	7.3	49	31.4	196	43.9	28	24.1	**301**	**27.3**
Unknown asthma inducer	200	52.2	71	45.5	159	35.7	37	31.9	**467**	**42.4**
Total	**383**	**100.0**	**156**	**100.0**	**446**	**100.0**	**116**	**100.0**	**1,101**	**100.0**

*Provisional surveillance data as of November 1997. The case identification period for California was March 1, 1993, through December 31, 1995. The case identification period for Massachusetts, Michigan, and New Jersey was January 1, 1993, through December 31, 1995.
†Includes cases of reactive airways dysfunction syndrome and occupational asthma.
§Known asthma inducers are agents previously documented in the published medical literature as being associated with occupational asthma. These agents are designated with the letter "A" in the Association of Occupational and Environmental Clinics' (AOEC) exposure coding system.

were associated with both work-aggravated and new-onset asthma. However, no cases of work-aggravated asthma were reported in association with toluene diisocyanate; glutaraldehyde; acrylates, NOS; wood dust, NOS; and paper dust, NOS.

Manufacturing industries and service industries were associated with 41.5% and 31.2% of cases, respectively (Table 3). Manufacturing was the most frequently reported industrial sector in Michigan and New Jersey. Transportation equipment manufacturing, the predominant manufacturing industry reported in Michigan, was associated with 43.5% of WRA cases in that state. In California and Massachusetts, service industries were associated with 40.5% and 51.3% of cases, respectively. Health services topped the list of service industries in Massachusetts, and health and educational services were associated with 14.6% and 14.4%, respectively, of cases in California.

The occupational category of operators, fabricators, and laborers was associated with the highest percentage of WRA cases overall (356 cases, 32.3%). The largest number of cases came from Michigan, with 55.4% of state cases coded to this category. The most frequently reported categories associated with WRA in the other three states included technical, sales, and administrative occupations in California (32.1% of cases); managerial and professional specialty occupations in Massachusetts (30.1% of cases); and both the managerial and professional specialty occupations and the operators, fabricators, and laborers category in New Jersey (23.3% of cases in both categories).

Workplace Follow-up

In Michigan, 185 (44.5%) of the 416 workplaces associated with WRA cases were inspected (Table 4). At 123 (66.5%) of these 185 workplaces, air sampling for agents known to induce occupational asthma was performed for comparison with established federal time-weighted average exposure limits. Sixteen (13.4%) of 119 workplaces had airborne concentrations exceeding the NIOSH recommended exposure limits (RELs);* 11 (9.1%) of 121 workplaces had concentrations exceeding the legally enforceable permissible exposure limit (PELs) established by the MIOSHA program.† Recommendations and citations were issued to several workplaces because of deficiencies noted during the inspections, with the most commonly reported recommendation being either to implement a hazard communication program or enhance an existing one (Table 4).

In California, seven workplaces were inspected, but air sampling for known hazards was not performed. Recommendations were made to all seven workplaces regarding specific ways to correct deficiencies in hazard communication and respiratory protection. In addition, each of the seven workplaces received recommendations to implement an employee medical screening program or modify an existing one and to implement engineering controls or enhance existing ones.

*Time-weighted average NIOSH RELs are intended to provide guidance on concentrations of specific substances to which nearly all workers can be exposed during a 10-hour workday and a 40-hour workweek without adverse health effect. NIOSH RELs are not legally enforceable and are usually lower than their corresponding Occupational Safety and Health Administration (OSHA) permissible exposure limits (PELs).

†OSHA PELs and NIOSH RELs do not exist for all agents for which air sampling was performed. Thus, the number of workplaces where an OSHA PEL for a sampled substance existed was different than the number of workplaces where a NIOSH REL existed.

TABLE 2. Most frequently reported putative agents associated with cases of work-related asthma, both new-onset and work-aggravated — California, Massachusetts, Michigan, and New Jersey SENSOR programs, 1993–1995*

AOEC code† and agent	New-Onset Asthma (WRA)		Work-Aggravated Asthma (WRA)		Total	
	No.	%	No.	%	No.	%
320.01 Air pollutants, indoor	67	7.5	19	9.0	**86**	**7.8**
010.00 Mineral and inorganic dust, NOS§	45	5.1	34	16.2	**79**	**7.2**
320.06 Chemicals, NOS	56	6.3	17	8.1	**73**	**6.6**
320.14 Lubricants, NOS¶	55	6.2	2	1.0	**57**	**5.2**
322.00 Cleaning materials, NOS	42	4.7	9	4.3	**51**	**4.6**
330.03 Smoke, NOS**	40	4.5	10	4.8	**50**	**4.5**
171.00 Solvents, NOS††	36	4.0	7	3.3	**43**	**3.9**
221.01 Toluene diisocyanate	41	4.6	—	0.0	**41**	**3.7**
023.01 Welding fumes, stainless steel	31	3.5	6	2.9	**37**	**3.4**
221.00 Diisocyanates, NOS	34	3.8	2	1.0	**36**	**3.3**
120.03 Formaldehyde	32	3.6	3	1.4	**35**	**3.2**
171.01 Paint	22	2.5	13	6.2	**35**	**3.2**
320.16 Pesticides, NOS	21	2.4	8	3.8	**29**	**2.6**
390.01 Mold	21	2.4	6	2.9	**27**	**2.5**
221.02 Methylene diisocyanate	24	2.7	2	1.0	**26**	**2.4**
270.02 Latex, natural rubber	24	2.7	2	1.0	**26**	**2.4**
320.11 Glues, NOS	14	1.6	9	4.3	**23**	**2.1**
030.02 Chlorine	16	1.8	6	2.9	**22**	**2.0**
010.09 Manmade mineral fibers	18	2.0	3	1.4	**21**	**1.9**
050.02 Bleach	16	1.8	5	2.4	**21**	**1.9**
023.00 Welding, NOS	16	1.8	3	1.4	**19**	**1.7**
120.05 Glutaraldehyde	19	2.1	—	0.0	**19**	**1.7**
331.01 Diesel exhaust	14	1.6	5	2.4	**19**	**1.7**
050.00 Acids, bases, oxidizers, NOS	17	1.9	1	0.5	**18**	**1.6**
110.02 Epoxy resins	17	1.9	1	0.5	**18**	**1.6**
330.02 Plastic smoke	8	0.9	6	2.9	**14**	**1.3**
142.00 Acrylates, NOS	12	1.3	—	0.0	**12**	**1.1**
373.00 Wood dust, NOS	12	1.3	—	0.0	**12**	**1.1**
052.02 Ammonia solution	9	1.0	2	1.0	**11**	**1.0**
060.11 4-phenylcyclohexene	5	0.6	6	2.9	**11**	**1.0**
231.00 Ethanolamines, NOS	10	1.1	1	0.5	**11**	**1.0**
331.00 Exhaust, NOS	9	1.0	2	1.0	**11**	**1.0**

370.00	Plant material, NOS	6	0.7	5	2.4	**11**	**1.0**
370.01	Paper dust	11	1.2	—	0.0	**11**	**1.0**
380.00	Animal material, NOS	7	0.8	4	1.9	**11**	**1.0**
330.01	Cigarette smoke	5	0.6	5	2.4	**10**	**0.9**
	All others	379	42.5	83	39.5	**462**	**42.0**

* Provisional surveillance data as of November 1997. The case identification period for California was March 1, 1993, through December 31, 1995. The case identification period for Massachusetts, Michigan, and New Jersey was January 1, 1993, through December 31, 1995. The sum of the number columns exceeds the total number of cases identified because as many as three putative causes of asthma were reported in association with each case of work-related asthma. Percentages are based on the actual number of cases.
† Association of Occupational and Environmental Clinics' (AOEC) exposure codes.
§ Not otherwise specified.
¶ Includes metalworking fluids.
** Includes pyrolysis products other than incinerator fume or cigarette, plastic, marijuana, and lead-containing smoke.
†† Includes graffiti removers.
— No cases were reported.

TABLE 3. Primary industries where exposure to agents causing work-related asthma occurred — California, Massachusetts, Michigan, and New Jersey SENSOR programs, 1993–1995*

SIC Divisions† and Major Groups	California		Massachusetts		Michigan		New Jersey		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Agriculture, Forestry, Fishing	**22**	**5.7**	**2**	**1.3**	**1**	**0.2**	**1**	**0.9**	**26**	**2.4**
Agricultural production crops (01§)	14	3.7	—	0.0	—	0.0	—	0.0	**14**	**1.3**
All other (02,07,08)	8	2.1	2	1.3	1	0.2	1	0.9	**12**	**1.1**
Mining (10,14)	**1**	**0.3**	**—**	**0.0**	**1**	**0.2**	**—**	**0.0**	**2**	**0.2**
Construction	**5**	**1.3**	**9**	**5.8**	**14**	**3.1**	**9**	**7.8**	**37**	**3.4**
Construction, special trade (17)	2	0.5	7	4.5	10	2.2	8	6.9	**27**	**2.5**
All other (15,16)	3	0.8	2	1.3	4	0.9	1	0.9	**10**	**0.9**
Manufacturing	**63**	**16.4**	**37**	**23.7**	**311**	**69.7**	**46**	**39.7**	**457**	**41.5**
Transportation equipment (37)	15	3.9	2	1.3	194	43.5	1	0.9	**212**	**19.3**
Chemicals and allied products (28)	5	1.3	4	2.6	17	3.8	12	10.3	**38**	**3.5**
Industrial and commercial machinery and computer equipment (35)	5	1.3	6	3.8	22	4.9	—	0.0	**33**	**3.0**
Fabricated metal products except machinery and transportation equipment (34)	5	1.3	5	3.2	15	3.4	1	0.9	**26**	**2.4**
Rubber and miscellaneous plastics products (30)	1	0.3	2	1.3	20	4.5	1	0.9	**24**	**2.2**
Primary metal industries (33)	2	0.5	—	0.0	16	3.6	5	4.3	**23**	**2.1**
Electronic and other electrical equipment and components except computer equipment (36)	7	1.8	2	1.3	3	0.7	6	5.2	**18**	**1.6**
Food and kindred products (20)	9	2.3	1	0.6	3	0.7	2	1.7	**15**	**1.4**
Paper and allied products (26)	—	0.0	2	1.3	5	1.1	7	6.0	**14**	**1.3**
Measuring, analyzing, and controlling instruments (38)	—	0.0	5	3.2	4	0.9	2	1.7	**11**	**1.0**
Printing, publishing, and allied industries (27)	2	0.5	1	0.6	6	1.3	1	0.9	**10**	**0.9**
All other (22–25,29,31,32,39)	12	3.1	7	4.5	6	1.3	8	6.9	**33**	**3.0**
Transportation	**28**	**7.3**	**2**	**1.3**	**12**	**2.7**	**6**	**5.2**	**48**	**4.4**
Electric, gas, and sanitary services (49)	11	2.9	2	1.3	4	0.9	1	0.9	**18**	**1.6**
All other (40–42,44,45,48)	17	4.4	—	0.0	8	1.8	5	4.3	**30**	**2.7**
Wholesale Trade (51,50)	**4**	**1.0**	**2**	**1.3**	**3**	**0.7**	**2**	**1.7**	**11**	**1.0**

Retail Trade	**20**	**5.2**	**5**	**3.2**	**11**	**2.5**	**3**	**2.6**	**39**	**3.5**
Food stores (54)	6	1.6	3	1.9	4	0.9	1	0.9	**14**	**1.3**
All other (52,53,55,58,59)	14	3.7	2	1.3	7	1.6	2	1.7	**25**	**2.3**
Finance, Insurance, and Real Estate (60,61,63,65)	**10**	**2.6**	**1**	**0.6**	**1**	**0.2**	**1**	**0.9**	**13**	**1.2**
Services	**155**	**40.5**	**80**	**51.3**	**72**	**16.1**	**37**	**31.9**	**344**	**31.2**
Health services (80)	56	14.6	48	30.8	35	7.8	17	14.7	**156**	**14.2**
Educational services (82)	55	14.4	16	10.3	15	3.4	10	8.6	**96**	**8.7**
Social services (83)	14	3.7	—	0.0	2	0.4	—	0.0	**16**	**1.5**
Engineering, accounting, research, management, and related services (87)	5	1.3	5	3.2	3	0.7	3	2.6	**16**	**1.5**
Business services (73)	9	2.3	—	0.0	3	0.7	1	0.9	**13**	**1.2**
Hotels, rooming houses, and camps (70)	4	1.0	2	1.3	3	0.7	2	1.7	**11**	**1.0**
All other (72,75,76,78,79,81,84,86,89)	12	3.1	9	5.8	11	2.5	4	3.4	**36**	**3.3**
Public Administration	**73**	**19.1**	**18**	**11.5**	**20**	**4.5**	**11**	**9.5**	**122**	**11.1**
Justice, public order, and safety (92)	34	8.9	6	3.8	6	1.3	1	0.9	**47**	**4.3**
Executive, legislative, and general government except finance (91)	17	4.4	1	0.6	1	0.2	3	2.6	**22**	**2.0**
Administration of human resource programs (94)	11	2.9	—	0.0	5	1.1	3	2.6	**19**	**1.7**
Administration of economic programs (96)	2	0.5	11	7.1	3	0.7	1	0.9	**17**	**1.5**
All other (93,95,97)	9	2.3	—	0.0	5	1.1	3	2.6	**17**	**1.5**
Nonclassifiable	**2**	**0.5**	**—**	**0.0**	**—**	**0.0**	**—**	**0.0**	**2**	**0.2**
TOTAL	**383**	**100.0**	**156**	**100.0**	**446**	**100.0**	**116**	**100.0**	**1,101**	**100.0**

* Provisional surveillance data as of November 1997. The case identification period for California was March 1, 1993, through December 31, 1995. The case identification period for Massachusetts, Michigan, and New Jersey was January 1, 1993, through December 31, 1995.
† 1987 Standard Industrial Classification (SIC).
§ Two-digit numbers correspond to SIC major groups.
— No cases were reported.

TABLE 4. Results of workplace follow-up inspections associated with work-related asthma cases — California, Massachusetts, Michigan, and New Jersey SENSOR programs, 1993–1995*

	California		Massachusetts†		Michigan		New Jersey		Total	
Workplaces	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Identified	349	100.0	128	100.0	416	100.0	116	100.0	**1,009**	**100.0**
Not inspected	342	98.0	107	83.6	231	55.5	89	76.7	**769**	**76.2**
Inspected	7	2.0	21	16.4	185	44.5	27	23.3	**240**	**23.8**
Inspected workplaces where air sampling for agents known to induce occupational asthma was conducted at the time of inspection	—		§		123		§			
Number of inspected workplaces where										
OSHA PELs¶ existed	—		NA**		121		NA			
Concentrations were >PELs	—		NA		11††		NA			
NIOSH RELs§§ existed	—		NA		119		NA			
Concentrations were >RELs	—		NA		16¶¶		NA			
Inspected workplaces where recommendations or citations were issued for the following:										
Medical monitoring	7		—		60		8			
Engineering controls	7		2		80		11			
Air monitoring	—		—		63		12			
Hazard communication program	7		2		126		6			
Respiratory protection program	7		1		71		7			

* Provisional workplace findings as of June 30, 1998.
† Data on recommendations made to workplaces inspected in Massachusetts are for 1993 only.
§ Sampling was not conducted to obtain results for comparison with established 8-hour time-weighted average exposure limits. In some instances, short-term direct-reading air sampling instrumentation was used to guide recommendations made.
¶ Occupational Safety and Health Administration (OSHA) permissible exposure limits (PELs).
** Data are not available.
†† Substance levels above Michigan Occupational Safety and Health Act (MIOSHA) program legally enforceable PELs included chromic acid, zinc oxide, glutaraldehyde (two companies), flour dust, welding fumes (three companies), oil mist, and wood dust (two companies).
§§ National Institute for Occupational Safety and Health (NIOSH) recommended exposure limits (RELs).
¶¶ Substance levels above NIOSH RELs included chromic acid, zinc oxide, ethylene oxide, glutaraldehyde (two companies), total dust (flour) (two companies), welding fumes (three companies), oil mist, wood dust (two companies), formaldehyde (two companies), and ethoxyethanol.
— No workplaces reported.

In Massachusetts and New Jersey, 21 and 27 workplaces, respectively, were inspected. However, air sampling for agents known to induce asthma for comparison with established 8-hour time-weighted average exposure limits was not performed. In some cases, direct-reading instruments were used to assess short-term airborne levels of hazardous substances and compliance with ceiling values. This information was used to guide the type of recommendations made. No single recommendation for prevention predominated among the workplaces investigated in these states (Table 4).

DISCUSSION

Surveillance systems have led to the current recognition that WRA is an important public health problem. In Quebec, Canada, and the United Kingdom, WRA is the most commonly reported occupational respiratory condition (*10,11*). Estimates of the proportion of asthma in the adult U.S. population that is work-related range from 2% to 26% (*3,12*). A recent study involving a review of medical records from a health maintenance organization in Massachusetts in 1998 reported that 21% of clinically significant adult asthma was work-related (*13*). Public health surveillance systems for WRA are needed to effectively plan and implement public health prevention programs through the identification and targeting of specific industries and workplaces.

More than 250 agents are known to cause occupational asthma (*6,7,8*). For this report, as many as three putative causes of WRA were reported for each case. The putative agents reported are ones in which all the evidence reviewed points to these agents as causing asthma or exacerbating a preexisting asthma condition. Several agents discussed in this report have been documented in the medical literature to cause occupational asthma (e.g., diisocyanates, natural rubber latex, glutaraldehyde, molds, and epoxy resins). The SENSOR WRA programs conducted in California, Massachusetts, Michigan, and New Jersey provide evidence that other less-recognized causes (e.g., cleaning agents and metalworking fluids) are also associated with WRA. In addition, SENSOR data played an important role, particularly in Massachusetts, in identifying a well-known cause of occupational asthma — natural rubber latex — in a new work setting, the health-care industry.

Cleaning agents, which can contain strong respiratory irritants (e.g., chlorine, ammonia) or sensitizers (e.g., benzalkonium chloride, chloramine, chlorhexidine, formaldehyde, glutaraldehyde), were frequently reported as putative agents associated with WRA. A total of 62 WRA cases were associated with agents coded as cleaning materials, including household cleaners (five cases), soap/detergent (four cases), metal polish (one case), copier cleaning fluids (one case), and cleaning materials, NOS (51 cases) (Table 2). Of these 62 cases, 51 were classified as new-onset asthma and 11 as work-aggravated asthma. Additional WRA cases were reported to be associated with cleaning-related processes, including some with putative agents coded as solvents, NOS (e.g., used in graffiti removal), ammonia solution, and bleach. Some of the reported cleaning agent cases involved improper mixing of products or chemicals. These findings suggest the need for enhanced health communications concerning the risks associated with and the proper use of various cleaning materials, as well as the need to target industries and workers at high risk. For example, based on seven WRA cases in California reported to be associated with the use of graffiti- removal products, staff members in that state's SENSOR program have conducted a series of workplace

inspections and are working to develop a graffiti-removal hazard fact sheet. This fact sheet will be disseminated through a national graffiti-removal organization, local governments, school districts, and other organizations and employers. Graffiti removers contain many chemicals, including acetone, amyl acetate, glycol ethers, methanol, methylene chloride, monoethanolamine, N-methyl-2- pyrrolidone, toluene, and d-limonene. Only monoethanolamine is a known inducer of occupational asthma, according to the most recent list of occupational asthma inducers the surveillance programs used (*8*).

One overall limitation of the SENSOR WRA program is that the data represent an underestimate of the number of WRA cases because of the underrecognition of asthma work-relatedness and the underreporting of recognized cases. The extent of underreporting varies by state, in part, because of differences in sources used to identify cases. In Massachusetts, physicians were the sole identification source, and a limited number of clinics and physicians reported WRA cases. Although industries and occupations that contribute to WRA were identified, the data are not considered representative or an indicator of the magnitude of WRA in Massachusetts. In California, cases were identified through an administrative data system that requires physicians to submit DFRs when seeking reimbursement from workers' compensation insurers. Thus, these data are considered more representative because all types of physicians throughout the state report using this mechanism. The California data also have been used to generate WRA incidence rates (*14*). Although the case identification methods used in Michigan are likely not as comprehensive a source of WRA cases as the DFRs system in California, the Michigan data also have been used to calculate incidence rates (*3,15*).

Beginning in 1997, the original case identification approach used in California (i.e., DFRs) was supplemented with statewide hospital discharge data and workers' compensation data from northern and southern regions of the state that are served by a large health maintenance organization. With this enhancement, the California SENSOR program should be able to assess how effective DFRs are for case identification and to estimate WRA incidence more accurately. In Massachusetts in 1997, case identification methods were enhanced by the addition of workers' compensation and hospital discharge data.

The workplace findings indicate that 9.1% (11 of 121) of investigated workplaces in Michigan had exposures above the legally enforceable PELs. Despite this small percentage, reports from Michigan demonstrate that coworkers of the index case-patient at approximately 70% of investigated companies had either received a diagnosis of asthma since beginning work at the company or had work-related asthma symptoms, regardless of the measured level of exposure to asthma-causing substances. This finding suggests that adhering to PELs might not prevent asthma or that intermittent high-level exposures (e.g., a spill or leak), which are unlikely to occur during industrial hygiene assessments, play an important role in asthma causation. In Michigan, surveillance staff members have indicated a need to reevaluate PELs for specific asthma-causing agents (e.g., diisocyanates) in terms of their effectiveness in preventing asthma (*3*), as well as a need to establish ceiling standards or standards for work practices in the event of intermittent high-level exposures (*3*).

Indoor air pollutants were reported as a cause of new-onset and work-aggravated WRA in all four states and represented the most frequent putative cause for WRA

cases overall. The types of exposures reported in association with indoor air pollutants included poor ventilation, pesticides, dusts and dirt, molds, environmental tobacco smoke, paint odors, and other nonspecific building odors. Affected workers included teachers, nurses, secretaries, librarians, computer operators and programmers, technicians, clerks, and office workers. Massachusetts surveillance staff members have asked environmental health assessment staff members in the Massachusetts Department of Public Health to investigate indoor air quality in public buildings, especially schools. In other SENSOR states, the links between indoor air problems and WRA have not commonly been investigated. In Michigan, workplaces where indoor air quality cases have been reported receive educational materials, including a list of occupational asthma inducers, OSHA technical manual instructions for conducting indoor air investigations, and selected NIOSH information about indoor air quality. Barriers cited to conducting indoor air quality investigations include a lack of resources to assemble and train a multidisciplinary team to conduct these investigations and a lack of an OSHA standard for indoor air quality.

SENSOR data indicate that WRA cases commonly lack confirmatory pulmonary function data, an apparent reflection of usual medical practice. Pulmonary function testing plays two major roles in the diagnosis of WRA — confirming the presence of asthma and documenting work-relatedness. Only 29 case-patients in Michigan and New Jersey (5.2% of the 562 case-patients in these two states) had medical record documentation of pulmonary function testing. Of these, only 19 case-patients (3.4% overall) had medical record documentation of pulmonary function testing to substantiate work-relatedness. By comparison, a health maintenance organization study in Massachusetts reported that a complete chart review of 67 case-patients with clinically significant asthma found only a minority had evidence of pulmonary function testing to substantiate asthma (seven had spirometry testing and seven had peak flow measurements) (*13*). In a study of 101 case-patients evaluated for occupational asthma in specialty occupational medicine clinics, objective physiologic tests to confirm asthma were performed on 75 case-patients (74.2%), and physiologic tests to evaluate work-relatedness were performed on 17 case-patients (16.8%). Eleven case-patients (10.9%) had positive physiologic work-related changes (*16*).

The data collection methods pioneered by the state-based SENSOR WRA programs have many strengths. Data standardization has allowed for aggregation of meaningful data across the participating states. This allows conclusions to be made regarding the nature and extent of WRA in the United States, which allows public health prevention programs to be developed and guided nationwide. In addition, surveillance systems based on physician reporting provide a vehicle for educational outreach to physicians on asthma work-relatedness. This is important because physicians are critical to WRA prevention. The SENSOR WRA programs also provide a mechanism for workers and physicians to request workplace investigations aimed at primary prevention for other workers.

NIOSH and state health department representatives are working to establish a long-term agenda for state-based surveillance of work-related conditions and hazards, including identification of priority conditions for surveillance at the state level. The results from the SENSOR WRA programs described in this report support inclusion of WRA in such a priority condition list and suggest that programs directed at adult asthma should address WRA.

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State Laws on Tobacco Control — United States, 1998

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Abstract

Problem/Condition: State laws addressing tobacco use, the leading preventable cause of death in the United States, are summarized. Laws address smoke-free indoor air, minors' access to tobacco products, advertising of tobacco products, and excise taxes on tobacco products.

Reporting Period Covered: Legislation effective through December 31, 1998.

Description of System: CDC identified laws addressing tobacco control by using an on-line legal research database. CDC's findings were verified with the National Cancer Institute's State Cancer Legislative Database.

Results: Since a previous surveillance summary on state tobacco-control laws published in November 1995 (covering legislation effective through June 30, 1995), several states have enacted new restrictions or strengthened existing legislation that addresses smoke-free indoor air, minors' access to tobacco, tobacco advertising, and tobacco taxes. Five states strengthened their smoke-free indoor air legislation. All states and Washington, D.C., continued to prohibit the sale and distribution of tobacco products to minors; however, 21 states expanded minors' access laws by designating enforcement authorities, adding license suspension or revocation for sale to minors, or requiring signage. Since the 1995 report, eight additional states (a total of 19 states and Washington, D.C.) now ban vending machines from areas accessible to minors. Thirteen states restrict advertising of tobacco products, an increase of four states since the 1995 report. Although the number of states that tax cigarettes and smokeless tobacco did not change, 13 states increased excise taxes on cigarettes, and five states increased excise taxes on smokeless tobacco products. The average state excise tax on cigarettes is 38.9¢ per pack, an increase of 7.4¢ compared with the average tax in the 1995 report.

Interpretation: State laws addressing tobacco control vary in relation to restrictiveness, enforcement and penalties, preemptions, and exceptions.

Actions Taken: The data summarizing state tobacco-control laws are available through CDC's State Tobacco Activities Tracking and Evaluation (STATE) System*; the laws are collected and updated every quarter. The STATE System also contains state-specific data on the prevalence of tobacco use, tobacco-related deaths, and the costs of tobacco use. Information from the STATE System is available for use by policy makers at the state and local levels to plan and implement initiatives to prevent and reduce tobacco use. In addition, CDC is using this information to assess the ongoing impact of tobacco-control programs and policies on tobacco use.

*Available at CDC website <http://www.cdc.gov/tobacco>.

INTRODUCTION

Since the release of the first Surgeon General's report on tobacco in 1964, scientific knowledge about the health consequences of tobacco use has increased substantially (*1,2*). As knowledge about the health consequences of tobacco use and exposure to environmental tobacco smoke (ETS) has increased, knowledge about effective interventions to prevent and reduce tobacco use and exposure to ETS has also increased. Extensive study during the preceding 30 years has documented that reductions in tobacco use decreases the incidence of several diseases and disorders as well as decreases mortality (*2*). However, one fourth of all adults in the United States still smoke (*3*), and tobacco use continues to cause >430,000 deaths each year (*4*).

Although individually focused strategies to prevent and reduce tobacco use remain important, social change and population-based environmental interventions have become the overriding focus of tobacco-control initiatives (*5,6*). In particular, developing and implementing public health policies are a central component of tobacco-control efforts. Tobacco-control policies cover a range of topics, including minors' access to tobacco, retail tobacco licensing, smoke-free indoor air, advertising and promotion, excise taxes, warning labels, and product ingredient disclosure. Some tobacco-related policies are instituted primarily at the federal level; however, most tobacco-related policies are established at the state and local level.

Several studies have been conducted to examine the impact of tobacco-control laws on tobacco-use behaviors. Although the strongest data on the impact of policies on tobacco-use behaviors come from studies of tobacco excise taxes, data also document the impact of smoke-free indoor air, minors' access, and advertising policies (*7*). Although some studies have used a pre- and postdesign without a comparison, others have included randomized and controlled comparisons. In addition, many tobacco policy studies have used econometric analyses to assess the impact of price and nonprice variables on tobacco use. One important nonprice variable is state tobacco-control policy (e.g., laws).

In recognition of the importance of policy as a tobacco-control intervention, several national health objectives track state tobacco-control laws. These objectives include state laws on minors' access, smoke-free indoor air, tobacco vending machines, tobacco excise taxes, and preemptive tobacco-control laws (*8*). By regulating the sale and use of tobacco and increasing taxes on tobacco products, states play an important role in achievement of the year 2000 national health objectives, which ultimately will reduce the burden of diseases attributable to tobacco.

This report is an update of the 1995 surveillance summary (*9*), which examined state tobacco-control laws effective June 30, 1995. This report addresses state tobacco-control laws effective December 31, 1998, and describes changes in legislation since the 1995 report.

METHODS

This report identifies four aspects of tobacco-control laws in each state and Washington, D.C.: a) smoke-free indoor air, b) minors' access, c) advertising, and d) excise taxes. Data on the preemptive provisions of smoke-free indoor air, minors' access, and marketing laws are also provided. State laws are reported for all four topics as well as

executive orders for smoke-free indoor air in government work sites, effective December 31, 1998. States that enacted legislation that became effective after December 31, 1998, were not included in this report.

Updating Tobacco-Related State Laws

Using laws effective June 30, 1995, as a baseline, information on state laws is updated quarterly with any newly enacted legislation that is effective the last day of the quarter. CDC tracked legislation for the quarters ending March 31, June 30, September 30, and December 31, using an on-line legal research database. The legislation is coded according to matrices developed for *State Laws on Tobacco Control—United States, 1995* (*9*) with minor modifications. Coding completed by CDC is then verified with the National Cancer Institute's State Cancer Legislative Database. Legislative data are stored in CDC's State Tobacco Activities Tracking and Evaluation (STATE) System.* Although state regulations carry the same authority as law, the STATE System currently does not include regulations for tobacco control. Also, the STATE System currently does not include provisions of the individual state and multistate settlements with the tobacco industry.

Changes in Legislative Tracking

Since 1995, CDC has enhanced its legislative tracking efforts to more specifically indicate whether it is illegal for minors to purchase, possess, or use tobacco and to include more specific provisions regarding smoke-free indoor air policies in child day care centers. In addition, CDC has developed a matrix describing preemptive provisions of minors' access, smoke-free indoor air, and marketing laws. In the 1995 report, such provisions were incorporated directly into the tables for minors' access, smoke-free indoor air, and advertising. Changes in interpretation or errors in the 1995 report were corrected in CDC's legislative tracking system as they were discovered and also have been footnoted in the tables in this report.

Categorizing Locations and Restrictions

State laws vary in their definition of public places, and methods of implementing smoking restrictions in these locations also vary. Because of these variations, comparing smoke-free indoor air laws across states can be difficult. To aid in comparisons, locations included in state laws were categorized as government work sites, private-sector work sites, restaurants, child day care centers, and other sites, which include bars, shopping malls, retail stores, enclosed arenas, public transportation, hospitals, prisons, and hotels and motels.

RESULTS

Results of the legislative review summarize which states have laws concerning smoke-free indoor air, minors' access to tobacco products, advertising of tobacco products, and tobacco excise taxes (Table 1). In addition, the review summarizes which states have preemptive provisions in smoke-free indoor air, minors' access, or tobacco marketing laws.

*Available at CDC website <http://www.cdc.gov/tobacco>.

Smoke-Free Indoor Air

Because of concerns about the health effects of exposure to ETS, many state laws restrict smoking in public places. As of December 31, 1998, 46 states and Washington, D.C., restrict smoking to some extent. Alabama, Kentucky, Mississippi, and North Carolina have no restrictions on smoking in sites covered in this report.

Smoke-free indoor air restrictions (Tables 2–6) are provided in four categories. States with no restrictions on smoking in a given site are categorized as "1." States that require or allow designated smoking areas in a given site are categorized as "2." If either no smoking is allowed or designated smoking areas with separate ventilation are required, the site is categorized as "3." Sites where no smoking is allowed are categorized as "4."

Government Work Sites

Forty-one states and Washington, D.C., have laws that restrict smoking in state government work sites (Table 2). Although no change has occurred in the number of states with any restrictions since the 1995 report, state restrictions in Hawaii and Massachusetts were strengthened from limiting smoking to designated areas to prohibiting smoking. Twenty-nine state laws limit smoking to designated areas; two either ban smoking or require designated smoking areas with separate ventilation; and 11 completely ban smoking. Seven of these state laws require a minimum number of employees (i.e., 1–25 employees) for the restriction to be implemented. Nineteen states and Washington, D.C., authorize penalties against both the work site and the smoker for the first violation; four states authorize penalties to the work site only; and eight authorize penalties to the smoker only. Of state laws that restrict smoking in government work sites, 62% also designate an enforcement authority. In Kentucky, state government work sites are permitted but not required to develop policies on smoking. North Carolina's law requires all government work sites to have smoking areas; the law does not permit the establishment of smoke-free government work sites.

Private-Sector Work Sites

Twenty states and Washington, D.C., have laws that restrict smoking in private-sector work sites (Table 3); of these, only California requires either no smoking or separate ventilation for smoking areas. Since the 1995 report, no change has occurred in the number of states with smoking restrictions in private-sector work sites or in the strength of existing restrictions. Seven of the 21 laws mandate designated smoking areas only in work sites that have a minimum number of employees (i.e., 1–50 employees). Ten states and Washington, D.C., penalize both the work site and the smoker for the first violation; three penalize the work site only; and four penalize the smoker only. Sixty-seven percent of laws that restrict smoking in private-sector work sites designate an enforcement authority.

Restaurants

Thirty states and Washington, D.C., have laws that restrict smoking in restaurants (Table 4). No change has occurred in the number of states with restaurant restrictions since the 1995 report; however, Vermont strengthened its restrictions from limiting

smoking to designated areas to prohibiting smoking. Utah and Vermont are the only states that completely prohibit smoking in restaurants; California requires either no smoking or separate ventilation for smoking areas. Many state laws exempt small restaurants, generally those with a seating capacity of <50 persons, from smoke-free indoor air laws. Seventeen state laws penalize both the restaurant and the smoker for the first violation; five penalize the restaurant only; and five penalize the smoker only. Of state laws that restrict smoking in restaurants, 71% designate an enforcement authority. In Louisiana, restaurants are permitted but not required to develop policies on smoking.

Child Day Care Centers

Twenty-eight states and Washington, D.C., have laws that restrict smoking in commercial day care centers, an increase of two states (i.e., New Jersey and Tennessee) since the 1995 report. Eleven states restrict smoking in home-based day care centers, an increase of one state (i.e., Tennessee) since the 1995 report (Table 5). Eleven states ban smoking in commercial day care centers at all times; one requires either no smoking or separate ventilation for smoking areas at all times; 10 ban smoking only when children are on the premises; five states and Washington, D.C., require or allow designated smoking areas at all times; and one requires or allows designated smoking areas only when children are on the premises. Six of the states that restrict smoking in home-based day care centers ban smoking only when children are on the premises; one requires either no smoking or separate ventilation for smoking areas when children are on the premises; two require or allow designated smoking areas at all times; and two require or allow designated smoking areas only when children are on the premises. Of the 11 states that have clean indoor air restrictions for home-based day care, 10 penalize either the smoker or the business for a violation. Of the 29 states that have clean indoor air restrictions for commercial day care, 27 penalize either the business or the smoker for a violation. Laws in Michigan, New Jersey, and Ohio authorize license revocation for violations of the law. Sixty-six percent of laws restricting smoking in day care centers designate an enforcement authority.

Other Sites

Some states have laws that regulate smoking in other locations (Table 6). Forty-two states and Washington, D.C., have smoking restrictions in hospitals (an increase of one state [i.e., Tennessee] since the 1995 report); 40 states and Washington, D.C., on selected forms of public transportation; 29 states and Washington, D.C., in grocery stores; and 23 states in enclosed arenas. Fewer than 10 states have laws that restrict smoking in either bars, shopping malls, prisons, or hotels and motels. California is the only state that requires bars to be smoke-free or have separately ventilated areas; this change went into effect after the 1995 report. Laws in West Virginia and Minnesota require that certain prison facilities be smoke-free; both of these changes became effective after the 1995 report.

Minors' Access to Tobacco Products

Sale and Distribution

Because most initiation of tobacco use occurs in the teenage years, states have implemented minimum age requirements, vending machine restrictions, and retail licensure systems to limit minors' access to tobacco products. Selling tobacco products to persons under the age of 18 years is illegal in all states and Washington, D.C. (Table 7). In Alabama, Alaska, and Utah, selling tobacco products to persons under the age of 19 is illegal. Since the 1995 report, 15 states* have added an enforcement authority to their minors' access laws. More than one half of all states (32) now designate an enforcement authority within the minors' access legislation. Enforcement agencies include departments of public health, revenue, and public safety as well as alcoholic beverage-control boards and agencies. All 50 states and Washington, D.C., have some type of penalty for violation of minors' access laws. Since the 1995 report, 11 states† have added license suspension and/or revocation as a penalty for sales to minors. Nevada state law removed license suspension and revocation as a possible penalty to businesses for violation of minors' access laws. Thirty-five states and Washington, D.C., require signage indicating that selling cigarettes or tobacco products to minors is illegal, an increase of three states (i.e., Delaware, Kansas, and North Carolina) since the 1995 report.

Purchase, Possession, and Use of Tobacco by Minors

Forty-two states have laws that prohibit minors from purchasing, possessing, or using tobacco products, an increase of eight states (i.e., Alabama, Delaware, Florida, Kentucky, Mississippi, Montana, North Carolina, and Texas) since the 1995 report. Nine states prohibit all three of these provisions; 19 states prohibit two of the three provisions; and 14 states prohibit one of the provisions. The most common restriction is a prohibition on the purchase of tobacco products by minors; 33 states have such a restriction.

Vending Machines

Forty-one states and Washington, D.C., have laws that restrict minors' access to tobacco through vending machines, an increase of 10 states (i.e., California, Delaware, Illinois, Kansas, Louisiana, New Hampshire, North Carolina, Rhode Island, Texas, and Virginia) since the 1995 report (Table 8). In 1995, Louisiana and Virginia had only a signage requirement for vending machines, whereas the remaining eight states had no vending machine legislation.

Nineteen states and Washington, D.C., now ban tobacco vending machines from locations accessible to youths, an increase of eight states since the 1995 report. Four states (i.e., Minnesota, Mississippi, Montana, and South Dakota) that now ban tobacco vending machines from locations accessible to youths previously had limited placement restrictions that required either a locking device and/or supervision. Three states (i.e., California, Delaware, and Texas) had no vending machine restrictions in the 1995 report, and Louisiana had only a signage requirement.

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*Alabama, Arkansas, Colorado, Delaware, Idaho, Illinois, Kentucky, Maine, Minnesota, Montana, Nevada, New Jersey, Rhode Island, Texas, Utah.

†Delaware, Louisiana, Maine, Minnesota, Mississippi, Montana, New Hampshire, New Jersey, Oklahoma, Texas, Utah.

Seven states added an enforcement authority since the 1995 report; 52% of laws restricting vending machines designate an enforcement authority. Thirty-three states and Washington, D.C., have laws that penalize the business for a first violation, an increase of 10 states since the 1995 report; also, since the 1995 report, three states have changed their existing penalties.

Twenty-one states require signage regarding minors' restricted access to vending machines, an increase of four states since the 1995 report. New Hampshire, New Jersey, New Mexico, and Rhode Island now require signage.

Retail Licensing

Thirty-four states and Washington, D.C., require retailers to obtain either an over-the-counter and/or a vending machine license for selling tobacco products (Table 9). Maine and Mississippi enacted over-the-counter or vending machine licensing requirements for the first time since the 1995 report. Minnesota enacted legislation requiring localities to license tobacco. In addition, two states with one type of license enacted provisions requiring the other type of license. Alabama previously had over-the-counter licensing and added vending machine licensing, and Louisiana previously had vending machine licensing and added over-the-counter licensing.

Thirty states and Washington, D.C., have laws that require retailers to obtain a license for over-the-counter sales. Three of these states (i.e., Louisiana, Maine, and Mississippi) have added this requirement since the 1995 report. Of states that require an over-the-counter license, all except Alabama, Georgia, Mississippi, and Texas require a license fee.

Thirty-one states and Washington, D.C., have laws that require retailers to obtain a license for tobacco sales through vending machines. Alabama, Maine, and Mississippi added their license requirement since the 1995 report. Of states that require a vending machine license, all except Alabama, South Carolina, and Texas require a license fee.

Two states have changed their laws regarding frequency of license renewal since the 1995 report. In Delaware, a 3-year renewal frequency for over-the-counter licenses and a 1-year renewal frequency for vending machine licenses were added. In Mississippi, a 1-year renewal frequency was added to the over-the-counter retail license. Thirty-three states and Washington, D.C., authorize penalties for businesses for violating the over-the-counter and/or vending machine licensing requirements.

Advertising

Thirteen states have laws that restrict the advertising and promotion of tobacco products (Table 10), an increase of four states since the 1995 report. California's law bans tobacco advertising on state government property and on video games; in addition, since the 1995 report, California enacted a law that requires tobacco billboards be placed >1,000 ft. away from schools or playgrounds. Since the 1995 report, Arizona, Nevada, and Tennessee have enacted bans on advertising on the backs of school buses, and Indiana law requires that tobacco billboards be placed >200 ft. away from schools. Other types of advertising restrictions include limiting advertising on public transportation and requiring health warnings on print and billboard advertising for smokeless tobacco products.

Excise Taxes

All states and Washington, D.C., have cigarette excise taxes. The average tax is 38.9¢ per pack, and taxes range from 2.5¢ in Virginia to $1.00 in Alaska and Hawaii (Table 11). Forty-two states tax smokeless tobacco products; all states except one tax these products as a percentage of the price. Since the 1995 report, 13 states* have increased cigarette excise taxes. These increases range from 12¢ in New Hampshire to 71¢ in Alaska.

Seven states have changed their tax on smokeless tobacco products since the 1995 report. In Alaska, Massachusetts, New Jersey, Oregon, and Vermont, the tax on smokeless tobacco has been increased. In California and New Hampshire, the tax on smokeless tobacco fluctuates. California's smokeless tobacco tax is set by the state Board of Equalization. This tax is equivalent to the combined rate of tax applied to cigarettes and is based on the previous year's wholesale cost of tobacco products. California lowered the smokeless tobacco tax from 34% of the wholesale price in June 1995 to 29.4% effective through December 1998. New Hampshire's smokeless tax, set by the New Hampshire Department of Revenue, is based on the tax rate for cigarettes as a percentage of the price of the pack of cigarettes. The smokeless tobacco tax has fluctuated from 20% of the wholesale price in June 1995 to a high of 33.4% in June 1997; as of December 1998, the tax was 27.1% of the wholesale price.

Preemption

Thirty states have preemptive provisions in their tobacco-control laws (Table 12). For this report, preemptive legislation was defined as legislation that prevents any local jurisdiction from enacting restrictions that are more stringent than the state law or that might vary from the state law. Six states (i.e., Delaware, Indiana, Maine, Nevada, North Carolina, and South Carolina) have passed preemptive laws since the 1995 report. Of these, Indiana and Maine did not have previous preemptive laws in any area tracked in this report. However, Maine repealed its preemptive law as of June 1997. Some preemptive provisions are very narrow. For example, in New York, the state government has precedence over local government restrictions on the free distribution of samples of tobacco products. Other provisions are broad. For example, Tennessee's minors' access law preempts local legislation in all tobacco-control areas.

DISCUSSION

Smoke-Free Indoor Air

Restrictions on smoking in public places are designed to limit the public's exposure to ETS, which causes serious health consequences among both adults and children (*10–12*). Exposure to ETS among the nonsmoking U.S. population is extensive. A study using results from the Third National Health and Nutrition Examination Survey indicated that 87.9% of nontobacco users had detectable blood levels of cotinine, a primary measure of ETS exposure (*13*). One important source of ETS exposure is the workplace. Results reported in the 1992–1993 *Current Population Survey Tobacco Use*

*Alaska, Hawaii, Illinois, Maine, Massachusetts, New Hampshire, New Jersey, Oregon, Rhode Island, Utah, Vermont, Washington, Wisconsin.

Supplement indicate that 81.6% of all indoor workers are covered by some type of smoking policy. However, less than one half of workers (46.0%) are covered by a 100% smoke-free policy (*14*). Only 21.1% of food service workers (e.g., bartenders and wait staff) reported a smoke-free workplace; health-care workers (e.g., doctors) reported the highest percentage (80.7%) of smoke-free policies. Restaurant workers have an ETS exposure level that is approximately 1.6 to 2.0 times higher than levels for office workers; ETS exposure levels for bar workers are approximately 3.9 to 6.1 times higher than levels for office workers (*15*).

According to 1992 data from the National Survey of Worksite Health Promotion Activities, 87% of companies with >50 employees have established formal smoking policies, and 59% have banned smoking (*8*). Researchers have found that work site smoking policies reduce nonsmokers' exposure and impact employees' smoking behaviors (*7,16–20*). In some cases, smoke-free policies have been associated with a decrease in consumption of cigarettes among smoking employees (*17,18,21*). One study assessed whether smoking restrictions led to self-selection, which occurs when nonsmokers are attracted to smoke-free work sites, and smokers are attracted to work sites allowing smoking. After accounting for potential self-selection among workers, the study indicated that smoking bans reduced adult smoking by 5% and reduced cigarette consumption among continuing smokers by 10% (*22*). Evidence also exists indicating that strong smoking restrictions reduce smoking prevalence and average daily cigarette consumption among youth (*23*) and young adult (*24*) smokers.

A year 2000 national health objective is for all states and Washington D.C., to prohibit smoking or limit it to separately ventilated areas in work sites, restaurants, and public places (*8*). Although 31 states and Washington, D.C., restrict smoking in restaurants, only three states either prohibit smoking entirely or limit it to separately ventilated areas. Furthermore, since the 1995 report, few state-level actions to establish additional smoke-free laws or to strengthen existing laws have been adopted; this might be because many tobacco prevention and reduction efforts in the preceding 4 years have focused on children and adolescents to the exclusion of efforts to reduce ETS exposure (*25*). In addition, public health involvement with tobacco-related lawsuits and settlements also might have diminished the attention paid to establishing state- level actions to reduce ETS exposure.

California is the only state to prohibit smoking or limit it to separately ventilated areas in bars. This law has been associated with an improvement in the health of bartenders throughout the state (*26*). Approximately 59% of bartenders reported no longer having respiratory symptoms (i.e., wheezing, shortness of breath, or coughing) during the second month after the law took effect. In addition, 78% of bartenders who had reported sensory irritation (i.e., eye, nose, or throat irritation) reported no longer having those symptoms after the ban.

Although they are not tracked in this report, state regulations and administrative agency actions are another important means for establishing smoking restrictions in work sites and other sites. For example, Maryland and Washington have implemented extensive smoking restrictions through such mechanisms. In addition to state restrictions, many local governments also have taken action to protect the public from exposure to ETS. As of March 1999, at least 259 workplace or restaurant smoking ordinances were in effect in the United States that either prohibited smoking altogether or limited it to separately ventilated areas (*27*). For example, on April 1, 1996,

New York City enacted an ordinance that prohibited smoking in many sites, including public transportation, child day care centers, and retail stores (*28*). The ordinance also has extensive restrictions on smoking in restaurants.

The federal government has taken several actions to reduce exposure to ETS. These actions include smoking bans on domestic airline flights, in federally funded facilities that provide services to children, and in federal Executive Branch buildings (*29–31*). In 1994, the Occupational Safety and Health Administration proposed standards, including restrictions on exposure to ETS, for indoor air quality in the workplace (*32*). In addition, in 1998, the U.S. Department of Transportation announced that all U.S. airline carrier flights (domestic and international airlines) are completely smoke-free; 91% of flights between the United States and foreign destinations, including those operated by foreign carriers, are smoke-free. This progress in reducing exposure to ETS on flights has been achieved through a combination of legislative actions and voluntary agreements.

In July 1998, a U.S. District Court in North Carolina ruled that the Environmental Protection Agency's (EPA's) designation of secondhand smoke as a Group A carcinogen (i.e., a known human carcinogen) was flawed because of technical and procedural problems in the agency's review of health data (*33*). However, the court did not challenge EPA's findings regarding the effects of secondhand smoke exposure on children. EPA is appealing the court ruling regarding the carcinogenicity of secondhand smoke. Despite the ruling on the EPA report, studies continue to support a causal relation between ETS exposure and cancer. For example, the 1997 California EPA report described the causal relation between exposure to ETS and several negative health effects, including cancer (*12*). And in 1998, the National Toxicology Program proposed that ETS be listed as a carcinogen in the federal government's *9th Report on Carcinogens* (*34*). As information about the health hazards of exposure to ETS continues to be collected and disseminated, action at the state and local level to eliminate ETS exposure will likely increase.

Minors' Access to Tobacco Products

Despite laws in every state that prohibit the sale of cigarettes to minors, children and adolescents continue to obtain and use tobacco products. Some of these tobacco products are obtained from social sources (e.g., friends, family, or older adults) either by borrowing (or "bumming"), theft, or giving money to an older person to buy the tobacco for them (*35*). However, a large percentage of minors who smoke purchase their own cigarettes from commercial sources (*36–38*). Small stores and gas stations are the major commercial source of cigarettes for underaged buyers. Vending machines are more popular among the youngest adolescents, and the majority of adolescents who have never smoked believe it would be easy for them to buy cigarettes (*36,37*). According to the 1997 Youth Risk Behavior Surveillance System, of the 29.8% of students who purchased their cigarettes from a gas station or store, 66.7% of them were not asked for proof of age when they bought cigarettes in the month preceding the survey (*39*).

Data indicate that when minors' access laws are actively enforced, sales to minors are reduced (*36,40–44*). Furthermore, preliminary evidence indicates that strong enforcement of minors' access laws might reduce tobacco use among youth (*41,42,44*).

Localities that have been most successful in reducing commercial sales of tobacco to minors have generally had comprehensive minors' access ordinances, which include active surveillance of illegal sales to minors by using compliance checks in which minors, working with an enforcement agency, attempt to purchase tobacco products (*40–44*).

To date, no published studies have measured the effectiveness of youth purchase, possession, or use restrictions in reducing smoking prevalence rates among youths, but several studies have questioned the motivation and appropriateness of such laws (*36,45,46*). Some states (e.g., Florida, Texas, and Utah) have programs that give youth offenders a choice of paying a fine, participating in a smoking education class, or performing community service. These programs have not yet been evaluated for their effects on youth smoking rates.

The 1992 Synar Amendment (Public Law 102-321) requires that states receiving Substance Abuse Prevention and Treatment Block Grants establish and enforce laws that prohibit the sale of tobacco products to persons under the age of 18 years (*47*). The final Synar Regulation, issued by the Substance Abuse and Mental Health Services Administration (SAMHSA) in January 1996, requires each state to annually conduct random, unannounced inspections on a representative sample of retail tobacco outlets to assess the extent of sales to minors. The states were required to determine baseline rates and negotiate with SAMHSA appropriate interim targets and a timeline to reach the goal of a 20% maximum inspection failure rate. The 1997 *Synar Regulation Implementation Report to Congress on FFY 1997 State Compliance* (*48*) indicated that sales of cigarettes to minors in state compliance checks ranged from 7.2% in Florida to 72.7% in Louisiana with a median of 40% in fiscal year 1997. Four states (i.e., Florida, Maine, New Hampshire, and Washington) met the year 2000 national health objective of ≤20% sales to minors in compliance inspections in fiscal year 1997. States that had a history of strong enforcement activities generally had lower rates of sales to minors (*48*). Although the regulation implementing the Synar Amendment requires that all states obtain the goal of a maximum failure rate of no more than 20%, recent studies conducted at the community level indicated that this target might not be optimal for changing youth smoking rates (*40–42*).

In 1996, the Food and Drug Administration (FDA) issued a regulation prohibiting the sale of tobacco products to persons under the age of 18 years and required that all persons under the age of 27 years show a photographic identification to purchase cigarettes or smokeless tobacco. The regulation also banned sales of packages with <20 cigarettes and banned vending machines and self-service displays, except in certain venues for adults only (e.g., nightclubs) (*49*). In February 1997, the minimum age of sale and identification verification provisions went into effect; however, because of a legal challenge, the remaining access provisions have not yet gone into effect.

A year 2000 national health objective is for all states and Washington, D.C., to prohibit vending machines in areas accessible to minors (*8*). As of December 31, 1998, 19 states and Washington, D.C., have met the objective. In addition to state action, many localities have also taken action to restrict vending machines. As of March 31, 1999, 265 localities had completely banned vending machines, and 87 banned them in areas accessible to minors (*50*). Retail tobacco licensure allows states to develop and maintain lists of tobacco vendors that can be used for compliance checks and enforcement actions. Some states designate a portion of licensing fees for retailer education

or minors' access law enforcement. Furthermore, some states suspend or revoke retail tobacco licenses for repeated violation of minors' access laws (*36,37,48*). As of December 31, 1998, 23 states and Washington, D.C., may suspend or revoke retail licenses for violation of minors' access laws.

Tobacco Product Advertising and Promotion

Tobacco advertising increases the social pressure on minors to use tobacco by implying that using tobacco promotes independence, adventure, and glamour (*37,38*). Such advertising diminishes awareness of the addictive nature of tobacco and its substantial health risks (*51*). Teenagers are more likely than adults to smoke the three most advertised cigarette brands (i.e., Marlboro™, Camel™, and Newport™) (*52*). Although combined sales of these brands accounted for only 35% of the overall cigarette market share, 86% of current minor smokers purchased one of these three brands (*52*). The effect of cigarette advertising expenditures on brand preferences is three times greater for teenagers than for adults (*53*)

Assessing the impact of advertising restrictions on cigarette demand is difficult, especially isolating the impact of the advertising restrictions from other key determinants on cigarette demand (*7*). Factors that increase the complexity of studies regarding the impact of advertising restrictions include a) exposure to different types of advertising and promotion; b) social, taste, and cultural differences; and c) cumulative effects of exposure to advertising.

Results from econometric studies of advertising restrictions have varied. Most studies have measured the effect of banning only one or two types of advertising, which might increase cigarette demand. This increase in cigarette demand might be partly because of the substitution of other marketing approaches. However, a few studies have indicated that comprehensive advertising bans decrease cigarette demand (*7*).

In 1996, the tobacco industry spent $5.1 billion on cigarette advertising and promotion, a 4% increase from 1995 (*54*) . The largest category of cigarette advertising and promotion is for promotional allowances, which includes money paid to retailers for shelf space (i.e., slotting allowances). In 1996, the tobacco industry spent $2.15 billion on such promotions compared with $1.87 billion in 1995 (*54*).

Although the smokeless tobacco industry spends a fraction of what the cigarette manufacturers spend on advertising and promotion, the smokeless tobacco industry has increased expenditures every year since 1987; in 1997, the smokeless tobacco industry spent $150.4 million (*55*). Cigar industry spending on media advertising increased from >$1.1 million in 1994 to approximately $4 million in the first 9 months of 1996 (*56*).

The Comprehensive Smoking Education Act of 1984 requires cigarette print advertisements, billboards, and packages to contain one of four rotating warning labels (*57*). The Comprehensive Smokeless Tobacco Health Education Act of 1986 requires smokeless tobacco advertisements (other than billboards) and packages to contain one of three rotating warning labels (*58*). Because this act exempts smokeless tobacco billboards from including warning labels, states are allowed to enact such requirements. To date, Illinois, Michigan, and West Virginia have enacted such requirements.

The 1996 FDA regulation on tobacco use among minors included several provisions on tobacco advertising. Outdoor advertising within 1,000 ft. of schools and public playgrounds was banned. Also, selling or giving away products (e.g., caps and gym bags) that bear tobacco product brand names or logos was also prohibited (*49*). However, because of a legal challenge, the advertising provisions of this regulation have not yet gone into effect.

Settlements of lawsuits brought by states against the tobacco industry include additional restrictions on tobacco advertising and promotion. Florida, Minnesota, Mississippi, and Texas have settled individual lawsuits against the tobacco industry to recover the states' tobacco-related Medicaid costs. These settlement agreements require the tobacco industry to discontinue all tobacco product billboards, transit advertisements (i.e., including advertising on public transportation and at transit waiting areas, taxi stands, airports, and similar sites), and advertisements in arenas and stadiums.

The November 1998 settlement between the tobacco industry and 46 states,* Washington, D.C., and five territories also contains certain advertising and promotional restrictions (*59*). These restrictions include a ban on tobacco product billboards and tobacco advertising on buses and other forms of public transportation. The settlement also bans merchandise bearing tobacco company brand names and the use of cartoon characters in advertising. However, companies can continue to market cigarettes through print advertising and signs in stores; indoor and outdoor retail signage that is ≤14 sq. ft. in size are also allowed. Companies may also continue to sponsor a sporting event (e.g., NASCAR racing and rodeos), which uses the brand names of tobacco products. Most of the advertising and promotion restrictions in the settlement were required to be implemented by April 1999.

Excise Taxes

Policies that affect the price of tobacco products are the single most effective means of decreasing tobacco use, especially among youths and young adults (*7,24,60*). Price increases, usually a result of increases in the excise tax on tobacco products, encourage current tobacco users to quit or reduce their consumption of tobacco products and discourage youths and young adults from initiating tobacco use.

Studies suggest that increases in cigarette prices effectively curb tobacco use among all age groups but have a greater impact on youths and young adults than on older adults (*24,60–67*). Youths (i.e., aged 12–17 years) are more responsive to cigarette price increases than adults; young adults (i.e., aged 18–24 years) are less responsive than youths but more responsive than adults. Increases in cigarette prices also exhibit differential impacts by race and ethnicity. For example, data indicate that young (i.e., aged 18–24 years) blacks and Hispanics are substantially more responsive to changes in price than young whites (*67*).

Studies also indicate that increases in smokeless tobacco taxes reduce smokeless tobacco use among both adult and adolescent males (*66,68,69*). Among adolescent males, most of the decrease in use is attributed to adolescent males quitting or not starting to use smokeless tobacco (*68*). Some studies have indicated that increases in cigarette excise taxes can increase the demand for smokeless tobacco products.

*Florida, Minnesota, Mississippi and Texas were not included because these states had previous settlements with the tobacco industry.

Specifically, as cigarette excise taxes are increased, persons who can no longer afford expensive cigarettes brands will substitute relatively cheaper smokeless tobacco products to obtain nicotine (*66,69*). Increases in smokeless tobacco tax rates might help reduce this substitution.

The federal excise tax on cigarettes currently is 24¢ per pack, and the excise tax on smokeless tobacco products translates into 2.7¢ per average tin of snuff. In 1997, Congress enacted legislation to increase the federal cigarette excise tax by 15¢ per pack, which will bring the overall tax to 39¢ by the year 2002. The legislation also raised the federal tax on other tobacco products to a level proportional to the increase in the cigarette tax. In fiscal year 1997, revenues generated from federal excise taxes totaled $5.7 billion from cigarettes and $1.3 million from other tobacco products (*70*).

As of December 1998, state excise taxes ranged from 2.5¢ to $1.00 per pack, with an average of 38.9¢ per pack. In fiscal year 1997, net collections from state cigarette excise taxes totaled $7.14 billion (*70*). Arizona, California, Massachusetts, and Oregon have enacted tax increases through voter initiatives, which specify that revenues from these tax increases must be designated for tobacco-use prevention and control programs. In addition, Maine's legislature has enacted a tax increase that allocates a portion of the revenues for tobacco-use prevention and reduction programs.

Inflation-adjusted (1997 dollars) cigarette prices increased from $1.42 per pack in 1960 to $1.95 per pack in 1997, a 37% increase during a 37-year period. In 1992, the inflation-adjusted price of a pack of cigarettes peaked at $2.10 (1997 dollars). The cigarette tax-to-price ratio is used to assess the relative contribution of total state and federal excise taxes to the full price of cigarettes. Excise taxes as a percentage of nominal cigarette prices declined from 49.8% in 1960 to 29.6% in 1997. The national health objective for the year 2000 for tax-to-price ratio is 50% (*8*). A declining tax-to-price ratio indicates that the effect of excise taxes in increasing the price of cigarettes is diminished. To sustain the public health impact of tobacco excise taxes over time, such taxes can be indexed for inflation.

The individual state settlements between the tobacco industry and Florida, Minnesota, Mississippi, and Texas and the multistate settlement between the tobacco industry and the remaining 46 states might have an impact on the retail price of cigarettes. Despite the absence of an excise tax increase in these settlements, tobacco companies have increased wholesale cigarette prices to offset the financial impact of the settlements. As a result of the individual four-state settlements, the tobacco industry raised the wholesale price of cigarettes by approximately 25¢ per pack (*71*). The multistate settlement led to a wholesale cigarette price increase of approximately 45¢ per pack (*72*). However, because of industry discounting strategies, the long-term impact of these settlements on retail cigarette prices is still unknown (*73*).

For tobacco-control purposes, the inflation-adjusted price of cigarettes impacts consumers' behaviors (*7*). Smoking rates among adolescents began increasing in the early 1990s (*39*), which was concurrent with the drop in prices after 1992. Similarly, smoking rates among adults declined until the early 1990s but have leveled off in recent years (*3*).

Preemption

In this report, preemption is defined as legislation that prevents localities from enacting more stringent laws or laws that might vary from the state law (*74–77*). Such preemption limits the ability of localities to tailor laws to address community-specific issues. In addition, preemptive laws deter debate over local ordinances; such debate can educate the community about tobacco, potentially altering social norms about tobacco use (*78*). Preemptive state laws might also discourage local enforcement because communities that are not involved in the decision-making process might be less likely to request or encourage enforcement (*79*).

During 1993–1996, the number of tobacco-control laws with preemptive provisions increased substantially (*74*). A Tobacco Institute priority for 1993 was to encourage and support statewide legislation preempting local laws, including smoking, advertising, sales, and vending restrictions (*80*). A potential reason for this strategy was the greater potential for passage of strong tobacco-control laws at the local level and the logistical difficulties of the tobacco industry investing resources to address ordinances in multiple local jurisdictions (*75–77*). Eighteen states have preemptive provisions affecting smoke-free indoor air restrictions; therefore, achievement of the year 2000 national health objective (i.e., zero states with preemptive clean indoor air provisions) is unlikely.

CONCLUSION

Since the 1995 report on state tobacco laws, several states have enacted additional provisions that address tobacco use. Twelve states have increased excise taxes on cigarettes since the 1995 report, including an increase of 71¢ in Alaska. In addition, 11 states added retail license suspension or revocation for sales to minors, and 10 placed greater restrictions on tobacco vending machines.

Although all states have some tobacco-control laws, continued progress must be made to achieve the year 2000 national health objectives. For example, substantial progress is needed to fulfill the health objective to increase the number of state laws that either prohibit or restrict smoking to separately ventilated areas in work sites, restaurants, day care centers, and other public sites. Since the 1995 report, few states have passed new indoor smoking restrictions or strengthened existing ones. Eighteen states continue to have preemptive clean indoor air laws; therefore, the United States is unlikely to achieve the year 2000 national health objective to eliminate preemptive clean indoor air laws.

In addition to the development and enactment of tobacco-control policies, enforcement and implementation of such policies are critical. Enforcement actions taken by state and local agencies might include fines, license removal, and other penalties. Implementation strategies include educational activities in support of the law, disseminating tobacco-use prevention materials to affected parties, and developing processes to ensure compliance with laws (*79*).

Tobacco-control laws are an essential part of public health efforts to reduce the harmful effects of tobacco use. Price and tax increases reduce tobacco use among youths and adults. Indoor smoking restrictions have been demonstrated to reduce consumption of tobacco products. Compliance with minors' access laws substantially

reduces illegal sales to minors and also might (if sales rates are low enough) impact the use of tobacco products by youths. A few studies have documented that comprehensive advertising bans decrease cigarette demand.

In addition to the adoption and implementation of tobacco-control laws and policies, additional public health interventions are necessary for a comprehensive approach to effectively prevent and reduce tobacco use (*5*). For example, recent reports revealed that a tax increase on tobacco products combined with an antismoking campaign are more effective in sustaining the reduction in per capita cigarette consumption than a tax increase alone (*81,82*). Such antismoking campaigns include community-based prevention and educational programs, counteradvertising initiatives, and school-related interventions. In addition, interventions by the health-care system, in particular efforts to institutionalize delivery of tobacco-use cessation services, are critical (*83*).

Substantial evidence exists regarding the impact of tobacco-control policies; however, evaluation of the impact of these policies is ongoing. CDC is continuing to evaluate state tobacco-control programs and policies to further clarify the role of different interventions and policies in the reduction of tobacco use. CDC also will monitor state tobacco-control policies to assess progress toward the year 2000 national health objectives. In addition, CDC will apply the lessons of *Healthy People 2000* in the development of the tobacco objectives for *Healthy People 2010*. Finally, as other issues emerge as critical tobacco-control priorities (e.g., legislation requiring disclosure of ingredients and legislation addressing the multistate tobacco settlement), expansion of legislative tracking activities will be considered.

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TABLE 1. Summary of state laws* by type of restriction and state, as of December 31, 1998

State	Smoke-free indoor air				Minor's access to tobacco products			Advertising of tobacco products	Excise taxes	
	Government work sites	Private work sites	Restaurants	Other sites†	Sales and distribution	Vending machines	Licensing		Cigarettes	Chewing tobacco and snuff
Alabama					x		x		x	x
Alaska	x		x	x	x	x	x		x	x
Arizona	x			x	x			x	x	x
Arkansas				x	x	x	x		x	x
California	x	x	x	x	x	x		x	x	x
Colorado	x			x	x	x			x	x
Connecticut	x	x	x	x	x	x	x		x	x
Delaware	x	x	x	x	x	x	x		x	x
Florida	x	x	x	x	x	x	x		x	x
Georgia				x	x	x	x		x	
Hawaii	x		x	x	x	x			x	x
Idaho	x		x	x	x	x			x	x
Illinois	x	x	x	x	x	x		x	x	x
Indiana	x			x	x	x		x	x	x
Iowa	x	x	x	x	x	x	x		x	x
Kansas	x		x	x	x	x	x		x	x
Kentucky					x	x	x	x	x	
Louisiana	x	x		x	x	x	x	x	x	
Maine	x	x	x	x	x	x	x		x	x
Maryland	x		x	x	x	x	x		x	
Massachusetts	x		x	x	x	x	x		x	x
Michigan	x		x	x	x	x	x	x	x	x
Minnesota	x	x	x	x	x	x	x		x	x
Mississippi					x	x	x		x	x
Missouri	x	x	x	x	x	x			x	x
Montana	x	x	x	x	x	x	x		x	x
Nebraska	x	x	x	x	x	x	x		x	x
Nevada	x		x	x	x	x	x	x	x	x
New Hampshire	x	x	x	x	x	x	x		x	x
New Jersey	x	x		x	x	x	x		x	x
New Mexico	x				x	x			x	x
New York	x	x	x	x	x	x	x		x	x
North Carolina					x	x			x	x
North Dakota	x		x	x	x		x		x	x
Ohio	x			x	x	x	x		x	x

TABLE 1. Summary of state laws* by type of restriction and state, as of December 31, 1998 — Continued

State	Smoke-free indoor air				Minor's access to tobacco products			Advertising of tobacco products	Excise taxes	
	Government work sites	Private work sites	Restaurants	Other sites†	Sales and distribution	Vending machines	Licensing		Cigarettes	Chewing tobacco and snuff
Oklahoma	x		x	x	x	x	x		x	x
Oregon	x		x	x	x	x			x	x
Pennsylvania	x	x	x	x	x		x	x	x	
Rhode Island	x	x	x	x	x	x	x		x	x
South Carolina	x			x	x		x		x	x
South Dakota	x			x	x	x			x	x
Tennessee				x	x	x		x	x	x
Texas				x	x	x	x	x	x	x
Utah	x	x	x	x	x	x	x	x	x	x
Vermont	x	x	x	x	x	x	x		x	x
Virginia	x		x	x	x	x			x	
Washington	x		x	x	x	x	x		x	x
Washington, DC	x	x	x	x	x	x	x		x	
West Virginia				x	x			x	x	
Wisconsin	x	x	x	x	x	x	x		x	x
Wyoming	x				x	x			x	
Total	**42**	**21**	**32**	**45**	**51**	**45**	**35**	**13**	**51**	**42**

* Laws that have restrictions and/or require signs only.
† Other sites include commercial and home-based day care centers, bars, shopping malls, grocery stores, enclosed arenas, public transportation, hospitals, prisons, and hotels and motels.

TABLE 2. States with laws on smoking in government work sites, as of December 31, 1998

State	Type of restriction*	Minimum no. of employees	Non-retaliation provision	Written policy on smoking	Local government covered	Enforcement authority	Penalties for first violation		Signage required
							To business	To smoker	
Alaska	2	No	No	No	Yes	Yes	Fine of $20–$300	Yes	Yes
Arizona	2†	No	No	No	No	No	Petty offense	Yes	No
Arkansas	1§	No	No	Yes	No	No¶	No	No	No
California	3**	6	No	No	Yes	No	Fine up to $100	Yes	Yes
Colorado	4††	No	No	No	No	Yes	Corrective action, disciplinary action, or both	Yes	Yes
Connecticut	2†	20	No	No	Yes	No	Infraction	Yes	Yes
Delaware	2	1	Yes¶	Yes	Yes	Yes	Fine of $25	Yes	Yes
Florida	2†	No	No	Yes	Yes	Yes	Fine up to $100	Yes	Yes
Hawaii	4††	No	No	Yes	Yes	Yes	Fine up to $500	No	Yes
Idaho	4††	No	No	No	No	No	No	No	No
Illinois	2	No	No	No	Yes	Yes	No	Yes	Yes
Indiana	2	No	No	No	Yes	Yes	No	Yes	Yes
Iowa	2	No	No	No	Yes	Yes	Fine of $25	Yes	Yes
Kansas	4¶††	No	No	No	Yes	No¶	No	Yes	Yes
Kentucky	1§§	No	No	No	No	No	No	No	No
Louisiana	2	25	No	Yes	No	No¶	No	No	Yes
Maine	2	No	Yes	Yes	Yes	Yes	Fine up to $100	No	No
Maryland	4	No	No	No	No	No	No	Yes	No
Massachusetts	4¶	No	No¶	No	Yes	No	No	No	Yes¶
Michigan	4¶	No	No	Yes	No	Yes	No	No	Yes
Minnesota	2	No	No	No	No	Yes	No	Yes	Yes
Missouri	2	No	No	No	No	No	Infraction	Yes	Yes
Montana	2	7	No	No	No	Yes	No	No	Yes
Nebraska	2	No	No	No	No	Yes	No	Yes	Yes
Nevada	2	No	No	No	Yes	Yes	Misdemeanor	Yes	Yes
New Hampshire	2	4	Yes	Yes	Yes	No¶	Fine of at least $100	Yes	Yes
New Jersey	2	No	No	Yes	Yes	Yes	No	Yes	Yes
New Mexico	2	15	No	Yes	Yes	Yes	Fine of $10–$25	Yes	Yes
New York	2	No	No	Yes	Yes	Yes	Fine up to $2,000¶	Yes	Yes
North Carolina	1¶¶	No	No	No	No	No	No	No	No
North Dakota	2	No	No	No	No	No¶	Fine up to $100	No	Yes
Ohio	4††	No	No	No	No	No	No	No	No
Oklahoma	2	No	No	No	Yes	Yes	No	No	Yes
Oregon	2	No	No	No¶	No	No	No	No	No
Pennsylvania	2	No	No	Yes	Yes	Yes¶	Fine up to $50	Yes	Yes

TABLE 2. States with laws on smoking in government work sites, as of December 31, 1998 — Continued

State	Type of restriction*	Minimum no. of employees	Non-retaliation provision	Written policy on smoking	Local government covered	Enforcement authority	Penalties for first violation		Signage required
							To business	To smoker	
Rhode Island	2	No	Yes	Yes	Yes	Yes	Fine of $50–$500	No	Yes
South Carolina	2	No	No	No	Yes	Yes	Misdemeanor; or fine	Yes	Yes
South Dakota	4††	No	No	No	No	No	Corrective action, disciplinary action, or both	Yes	Yes
Utah	4	No	No	No	Yes	Yes	Fine up to $100	Yes	No
Vermont	2	No	No	No	Yes	Yes¶	Fine of $100	Yes	No
Virginia	2	No	No	No	Yes	Yes	Fine up to $25	Yes	Yes
Washington	4††	No	No	No	Yes	No	No	No	No
Washington, DC	2	No	No	Yes	No	Yes	Fine up to $300	Yes	Yes
Wisconsin	2	No	No	No	Yes	No¶	No	Yes	Yes
Wyoming	3††	No	No	No	No	Yes	No	No	Yes
Total* **	**42**	**7**	**4**	**14**	**26**	**26**	**24**	**28**	**33**

* 1 = no restrictions, 2 = designated smoking areas required or allowed, 3 = no smoking allowed or designated smoking areas allowed if separately ventilated, 4 = no smoking allowed (100% smoke free).
† Legislation restricts smoking in government buildings but does not specify work sites.
§ Requires smoking policy but does not specify smoking restrictions.
¶ Correction from 1995 report.
** Whereas most state laws stipulate areas in which smoking is restricted, California's law designates places and circumstances under which smoking is allowed.
†† Smoking restricted by executive order.
§§ State government work sites are permitted but not required to develop policies on tobacco.
¶¶ Smoking areas are required; nonsmoking areas are allowed.
*** Total number of state laws that have restrictions, enforcement, penalties, or signage.

NOTE: This table summarizes only those states that have legislative restrictions on smoking in government work sites. "Minimum no. of employees" indicates whether the law requires a minimum number of employees at the work site for the law to be in effect. "Nonretaliation provision" indicates whether the law protects an employee from retaliation for enforcing or attempting to enforce the law. "Written policy on smoking" indicates whether the law requires the work site to establish written policies regarding the provisions of the law. "Local government covered" indicates whether work sites under the control of political subdivisions of the state are covered by the law. "Enforcement authority" indicates whether the law designates a specific agency, department, office, or governing body responsible for enforcing the law. "Penalties for first violation" indicates the penalty or fine imposed on a work site and whether smokers are penalized for a first infraction. "Signage required" indicates whether the law requires signs to be displayed that describe the law.

TABLE 3. States with laws on smoking in private-sector work sites, as of December 31, 1998

State	Type of restriction*	Minimum no. of employees	Nonretaliation provision	Written policy on smoking	Enforcement authority	Penalties for first violation		Signage required
						To business	To smoker	
California	3†	6	No	No	No	Fine up to $100	Yes	Yes
Connecticut	2	20	No	No	No	No	No	Yes
Delaware	2	1	Yes§	Yes	Yes	Fine of $25	Yes	Yes
Florida	2¶	No	No	Yes	Yes	Fine up to $100	Yes	Yes
Illinois	2¶	No	No	No	No	No	Yes§	Yes
Iowa	2	No	No	No	Yes	Fine of $25	Yes	Yes
Louisiana	2	25	No	Yes	No§	No	No	Yes
Maine	2	No	Yes	Yes	Yes	Fine up to $100	No	No
Minnesota	2	No	No	No	Yes	No	Yes	Yes
Missouri	2	No	No	No	No	Infraction	Yes	Yes
Montana	2	No	No	No	Yes	Fine up to $25	No	Yes
Nebraska	2	No	No	No	Yes	No	Yes	Yes
New Hampshire	2	4	Yes	Yes	No§	Fine of at least $100	Yes	Yes
New Jersey	2	50	No	Yes	Yes	No	No	Yes
New York	2	No	No	Yes	Yes	Fine up to $2,000§	Yes	Yes
Pennsylvania	2	No	No	Yes	Yes§	Fine up to $50	Yes	Yes
Rhode Island	2	No	Yes	Yes	Yes	Fine of $50–$500	No	Yes
Utah	2	No	No	No**	Yes	Fine up to $100	Yes	No
Vermont	2	10	Yes	Yes	Yes	Fine of $100	Yes	No
Washington, D.C.	2	No	No	Yes	Yes	Fine up to $300	Yes	Yes
Wisconsin	2	No	No	No	No§	No	Yes	Yes
Total††	**21**	**7**	**5**	**11**	**14**	**14**	**15**	**18**

*1 = no restrictions, 2 = designated smoking areas required or allowed, 3 = no smoking allowed or designated smoking areas allowed if separately ventilated, 4 = no smoking allowed (100% smoke free).
†Whereas most state laws stipulate areas in which smoking is restricted, California's law designates places and circumstances under which smoking is allowed.
§Correction from 1995 report.
¶Restricts smoking in work sites but does not specify private-sector work sites.
**If 10 or more employees, written policy required.
††Total number of state laws that have restrictions, enforcement, penalties, or signage (i.e., sign is posted indicating where smoking is prohibited).

NOTE: This table summarizes only those states that have legislative restrictions on smoking in private-sector work sites. "Minimum no. of employees" indicates whether the law requires a minimum number of employees at the work site for the law to be in effect. "Nonretaliation provision" indicates whether the law protects an employee from retaliation for enforcing or attempting to enforce the law. "Written policy on smoking" indicates whether the law requires the work site to establish written policies regarding the provisions of the law. "Enforcement authority" indicates whether the law designates a specific agency, department, office, or governing body responsible for enforcing the law. "Penalties for first violation" indicates the penalty or fine imposed on a work site and whether smokers are penalized for a first infraction. "Signage required" indicates whether the law requires signs to be displayed that describe the law.

TABLE 4. States with laws on smoking in restaurants, as of December 31, 1998

State	Type of restriction*	Minimum seating capacity†	Enforcement authority	Penalties for first violation		Signage required
				To business	To smoker	
Alaska	2	50	Yes	Fine of $20–$300	Yes	Yes
California	3§	No	No	Fine up to $100	Yes	Yes
Connecticut	2	75	No	Infraction¶	Yes	Yes
Delaware	2	50	Yes	Fine of $25	Yes	Yes
Florida	2	50 (35)	Yes	Fine up to $100	Yes	Yes
Hawaii	2	50	Yes	Fine up to $20	Yes	Yes
Idaho	2	30	Yes	Fine up to $50	Yes	Yes
Illinois	2	No	No	No	Yes	Yes
Iowa	2	50	Yes	Fine of $25	Yes	Yes
Kansas	2	No	No¶	No	Yes	Yes
Louisiana	1¶**	No	No	No	No	No
Maine	2	No	Yes	Fine of $100–$500	No	Yes
Maryland	2	No (60)††	No	No	No	No
Massachusetts	2	75	No¶	No	No	Yes
Michigan	2	>50 (50); <50 (25)	Yes	Misdemeanor	No	Yes
Minnesota	2	No	Yes	No	Yes	Yes
Missouri	2	50	Yes	Infraction	Yes	Yes
Montana	2	No	Yes	Fine up to $25	No	Yes
Nebraska	2	No	Yes	No	Yes	Yes
Nevada	2	50	Yes	Misdemeanor; fine up to $100	Yes	No
New Hampshire	2	50	No¶	Fine of at least $100	Yes	Yes
New York	2	50 (70)	Yes	Fine up to $2,000¶	Yes	Yes
North Dakota	2	50¶	No¶	Fine up to $100	No	Yes
Oklahoma	2	50	Yes	No	No	Yes
Oregon	2	30	Yes	Fine up to $100	No	Yes
Pennsylvania	2	75	Yes	Fine up to $50	Yes	Yes
Rhode Island	2	50	Yes	Fine of $50–$500	Yes	Yes
Utah	4	No	Yes	Fine up to $100	Yes	No
Vermont	4	No	No	No	No	No

TABLE 4. States with laws on smoking in restaurants, as of December 31, 1998 — Continued

State	Type of restriction*	Minimum seating capacity†	Enforcement authority	Penalties for first violation		Signage required
				To business	To smoker	
Virginia	2	50	Yes	Fine up to $25	Yes	Yes
Washington	1	No	Yes	No	No	Yes
Washington, D.C.	2	50 (25)	Yes	Fine up to $300	Yes	Yes
Wisconsin	2	50	No¶	No¶	Yes	Yes
Total§§	**31**	**22**	**22**	**22**	**22**	**28**

*1 = no restrictions, 2 = designated smoking areas required or allowed, 3 = no smoking allowed or designated smoking areas allowed if separately ventilated, 4 = no smoking allowed (100% smoke free).
†Minimum seating capacity required by most restrictive law; percentage of seats required to be in smoke-free area is in parentheses.
§Whereas most state laws stipulate areas in which smoking is restricted, California's law designates places and circumstances under which smoking is allowed.
¶Correction from 1995 report.
**Restaurants are permitted but not required to develop policies on smoking.
††Maryland has no minimum seating requirement but requires restaurants of any size to have 60% of seats smokefree.
§§Total number of state laws that have restrictions, enforcement, penalties, or signage (i.e., sign is posted indicating where smoking is prohibited).

NOTE: This table summarizes only those states that have legislative restrictions on smoking in restaurants. "Minimum seating capacity" indicates whether the law requires the restaurant to have a minimum number of seats for the law to be in effect and indicates in parentheses the percentage of seats required to be smoke-free. "Enforcement authority" indicates whether the law designates a specific agency, department, office, or governing body responsible for enforcing the law. "Penalties for first violation" indicates the penalty or fine imposed on a work site and whether smokers are penalized for a first infraction. "Signage required" indicates whether the law requires signs to be displayed that describe the law.

TABLE 5. States with laws on smoking in commercial and home-based daycare centers, as of December 31, 1998

State	Commercial day care type of restriction†	Home-based day care type of restriction†	Enforcement authority	Penalties for first violation*	
				To business	To smoker
Alaska	4	4§	Yes	Civil fine	Yes
Arkansas	4	1¶	Yes	No	Yes
California	4	2**	No	Infraction	Yes
Delaware	4	1	No	Fine of $25–$50	Yes
Florida	4	1¶	Yes	Fine up to $100	Yes
Georgia	4§	1	No	No	Yes
Hawaii	4§	4§**	No	No	Yes
Illinois	4§	4§**	No	No	No
Kansas	4§	1¶	Yes	Civil fine	No
Louisiana	4	1¶	Yes	Fine $25–$50	Yes
Maine	2	2§	No	Fine up to $100	No
Massachusetts	2	1¶	No	No	No
Michigan	4	4§	No	Fine $100–$1000; license revocation	Yes
Minnesota	4§	4§**	Yes	Petty misdemeanor	Yes
Missouri	4§	1¶	No	Infraction	Yes
Nevada	2	1	Yes	Misdemeanor	Yes
New Hampshire	4§	1¶	Yes	Violation	Yes
New Jersey	4††	1	Yes	License suspension/revocation	No
New York	4	1	Yes	Civil penalty	Yes
North Dakota	4§	1¶	Yes	Class B misdemeanor	Yes
Ohio	3	3§	Yes	License revocation	No
Oklahoma	4	1¶	Yes	Fine of $50	No
South Carolina	4	1¶	Yes	Fine of $10–$25	Yes
South Dakota	2	2**	No	Petty offense	Yes
Tennessee	2§	2§	Yes	Class B misdemeanor; fine of $0–$500	No
Utah	4§	4§	Yes	Fine up to $100	Yes
Virginia	2	1	Yes	Fine up to $25	Yes

TABLE 5. States with laws on smoking in commercial and home-based daycare centers, as of December 31, 1998 — Continued

State	Commercial day care type of restriction†	Home-based day care type of restriction†	Enforcement authority	Penalties for first violation*	
				To business	To smoker
Washington, D.C.	2	1¶	Yes	Fine $10–$50	Yes
Wisconsin	4§	1¶	Yes	No	Yes
Total§§	**29**	**11**	**19**	**23**	**21**

*Penalties are for both commercial day care and home-based day care where applicable.
†1 = no restrictions, 2 = designated smoking areas required or allowed, 3 = no smoking allowed or designated smoking areas allowed if separately ventilated, 4 = no smoking allowed (100% smoke free).
§Nonsmoking restrictions are in effect when children are on the premises.
¶Prohibits smoking in child care facilities; however, language does not specify home-based child day care.
**Correction from 1995 report.
††Smoking restrictions are in effect when children are on the premises only. When children are not on the premises, smoking areas must be separately ventilated.
§§Total number of state laws that have restrictions, enforcement, or penalties.

NOTE: This table summarizes only those states that have legislative restrictions on smoking in day care centers. "Enforcement authority" indicates whether the law designates a specific agency, department, office, or governing body responsible for enforcing the law. "Penalties for first violation" indicate the penalty or fine imposed on a work site and whether smokers are penalized for a first infraction.

TABLE 6. States with laws on smoking in other sites,* as of December 31, 1998

State	Bars	Shopping malls	Grocery stores[†]	Enclosed arenas	Public transportation	Hospitals	Prisons	Hotels and motels
Alaska	1	1	2	1	2	4	2	1
Arizona	1	1	1	1	2	2	1	1
Arkansas	1	1	1	1	1	2	1	1
California[§]	3	3	3	3	3	3	1	2
Colorado	1	1	1	2	2	2	1	1
Connecticut	1	1	2	1	2	2	1	1
Delaware	1	1	2	1	4	4	1	1
Florida	1	1	2	2	4	2	1	1
Georgia	1	1	1	1	4	1	1	1
Hawaii	1	1	2	1	2[¶]	2	1	1
Idaho	1	1	2	2	2**	2	1	1
Illinois	1	1	2	2	2	2	1	1
Indiana	1	1	1	1	1	2	1	1
Iowa	1	2	2	2	2	2	1	2
Kansas	1	1	2	2	4	2	1	1
Louisiana	1	1	1	1	4	2	1	1
Maine	1	2	2	2	2	2	1	1
Maryland	1	1	2	1	4	4	1	2
Massachusetts	1	1	4	1	2**	2	1	1
Michigan	1	1	2	2	2	3	1	1
Minnesota	1	1	2	2	2**	4	4[††]	2
Mississippi	1	1	1	1	1[§§]	1	1	1
Missouri	2	2	2	2[¶¶]	2	2	1	1
Montana	1	1	2	2	2**	2	1	1
Nebraska	2	1	2	2	2	2	1	1
Nevada	1	1	2	1	2	2	1	1
New Hampshire	1	2	2	2	4	4	2	2
New Jersey	1	1	4	1	4	2	1	1
New York	1	1	2	2	4	2	1	1
North Dakota	1	1	1	1	2	2	1	1
Ohio	1	1	1	1	2**	2	1	1
Oklahoma	1	1	1	2	2	2	1	1
Oregon	1	1	2	2	1	2	1	1
Pennsylvania	1	1	1	2	2	2	1	1
Rhode Island	1	1	2	1	4	2	1	1
South Carolina	1	1	1	2	4	2	1	1
South Dakota	1	1	1	1	2	2	1	1

TABLE 6. States with laws on smoking in other sites,* as of December 31, 1998 — Continued

State	Bars	Shopping malls	Grocery stores†	Enclosed arenas	Public transportation	Hospitals	Prisons	Hotels and motels
Tennessee	1	1	1	1	1	2	1	1
Texas	1	1	1	1	2	2	1	1
Utah	1	4	4	4	4	2	1	2
Vermont	2	2	2	2	2	2	1	2
Virginia	1	1	2	2	4	2	1	1
Washington	1	2	2	2	2**	2	1	1
Washington, D.C.	1	1	2	1	4	2	1	1
West Virginia	1	1	1	1	4	1	4***	1
Wisconsin	1	1	2	1	2**	4	1	1
Total†††	**4**	**8**	**30**	**23**	**41**	**43**	**4**	**7**

* 1 = no restrictions, 2 = designated smoking areas required or allowed, 3 = no smoking allowed or designated smoking areas allowed if separately ventilated, 4 = no smoking allowed (100% smoke free).
† Because law does not always explicitly refer to grocery stores, restrictions on retail stores are often included here.
§ Whereas most state laws stipulate areas in which smoking is restricted, California's law designates places and circumstances under which smoking is allowed.
¶ Taxis only.
** Prohibits smoking on certain forms of public transportation but allows designated smoking areas on others.
†† State correctional facilities only.
§§ Correction from 1995 report.
¶¶ Enclosed arenas with a capacity of >15,000 persons are exempt.
*** Applies to inmates held by regional facility authority in regional jails operated solely by the authority.
††† Total number of state laws that have restrictions.

NOTE: This table summarizes only those states that have legislative restrictions on smoking in the specific sites.

TABLE 7. States with laws on sales of tobacco products to minors, as of December 31, 1998

State	Minimum age for legal sale (years)	Includes chewing tobacco or snuff	Enforcement authority	License suspension or revocation for violation	Penalties for first violation to business owner, manager and/or clerk	Prohibits purchase, possession, and/or use by minors	Signage required
Alabama	19	Both	Yes	No	Fine of $10–$50	Purchase/Possession/Use	No
Alaska	19	Both	No	Both	Fine of at least $300	Possession*	Yes
Arizona	18	Chewing tobacco only	No	No	Petty offense; fine up to $300 for an individual and up to $1,000 for an enterprise†	Purchase/Possession	No
Arkansas	18	Both	Yes	Both	Misdemeanor; fine of $100	No	Yes
California	18	Both	No	No	Fine of $200–$300; misdemeanor	Purchase/Possession	Yes
Colorado	18	Both	Yes	No	Written warning	Purchase	Yes
Connecticut	18	Both	Yes	Both	Fine up to $200	Purchase	Yes
Delaware	18	Both	Yes	Suspension	Fine of $250	Purchase	Yes
Florida	18	Both	Yes	Both	2nd degree misdemeanor; fine of $500	Purchase/Possession	Yes
Georgia	18	Both	Yes	No	Misdemeanor	Purchase	Yes
Hawaii	18	Both	No	No	Fine of $500	Purchase	Yes
Idaho	18	Both	Yes	No	Misdemeanor; imprisonment for 6 months and/or a fine of $300	Purchase/Possession/Use	No
Illinois	18	Both	Yes	No	Petty offense; fine of $200	Purchase	No§
Indiana	18	Both	No	No	Class C infraction; fine up to $500	Purchase/Possession	Yes
Iowa	18	Both	Yes	Both	Simple misdemeanor; fine of $300	Purchase/Possession/Use	No
Kansas	18	Chewing tobacco only	No	Both	Misdemeanor; fine of $200–$1,000	Purchase/Possession	Yes
Kentucky	18	Both	Yes	No	Fine of $100–$500	Purchase	Yes
Louisiana	18	Both	Yes	Both	Fine of $50–$500	Purchase/Possession¶	Yes
Maine	18	Both	Yes	Both	Fine of $50–$1500	Purchase/Possession/Use	Yes
Maryland	18	Both	No	No	Fine up to $300	Possession/Use	No
Massachusetts	18	Both	No	No	Fine of at least $100	No	Yes
Michigan	18	Both	No	No	Misdemeanor; fine up to $50	Possession/Use**	Yes
Minnesota	18	Both	Yes	Suspension	Fine of $75	Purchase/Possession/Use	No
Mississippi	18	Both	Yes	Both	$50 and a warning letter	Purchase/Possession††	Yes
Missouri	18	Both	No	No	Fine of $25	No	Yes
Montana	18	Both	Yes	Both	Verbal notification/warning; fine of $25	Possession/Use	Yes
Nebraska	18	Both	No	Both	Class III misdemeanor	Use	No
Nevada	18	Both	Yes	No	Fine up to $500	No	No
New Hampshire	18	Both	Yes	Both	Civil Infraction; fine up to $250	Purchase/Possession/Use	Yes
New Jersey	18	Both	Yes	Both	Fine of $250	No	Yes
New Mexico	18	Both	Yes	No	Misdemeanor; fine up to $1,000	Purchase	Yes

TABLE 7. States with laws on sales of tobacco products to minors, as of December 31, 1998 — Continued

State	Minimum age for legal sale (years)	Includes chewing tobacco or snuff	Enforcement authority	License suspension or revocation for violation	Penalties for first violation to business owner, manager and/or clerk	Prohibits purchase, possession, and/or use by minors	Signage required
New York	18	Both	Yes	Suspension	Fine of $100–$300	No	Yes
North Carolina	18	Both	No	No	Class 2 misdemeanor	Purchase	Yes
North Dakota	18	Both	No	No	Class B misdemeanor; fine up to $500	Use	No
Ohio	18	Both	No	No	4th degree misdemeanor; fine up to $250	No	Yes
Oklahoma	18	Both	Yes	Suspension	Fine of $100	Purchase/Possession	Yes
Oregon	18	Both	Yes	No	Fine of $100–$500	Possession	Yes
Pennsylvania	18	Both	No	No	Fine of at least $25	Possession/Use†§§	No
Rhode Island	18	Both	Yes	Suspension	Fine of $100	Purchase/Use¶¶	Yes
South Carolina	18	Both	No	No	Misdemeanor; fine up to $25	No	No
South Dakota	18	Both	Yes	No	Class II misdemeanor	Purchase/Possession/Use	No
Tennessee	18	Both	Yes	No	Class A misdemeanor; fine up to $2,500	Purchase	Yes
Texas	18	Both	Yes	Both	Class C misdemeanor; fine of $500	Purchase/Possession/Use	Yes
Utah	19	Both	Yes	Both	Fine up to $300	Purchase/Possession	No
Vermont	18	Both	Yes	Both	Fine up to $100	Purchase/Possession	Yes
Virginia	18	Both	Yes	No	Fine up to $100	Purchase/Possession	Yes
Washington	18	Both	Yes	Both	Fine of $100	Purchase/Possession	Yes
Washington, D.C.	18	Both	No	Both	Misdemeanor; fine of $100–$500	No	Yes
West Virginia	18	Both	Yes	No	Misdemeanor; fine of $10–$25	Possession/Use	No
Wisconsin	18	Both	No	Suspension	Fine up to $500	Purchase/Possession†	Yes
Wyoming	18	Both	No	No	Misdemeanor; fine up to $50	Purchase/Possession/Use	Yes
Total***	**51**		**32**	**24**	**51**	**42**	**36**

* Except minors at adult correctional facilities.
† Correction from 1995 report.
§ Signage required for sale of tobacco accessories but not for tobacco.
¶ Except persons who are accompanied by a parent, spouse, or legal guardian aged ≥21 years, or who are in a private residence.
** A person aged <18 years may not possess or use tobacco in any form in public places.
†† A pupil may not possess tobacco on school property.
§§ A pupil may not possess or use tobacco on school property.
¶¶ A person aged <16 years may not smoke or chew in any public street, place, or resort.
*** Total number of state laws that have restrictions, enforcement, penalties, or signage (i.e., sign is posted indicating that it is illegal to sell tobacco products to persons aged <18 years).

NOTE: This table summarizes the legislative restrictions and preemption relating to sale and distribution of tobacco products to minors for all states. The table includes the minimum age for legal sale in years. "Includes chewing tobacco or snuff" indicates whether the laws also restrict sales and distribution of chewing tobacco or snuff. "Enforcement authority" indicates whether the law designates a specific agency, department, office, or governing body responsible for enforcing the law. The table also indicates whether retail licenses may be suspended or revoked for sale of tobacco products to minors; the penalties to business owners, managers, and/or clerks for first violation of the law; and whether purchase, possession, and/or use of tobacco by minors is prohibited. "Signage required" indicates whether the law requires signs to be displayed that describe the law.

TABLE 8. States with laws on youth access to tobacco products through vending machines, as of December 31, 1998

State	Restrictions on access	Banned from locations accessible to youth	Limited placement	Locking device	Supervision	Enforcement authority	Penalties to business for first violation	Signage required
Alaska	Yes	Yes	No	No	Yes	No	Fine of at least $300	No
Arkansas	Yes	No	Yes	No	Yes	Yes	Misdemeanor; fine of $100	Yes
California	Yes	Yes	No	No	No	Yes	Fine of $200–$300	No
Colorado	Yes	No	Yes	Yes	No	Yes	Written warning	Yes
Connecticut	Yes	No	Yes	No	Yes	Yes	Fine of $250	Yes
Delaware	Yes	Yes	No	No	Yes	Yes	Fine of $250	No
Florida	Yes	No	Yes	Yes	Yes	Yes	Fine up to $1,000	No
Georgia	Yes	No	Yes	No	Yes	Yes	Misdemeanor; fine up to $300	Yes
Hawaii	Yes	Yes	No	No	No	No	Fine up to $1,000	Yes
Idaho	Yes*	No	No	No	No	No	Misdemeanor; imprisonment up to 6 months or $300 or both	No
Illinois	Yes	No	Yes	Yes	Yes	No	No	No
Indiana	Yes	No	Yes	Yes	No	No	Class C infraction	Yes
Iowa	Yes*	No	No	No	No	No†	No	No
Kansas	Yes	No	Yes	Yes	No	Yes†	Misdemeanor; fine up to $1,000	No
Kentucky	Yes	No	Yes	No	Yes	Yes	Fine of $100-$500	No
Louisiana	Yes	Yes	No	No	Yes	No	Civil penalties $50–$500	Yes
Maine	Yes	No	Yes	No	Yes	Yes	Fine of $100–$500	Yes
Maryland	No	No	No	No	No	No	No	Yes
Massachusetts	No	No	No	No	No	No	No	Yes
Michigan	Yes	Yes§	No	No	Yes	Yes	Misdemeanor; fine up to $1,000	No
Minnesota	Yes	Yes	No	No	No	No	No	Yes
Mississippi	Yes	Yes	No	No	No	Yes	Misdemeanor; fine of $20–$100	No
Missouri	No	No	No	No	No	No	No	Yes
Montana	Yes	Yes¶	No	No	No	Yes	No	No
Nebraska	Yes	Yes§	No	No	No	No	Class III misdemeanor	No
Nevada	Yes	No	Yes**	No	No	No	No	No
New Hampshire	Yes	No	No	Yes	Yes	No	Fine of $100	Yes
New Jersey	Yes	No	Yes††	No	No	No	Fine of $250	Yes
New Mexico	Yes	Yes	No	No	No	Yes	Misdemeanor; fine up to $1,000†	Yes
New York	Yes	Yes	No	No	Yes	Yes	Fine of $100–$300	No
North Carolina	Yes	No	Yes	Yes	Yes	No	Class 2 misdemeanor	No
Ohio	Yes	No	Yes	No	Yes	No	4th degree misdemeanor	No
Oklahoma	Yes	No	Yes	Yes	Yes	Yes	No	No

TABLE 8. States with laws on youth access to tobacco products through vending machines, as of December 31, 1998 — Continued

State	Restrictions on access	Banned from locations accessible to youth	Limited placement	Locking device	Supervision	Enforcement authority	Penalties to business for first violation	Signage required
Oregon	Yes	Yes[§§]	No	No	No	No	Fine up to $250	No
Rhode Island	Yes	No	No	Yes	Yes	No	Fine of $75	Yes
South Dakota	Yes	Yes	No	No	No	Yes	Class II misdemeanor	Yes
Tennessee	Yes	No	Yes	Yes	Yes	Yes	Class C misdemeanor	No
Texas	Yes	Yes	No	No	No	No	Class C misdemeanor; fine of $500	No
Utah	Yes	Yes	No	No	No	No	Class C misdemeanor	No
Vermont	Yes	Yes	No	No	Yes	Yes	No	Yes
Virginia	Yes	No	Yes	No	Yes	Yes	Fine up to $100	Yes
Washington	Yes	Yes	No	No	No	Yes	No	No
Washington, D.C.	Yes	Yes[§]	No	No	Yes	Yes	Fine up to $1,000	No
Wisconsin	Yes	No	Yes	No	Yes	No	Fine up to $500	Yes
Wyoming	Yes	Yes	No	No	No	No	Misdemeanor; fine up to $50	Yes
Total[¶¶]	**42**	**20**	**18**	**10**	**22**	**22**	**34**	**21**

*Requires businesses that have vending machines to ensure minors do not have access to the machines; however, law does not specify type of restriction (e.g., limited placement, locking device, or supervision).
[†]Correction from 1995 report.
[§]Allows vending machines in certain licensed establishments not listed in youth access law.
[¶]Except restaurants with a bar seating area.
**Restricts placement on elevators; public buses and school buses; waiting rooms of medical facilities or offices; grocery stores; child care centers; and regional transportation maintenance facilities and offices only.
[††]Restricts placement at schools only.
[§§]Exempts hotels and motels.
[¶¶]Total number of state laws that have restrictions, enforcement, penalties, or signage (i.e., sign is posted indicating that it is illegal to sell tobacco products to persons aged <18 years).

NOTE: This table summarizes only those states that have tobacco vending machine restrictions or require signs describing youth access restrictions to be affixed to tobacco vending machines. "Restrictions on access" indicates whether there are any restrictions on youth access to these machines. States that have a "no" in this column are included on this table because they have laws requiring that signs regarding youth access restrictions be affixed to tobacco vending machines. "Banned from locations accessible to youth" indicates whether the law restricts the placement of vending machines to bars, cabarets, factories, businesses, offices, or any other establishment not readily accessible to minors. "Limited placement" indicates whether vending machines are banned from areas accessible to minors or are allowed in such areas only if the machines have locking devices (mechanical lock-out devices requiring tokens) or are supervised (in plain view of an employee). "Enforcement authority" indicates whether the law designates a specific agency, department, office, or governing body responsible for enforcing the law. The table also indicates the penalties to a business for first violation of the law. "Signage required" indicates whether the law requires that signs describing youth access restrictions be affixed to the vending machines.

TABLE 9. States with laws on retail licensing for sales of tobacco products, as of December 31, 1998

State	Any retail license required	Retail license includes chewing tobacco or snuff	Over-the-counter		Vending Machine		Renewal frequency	Penalties to business for violation
			License required	License fee	License required	License fee (machine operator fee/fee per machine)		
Alabama	Yes	Yes	Yes	No	Yes	No	1 year	Fine of at least $200 misdemeanor; license suspension or revocation
Alaska	Yes	No	Yes	$25	Yes	$25/$0	1 year	Misdemeanor; fine up to $2,000; license suspension or revocation
Arkansas	Yes	Yes*	Yes	$20–$50†	Yes	$100/$10	1 year	Class C misdemeanor; license suspension or revocation
Connecticut	Yes	No	Yes	$25	Yes	$25–$1,000§/$0	1 year	Fine up to $500; license suspension or revocation
Delaware	Yes	Yes	Yes	$15	Yes	$0/$3	3 years (over-the-counter); 1 year (vending machine)	Fine up to $1,000¶; license suspension or revocation
Florida	Yes	Yes	Yes**	Up to $50	Yes	Up to $50††	1 year	Fine up to $500; license suspension or revocation
Georgia	Yes	Yes (vending machine only)	Yes	No	Yes	$0/$1	No (over-the-counter); 1 year (vending machine)	Fine of $25–$250; license suspension or revocation
Iowa	Yes	No	Yes	$50–$100§§	Yes	$100/$0	1 year	Fine of $50; license suspension or revocation
Kansas	Yes	No	Yes	$12	Yes	$0/$12	2 years	Misdemeanor; fine up to $1,000; license suspension or revocation
Kentucky	Yes	No	No	No	Yes	$25/$0	1 year	Fine of $500
Louisiana	Yes	Yes	Yes	$75	Yes	$75/$5	1 year	Misdemeanor; fine of $50–$500; license suspension or revocation
Maine	Yes	Yes	Yes	Up to $25	Yes	$0/$25	No	Fine of $300–$500
Maryland	Yes	No	Yes	$30	Yes	$500/$0 ($200 application fee; $30 renewal fee)	1 year	Misdemeanor; fine of $1,000; license suspension or revocation

TABLE 9. States with laws on retail licensing for sales of tobacco products, as of December 31, 1998 — Continued

State	Any retail license required	Retail license includes chewing tobacco or snuff	Over-the-counter		Vending Machine		Renewal frequency	Penalties to business for violation
			License required	License fee	License required	License fee (machine operator fee/fee per machine)		
Massachusetts	Yes	Yes	Yes	$10[¶¶]	Yes	$100/$5	2 years (over-the-counter and vending machine); 1 year (vending machine operator)	Fine up to $50; license suspension or revocation
Michigan	Yes	Yes	No	No	Yes	$5–$100[§]/$0	1 year	Fine of 100% of tax due, felony with fine up to $5,000, or both; license suspension or revocation
Minnesota	Yes***	Yes	No	No	No	No	No	No
Mississippi	Yes	Yes	Yes	No	No	No	1 year	License suspension or revocation
Montana	Yes	Yes	Yes	$5	Yes	$5–$50[§]/$0	1 year	Misdemeanor; fine up to $500; license suspension or revocation
Nebraska	Yes	Yes	Yes**	$10–$25	Yes	$10–$25[††]/$0	1 year	Class III misdemeanor
Nevada	Yes	Yes	Yes**	No	Yes	No	No	Misdemeanor; license suspension or revocation
New Hampshire	Yes	Yes	Yes	$10	Yes	$70/$10	2 years	Misdemeanor; fine up to $2,000 for individuals and up to $20,000 for corporations; license suspension or revocation
New Jersey	Yes	No	Yes	$50	Yes	$0/$50	1 year	Fine up to $250; license suspension or revocation
New York	Yes	Yes	Yes	$100	Yes	$0/$25	1 year	Fine up to $200 (over-the-counter); fine up to $100 (vending machine)
North Carolina	No[†††]	No	No	No	No	No	No	No
North Dakota	Yes	Yes	Yes**	$15	No	$15/$0	1 year	Class A misdemeanor; license suspension or revocation[¶]
Ohio	Yes	No	Yes	$25–$30[§]	Yes	$0/$25–$30[§]	1 year	Misdemeanor; license suspension or revocation
Oklahoma	Yes	No	Yes	$30	Yes	$0/$50	3 years (over-the-counter); 1 year (vending machine)	Fine up to $30
Pennsylvania	Yes	No	Yes	$25	Yes	$25/$0	1 year	Fine of $250–$1,000; license suspension or revocation

TABLE 9. States with laws on retail licensing for sales of tobacco products, as of December 31, 1998 — Continued

State	Any retail license required	Retail license includes chewing tobacco or snuff	Over-the-counter		Vending Machine		Renewal frequency	Penalties to business for violation
			License required	License fee	License required	License fee (machine operator fee/fee per machine)		
Rhode Island	Yes	No	Yes	$25	Yes	$100[§§§]/$25	No	Fine up to $100; license suspension or revocation
South Carolina	Yes	Yes	No	No	Yes	No	No	Fine of $20–$100
Texas	Yes	Yes[¶¶¶]	Yes	No	Yes	No	2 years	Fine of $750
Utah	Yes	Yes	Yes	$30****	Yes	$30/$0	3 years	Class B misdemeanor; license suspension or revocation
Vermont	Yes	Yes	Yes	$10	Yes	$10/$0	1 year	Misdemeanor; fine up to $200; license suspension or revocation
Washington	Yes	No	Yes	$93	Yes	$93/$30	Unspecified[††††]	Misdemeanor; license suspension or revocation
Washington, D.C.	Yes	No	Yes	$15	Yes	$0/$15	1 year	Fine up to $1,000; license suspension or revocation
Wisconsin	Yes	Yes (over-the-counter only)	Yes	$5–$100[§§]	Yes	$50/$0	1 year	Fine of $25–$1,000; license revocation
Total[§§§§]	**35**	**22**	**31**	**26**	**32**	**29**	**30**	**34**

* Requires separate licenses for cigarettes and other tobacco products.
† Based on monthly gross sales.
§ Based on number of sites or vending machines operated.
¶ Correction from 1995 report.
** Includes vending machines.
†† Only one fee required if more than one vending machine is operated under the same roof.
§§ Based on size of locality.
¶¶ License fees determined annually by the department of revenue.
*** Cities and towns are required to license and regulate retail tobacco sales. County boards are required to license and regulate retail tobacco sales in unorganized territories and in cities or towns that do not license or regulate retail tobacco sales.
††† North Carolina, formerly coded yes in the 1995 report, is now coded no. A retail license exists for those retailers who manufacture their own tobacco products or deal nontaxed tobacco products.
§§§ Only if vending machine operator has ≥25 machines.
¶¶¶ Retailers are allowed to sell both cigarettes and other tobacco products through a combination permit.
**** License fees determined by tax commission.
†††† Unspecified in law; might be specified elsewhere (e.g., state regulations).
§§§§ Total number of state laws that have restrictions or penalties.

NOTE: This table summarizes only those states that require some form of retail licensure (i.e., either over-the-counter or vending machine). This table does not include license requirements for tobacco wholesalers or distributors. "Any retail license required" indicates whether the law requires any person owning a store that sells cigarettes at retail or operates a cigarette vending machine to obtain a license or permit. Whether an over-the-counter or vending machine license is required is also specified. Vending machine licenses might include vending machine operators who supply vending machines to more than one retail store. "Retail license includes chewing tobacco or snuff" indicates whether the license includes the sale of chewing tobacco or snuff. "License fee" indicates whether a fee is required and the amount of the fee for over-the-counter licenses, vending machine operator licenses, or licenses per vending machine. "Renewal frequency" indicates whether and how often licenses have to be renewed. The table also indicates the penalties to a business for violation of the law.

TABLE 10. States with laws on tobacco advertising (excluding promotions), as of December 31, 1998

State	Any restriction	Banned on state property	Restriction on public transportation	Near schools	Restrictions on other specific locations	Other restriction
Arizona	Yes	No	No	No	Yes*	No
California	Yes	Yes	No	Yes†	No	Yes§
Illinois	Yes	No	No	No	No	Yes¶
Indiana	Yes	No	No	Yes**	No	No
Kentucky	Yes	No	No	Yes††	No	No
Louisiana	Yes	No	No	No	No	Yes§§
Michigan	Yes	No	No	No	No	Yes¶
Nevada	Yes	No	No	No	Yes*	No
Pennsylvania	Yes	No	No	No	No	Yes§§
Tennessee	Yes	No	No	No	Yes*	No
Texas	Yes	No	No	Yes¶¶	Yes¶¶	No
Utah	Yes	No	Yes	No	No	Yes¶***
West Virginia	Yes	No	No	No	No	Yes
Total†††	**13**	**1**	**1**	**4**	**4**	**7**

* Tobacco advertisements are not allowed on the back of school buses.
† Advertising of tobacco products on outdoor billboards must be located >1,000 ft. away from schools or playgrounds.
§ Video games.
¶ Advertising of smokeless tobacco on printed materials must have warning labels.
** Advertising of tobacco products on outdoor billboards must be located >200 ft. away from schools.
†† No larger than 50 square feet and not less than 500 ft. away from a school.
§§ Lottery tickets.
¶¶ Advertising of tobacco products on outdoor signs must be located >1,000 ft. away from schools or churches.
*** Banned.
††† Total number of state laws including each type of provision.

NOTE: This table summarizes only those states that have legislative restrictions on advertising.

TABLE 11. State tax on tobacco products and year most recent tax change became effective, as of December 31, 1998

State	Cigarettes		Chewing tobacco and snuff	
	Tax (cents per pack)*	Year most recent tax change became effective	Tax	Year most recent tax change became effective
Alabama	16.5	1984	¾¢ per oz. (chew) ½¢ per oz. (snuff)	1984
Alaska	100	1997	75% of WP†	1997
Arizona	58	1994	6.5¢ per oz.	1994
Arkansas	31.5§	1993	23% of MSP¶	1993
California	37	1994	29.37% of WSP**††	1998
Colorado	20	1986	20% of MLP§§	1986
Connecticut	50	1994	20% of WSP	1989
Delaware	24	1991	15% of WSP	1987
Florida	33.9	1990	25% of WSP	1985
Georgia	12	1971	None	NA¶¶
Hawaii	100	1998	40% of WSP	1965
Idaho	28	1994	40% of WSP	1994
Illinois	58	1997	18% of WSP	1995
Indiana	15.5	1987	15% of WSP	1987
Iowa	36	1991	22% of WSP	1991
Kansas	24	1985	10% of WSP	1972
Kentucky	3	1970	None	NA
Louisiana	20	1990	None	NA
Maine	74	1997	62% of WSP	1991
Maryland	36	1992	None	NA
Massachusetts	76	1996	75% of WSP	1996
Michigan	75	1994	16% of WSP	1994
Minnesota	48	1992	35% of WSP	1987
Mississippi	18	1985	15% of MLP	1985
Missouri	17	1993	10% of manufacturer's invoice price	1993
Montana	18	1993	12.5% of WSP	1993
Nebraska	34	1993	15% of purchase price***	1988
Nevada	35	1989	30% of WP	1983
New Hampshire	37	1997	27.1% of WSP†††	1998
New Jersey	80	1998	48% of WP	1998
New Mexico	21	1993	25% of product value***	1986
New York	56	1993	20% of WSP	1993
North Carolina	5	1991	2% of cost***	1991
North Dakota	44	1993	28% of WPP§§§	1993
Ohio	24	1993	17% of WSP	1993
Oklahoma	23	1987	30% of factory list price	1985
Oregon	68	1997	65% of WSP	1997
Pennsylvania	31	1991	None	NA
Rhode Island	71	1997	20% of WSP	1992
South Carolina	7	1977	5% of MP¶¶¶	1968
South Dakota	33	1995	10% of WPP	1995
Tennessee	13	1971	6% of WSP	1972
Texas	41	1990	35% of MLP	1990
Utah	51.5	1997	35% of MSP	1986
Vermont	44	1995	41% of WP	1995
Virginia	2.5	1966	None	NA
Washington	82.5	1996	74.9% of WSP	1993
Washington, D.C.	65	1993	None	NA
West Virginia	17	1978	None	NA
Wisconsin	59	1997	20% of MLP	1981
Wyoming	12	1989	None	NA

*Twenty cigarettes per pack.
†Wholesale price.
§If the state does not appropriate adequate funds for breast cancer research and control, 2.5¢ per pack is added (1997).
¶Manufacturer's selling price.
**Rates determined by the State Board of Equalization.
††Wholesale sales price.
§§Manufacturer's list price.
¶¶Not applicable.
***Definition and/or legislative language indicates that unit is equivalent to manufacturer's price.
†††Imposes tax at a rate proportional to the cigarette tax.
§§§Wholesale purchase price.
¶¶¶Manufacturer's price.

TABLE 12. Preemption provisions in effect as of December 31, 1998

State	Any preemption	Smoke-free indoor air			Minors' access			Marketing		
		Government work sites	Private work sites	Restaurants	Sales to youth	Vending machines	Distribution	Sampling	Display	Promotion
California	x	x	x	x	x		x			
Connecticut*	x	x	x	x						
Delaware	x	x	x	x	x	x	x	x		
Florida	x	x	x	x						
Illinois†	x	x	x	x						
Indiana	x				x		x		x	
Iowa	x	x	x	x	x	x	x			
Kentucky*	x				x	x	x		x	
Louisiana	x	x	x	x	x	x	x			
Massachusetts§	x									
Michigan†	x			x	x					
Mississippi	x				x	x	x			
Montana	x				x	x	x			x
Nevada	x	x	x	x	x	x	x		x	x
New Jersey¶	x									
New Mexico	x				x	x	x	x		
New York	x							x		
North Carolina	x	x	x	x	x		x		x	x
Oklahoma	x	x		x	x		x	x	x	x
Oregon	x					x				
Pennsylvania	x	x	x	x						
South Carolina*	x	x			x		x	x		
South Dakota	x	x	x	x	x		x			x
Tennessee	x	x	x	x	x	x	x	x	x	x
Utah	x	x	x	x						
Virginia	x	x	x	x						
Washington	x				x	x		x		x
West Virginia†	x									
Wisconsin	x				x	x	x			
Wyoming	x				x		x			
Total**	**30**	**16**	**14**	**16**	**19**	**12**	**17**	**7**	**6**	**7**

*Correction from 1995 report. Connecticut, Kentucky, and South Carolina were previously listed as having preemption in clean indoor air for government work sites, private-sector work sites, or restaurants.
†Illinois, Michigan, and West Virginia have preemptive clauses regarding labeling of smokeless tobacco products.
§Massachusetts' preemptive clause only pertains to the sale of cigarette rolling papers.
¶New Jersey's preemptive clause only pertains to smoking in health-care facilities or in offices of persons performing the healing arts.
**Total number of state laws including each type of provison.

State and Territorial Epidemiologists and Laboratory Directors

State and Territorial Epidemiologists and Laboratory Directors are acknowledged for their contributions to *CDC Surveillance Summaries*. The epidemiologists and the laboratory directors listed below were in the positions shown as of May 1999.

State/Territory	Epidemiologist	Laboratory Director
Alabama	John P. Lofgren, MD	William J. Callan, PhD
Alaska	John P. Middaugh, MD	Gregory V. Hayes, DrPH
Arizona	Robert W. England, Jr, MD, MPH	Barbara J. Erickson, PhD
Arkansas	Thomas C. McChesney, DVM	Michael G. Foreman
California	Stephen H. Waterman, MD, MPH	Paul Kimsey, PhD
Colorado	Richard E. Hoffman, MD, MPH	Ronald L. Cada, DrPH
Connecticut	James L. Hadler, MD, MPH	Sanders F. Hawkins, PhD
Delaware	A. LeRoy Hathcock, PhD	Christopher Zimmerman (Acting)
District of Columbia	Martin E. Levy, MD, MPH	James B. Thomas, ScD
Florida	Richard S. Hopkins, MD, MSPH	Ming Chan, PhD (Acting)
Georgia	Kathleen E. Toomey, MD, MPH	Elizabeth A. Franko, DrPH
Hawaii	Paul V. Effler, MD, MPH	Vernon K. Miyamoto, PhD
Idaho	Christine G. Hahn, MD	Richard H. Hudson, PhD
Illinois	Byron J. Francis, MD, MPH	David F. Carpenter, PhD
Indiana	Robert Teclaw, DVM, PhD, MPH	David E. Nauth
Iowa	M. Patricia Quinlisk, MD, MPH	Mary J. R. Gilchrist, PhD
Kansas	Gianfranco Pezzino, MD, MPH	Roger H. Carlson, PhD
Kentucky	Glyn G. Caldwell, MD	Samuel Gregorio, DrPH (Acting)
Louisiana	Louise McFarland, DrPH	Henry B. Bradford, Jr, PhD
Maine	Kathleen F. Gensheimer, MD, MPH	John A. Krueger
Maryland	Diane M. Dwyer, MD, MPH	J. Mehsen Joseph, PhD
Massachusetts	Alfred DeMaria, Jr, MD	Ralph J. Timperi, MPH
Michigan	Matthew L. Boulton, MD, MPH	Frances Pouch Downes, DrPH (Acting)
Minnesota	Richard Danila, PhD, MPH (Acting)	Norman Crouch, PhD (Acting)
Mississippi	Mary Currier, MD, MPH	Joe O. Graves, PhD
Missouri	H. Denny Donnell, Jr, MD, MPH	Eric C. Blank, DrPH
Montana	Todd A. Damrow, PhD, MPH	Mike Spence, MD
Nebraska	Thomas J. Safranek, MD	Steve Hinrichs, MD
Nevada	Randall L. Todd, DrPH	L. Dee Brown, MD, MPH
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