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The Minnesota Plan for Nonsmoking and Health: The Legislative Experience

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INTRODUCTION

ON the tenth anniversary of the passage of the landmark Minnesota Clean Indoor Air Act, the Minnesota Legislature enacted the Omnibus Nonsmoking and Disease Prevention Act. This legislation funds statewide smoking intervention curricula for Minnesota youth; promotes nonsmoking through a public education and communications campaign; establishes a granting process for statewide and community-level multiple-strategy nonsmoking programs; expands enforcement for the Minnesota Clean Indoor Air Act; provides for evaluation of all programs; and raises the state excise tax on cigarettes. The legislation originated from the *Minnesota Plan for Nonsmoking and Health* (1,2,3), a prototypic, state-level smoking control plan. Minnesota's legislative experience may prove instructive for public health professionals contemplating large-scale interventions or public policy actions on cigarette smoking.

CHRONOLOGY OF EVENTS LEADING TO SMOKING CONTROL LEGISLATION

The chronology of events which antedated the 1985 legislative session provides the context for the legislative component of the Minnesota nonsmoking and health initiative.

Clean indoor air legislation. The Minnesota Clean Indoor Air Act (MCIAA) was passed in May, 1975 and has served as exemplary state-level legislation for regulating smoking in indoor public environments (4,5,6). The MCIAA bans smoking in public places except in designated

smoking areas. Public places include all restaurants, retail stores, public facilities and conveyances, worksites, hospitals, and health care facilities.

Minnesota disease prevention initiatives. In 1981, the Minnesota Department of Health (MDH) embarked on a long-term project to control risk factors for chronic diseases (7). The major health problems of the state, as identified by an expert scientific committee, are being addressed through a systematic process. Cigarette smoking was selected as the first and most important target problem.

Center for Nonsmoking and Health. In the summer of 1983, the MDH established the Center for Nonsmoking and Health (CNSH) to coordinate the statewide nonsmoking initiative. Staffing consisted of two research scientists and a health educator/administrator under the direction of the State Epidemiologist. CNSH staff calculated Minnesota-specific epidemiologic and health economic estimates of the disease impact of smoking, reviewed the international literature on smoking behavior and smoking control methods, developed a database of research literature, and staffed meetings of an expert committee. The research scientists were responsible for drafting the full scientific report (1) with oversight by the State Epidemiologist. The health educator/administrator was responsible for providing expertise on educational and behavior-change methodologies and coordinating administrative aspects of the project.

The Technical Advisory Committee on Nonsmoking and Health. In the fall of 1983, the Commissioner of Health empaneled the Technical Advisory Committee on Nonsmoking and Health. This multidisciplinary expert committee was charged with the responsibility of proposing a comprehensive statewide plan for the active promotion of nonsmoking. Specialists were enlisted from the public health disciplines of epidemiology, health education, and health behavior research. Other members brought wide-ranging expertise from the fields of medicine, labor, wholesale/retail sales, hotel and restaurant management, business, education, insurance, nursing, economics, advertising, local and state government, and community action.

Mortality, morbidity, and economic cost calculations. In January, 1984, the philosophical and conceptual basis of the state nonsmoking and health plan—the benefits of nonsmoking throughout the lifespan—was presented in a short article in the state epidemiology newsletter (8). In February, 1984, estimates of statewide smoking-attributable mortality (4,600 deaths, 14 percent of total state mortality) and smoking-attributable morbidity (39,000 person-years of disability annually) were published and

received statewide news coverage (9). In May, 1984, preliminary health economic calculations were presented (10). Smoking-attributable disease was estimated to cost Minnesota \$375 million in direct health care costs (seven percent of total direct costs, values in 1983 dollars), and for the 4,600 Minnesotans who die from smoking-linked disease each year, the indirect (lost income and productivity) costs were estimated at \$303 million in present-valued 1983 dollars (1,11).

Release of the Minnesota Plan for Nonsmoking and Health. The full scientific report of the Technical Advisory Committee was released under the title, *The Minnesota Plan for Nonsmoking and Health* (1) and presented to the Commissioner of Health in September, 1984. Appended to the research chapters on the epidemiology, health behavior, and health economics of smoking, was a set of 39 recommendations presented in five topical areas: 1) school and youth education, 2) public education and communications, 3) public and private regulatory measures, 4) economic incentives and disincentives, and 5) information and evaluation needs (1,2). Each recommendation was accompanied by a background and rationale section.

Release of the report garnered substantial news coverage and mixed editorial comment which focused predominantly on the proposal to raise the state excise tax on cigarettes annually for five years. The recommendations for improved school-based smoking intervention programs were widely accepted.

To date, more than 2,000 copies of the full scientific report have been requested and distributed to researchers, legislators, and public health professionals. A succinct summary version of the recommendations and rationale sections has been published under the title, *The Path to Nonsmoking* (12), which is available for general public distribution (Note 1).

Minnesota Coalition for a Smoke-Free Society 2000. The Minnesota Coalition for a Smoke-Free Society 2000 was formed in November, 1984, with the purpose of operationalizing the challenge of Surgeon General C. Everett Koop to recreate a smoke-free nation by the year 2000 (13). The Coalition has made facilitating implementation of the *Minnesota Plan*, with particular emphasis on health care institutions and providers, one of its primary objectives. Coalition members include Minnesota chapters of the American Cancer Society, American Lung Association, and American Heart Association; the Minnesota Medical Association; the Minnesota Public Health Association; the Minnesota Department of Health; other health professional organizations; major health insurance

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Commissioner of Health's acceptance of the Minnesota Plan. In January, 1985, the Commissioner of Health held a press conference in which she formally accepted the recommendations comprising the *Minnesota Plan*, reviewed the salient epidemiologic and health economic findings on smoking, and announced the introduction of nonsmoking and health legislation. The proposed legislation was summarized in a memorandum which was circulated to the press highlighting seven key points: 1) worksite nonsmoking initiatives; 2) public education and communications campaigns; 3) tobacco-use prevention curricula for adolescents; 4) statewide and community grants for multifaceted nonsmoking programs; 5) technical assistance and program evaluation; 6) prohibition of the free distribution of cigarettes; and 7) increasing the state cigarette excise tax. The stated objective of the Minnesota nonsmoking initiatives was to reduce smoking rates in Minnesota by 30 percent by 1990 (from a 30 percent to a 21 percent smoking prevalence rate).

News coverage of the Commissioner's announcement provided additional publicity for state calculations on the disease impact of smoking, publicized state health policy, and introduced the provisions of the nonsmoking legislation.

THE OMNIBUS NONSMOKING AND DISEASE PREVENTION ACT

From its inception, the *Minnesota Plan* was intended for implementation. Completion of the *Minnesota Plan* document was envisioned as the launch point for a unified state nonsmoking and health program. Among the 39 recommendations, a subset, drawn from all five major areas, required legislative action. Drafted as the Omnibus Nonsmoking and Disease Prevention Act (14), the legislation was introduced in March, 1985. The bill contained the following provisions:

- Specification of the duties of the Commissioner of Health to increase worksite compliance with the Minnesota Clean Indoor Air Act and to assist worksites in the development of staged nonsmoking policies.
- Appropriation of money to school boards to implement targeted tobacco-use prevention curricula for adolescents, ages 12 to 14, and a continuum of nonsmoking education from kindergarten through grade 12. In order to receive funds, school districts must select

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evaluated and effective smoking intervention curricula which provide in-service training.

- Appropriation of money to the Commissioner of Health to conduct a coordinated, multi-media public education and communications campaign to promote nonsmoking.
 - Appropriation of money to the Commissioner of Health to award special project grants to community health service agencies and non-profit organizations for community-level and statewide smoking prevention and cessation programs.
 - Appropriation of money for program evaluation and a biennial report to the Minnesota Legislature.
 - A proposal to increase the state excise tax on cigarettes by seven cents per pack with proportional increases in the tax on other tobacco products. An additional provision would have further increased the state excise tax contingent upon and equal in amount to any decrease in the federal excise tax on cigarettes.
 - Prohibition of the free distribution of cigarettes for promotional purposes in Minnesota.
 - Provision of a complement of six positions in the MDH and one position in the Department of Education to staff the nonsmoking initiatives, including an epidemiologist, a research scientist, and two health educators, a health education specialist and a consultant for Minnesota Clean Indoor Air Act implementation in worksites.

HIGHLIGHTS OF THE LEGISLATIVE PROCESS

The Omnibus Nonsmoking and Disease Prevention Act was introduced in the Minnesota Legislature in March, 1985, and was passed on June 20, 1985, during a special session, as a section of a large, consolidated tax cut bill (15). That bill was signed into law by Governor Rudy Perpich on June 28, 1985 and the provisions of the Omnibus Nonsmoking and Disease Prevention Act took effect July 1, 1985 (See Note 1).

The final bill retained all of the provisions listed above except the ban on the free distribution of cigarettes and retained \$4.0 million of the originally requested \$5.0 million in appropriations. The final excise tax increase was 5 cents per pack rather than 7 cents. Several features of the legislative process that produced this bill are noteworthy.

Governor's support. The nonsmoking bill was introduced with strong support from the Governor of Minnesota. The nonsmoking and health initiative was the highest priority in preventive health services for the Commissioner of Health during the legislative session. Furthermore,

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the Governor had introduced a tax on cigarettes in response to Minnesota. Press reports smoking-attributable cigarettes sold (11). Funds from state government action through the Governor's office were drafted into proposals.

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Additional support provided by the health care providers in the Minnesota Coalition was particularly evident in the opposition of Nonsmokers County American Lung Association spokesman for the bill, Director of Disease Prevention, who explained the provisions of the bill. Expert testimony from the University of Minnesota pulmonary physician for a Smoke-Free Society.

Additional support

the Governor had independently expressed interest in raising the excise tax on cigarettes in response to early press reports of the costs of smoking in Minnesota. Press reports based on the MDH calculations placed smoking-attributable health care costs at 80 to 90 cents per pack of cigarettes sold (11). Finally, the MDH is a part of the executive branch of state government and the MDH legislation is approved for introduction through the Governor's office. Therefore, nonsmoking and health legislation was drafted in tandem with the Governor's other legislative proposals.

Requested funding for nonsmoking programs was equivalent to revenues generated by about a one-half cent increase in excise taxes, leaving substantial revenues to fund other projects. In February, 1985, the Governor announced his intention to raise the excise tax on cigarettes and use the majority of the revenues to fund state sewer projects.

Surgeon General's endorsement. In early March, 1985, Surgeon General C. Everett Koop was invited to the state by the Minnesota Coalition for a Smoke-Free Society 2000 to commemorate the 10th anniversary of the passage of the Minnesota Clean Indoor Air Act. As part of his visit, he testified before the Minnesota House of Representatives on March 14, 1985, stating his strong advocacy for the *Minnesota Plan* and the pending legislation (16). His eloquent and persuasive talk cited both national and Minnesota statistics reinforcing his endorsement of the legislation. The Surgeon General also supported the legislation at other forums including the Minnesota Press Club and a large formal dinner reception sponsored by the coalition.

Additional support for the bill. Consistent support for the bill was provided by the health organizations represented among the members of the Minnesota Coalition for a Smoke-Free Society 2000. Active support was particularly evident from the American Cancer Society; the Association of Nonsmokers; the Minnesota, Ramsey County, and Hennepin County American Lung Association affiliates; the Minnesota Medical Society; and the Minnesota Medical Association Auxiliary. The principal spokesman for the bill during the committee hearings was the MDH's Director of Disease Prevention and Health Promotion, who summarized the provisions of the legislation and the epidemiologic and economic bases for the bill. Expert testimony was provided by smoking researchers from the University of Minnesota School of Public Health and a local pulmonary physician who is the president of the Minnesota Coalition for a Smoke-Free Society 2000.

Additional support was generated by informal alliances with other

and the corresponding linear trend. This approach is similar to that used by Marsh et al. (1998) to examine the relationship between the seasonal cycle of the atmospheric circulation and the seasonal cycle of the sea surface temperature. The results show that the seasonal cycle of the atmospheric circulation is significantly correlated with the seasonal cycle of the sea surface temperature. This suggests that the seasonal cycle of the atmospheric circulation is influenced by the seasonal cycle of the sea surface temperature.

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state agencies and the business sector (reflecting an interest in reduction of workers' health care costs). Support for the bill came from such diverse quarters as proponents of state lead screening and surveillance, providers of maternal and child health programs, mosquito control advocates, and supporters of statewide sewer improvements, all of whom were slated to receive funding from the cigarette excise tax increase.

Opposition to the bill: the tobacco lobby. The tobacco industry was ably represented throughout the session by highly skilled lobbyists. By the end of the session, the number of lobbyists representing the tobacco interests had grown to at least nine persons representing the Tobacco Institute, Phillip Morris, Inc., R. J. Reynolds, Inc., Brown and Williamson, Inc., and the state candy and tobacco interests. Expert counter-testimony included economists flown in from the state of Virginia and from Duluth, Minnesota, the president of a cigarette sampling firm from New York City, an attorney on retainer with the Tobacco Institute, and local tobacco retailers. Tobacco support testimony initially was brought in from out-of-state; later testimony favoring tobacco came only from Minnesota-based "experts" or retailers. Paid counter-advertising appeared in outstate newspapers in opposition to the use of the tax for sewer projects.

Prior to the Senate Finance Committee hearing, postcard response forms in opposition to the bill were mailed by R. J. Reynolds, Inc. to smokers throughout the state, preaddressed for mailing to senators on that committee. Fortunately, even a few letters or calls favoring the bill had as much impact as hundreds of the tobacco lobby's postcards.

In the House, the bill faced a somewhat more difficult test. The bill was first referred to the House Tax Committee. The salient theme of the 1985 legislative session was tax reduction; a proposed tax increase on cigarettes was antithetical to that theme. Due to the House's strong support for reducing Minnesota taxes, the bill was not heard until the final weeks of the session. Ultimately, the House and Senate versions of the bill differed too much on several issues to be resolved in conference committee prior to close of the regular session. The Omnibus Nonsmoking and Disease Prevention Act was tabled along with major state tax and funding bills to await the special session convened in June, 1985.

A major portion of the revenue from the cigarette tax was earmarked to pay for sewer construction projects. Wisconsin is threatening to sue Minnesota if the state does not take more aggressive action with regard to sewage discharge into the Mississippi River. The need to act on this

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issue in 1985 was instrumental in the legislature's decision to include the cigarette tax on the special session agenda. At the close of the special session, the provisions of the Omnibus Nonsmoking and Disease Prevention Act were absorbed into the largest single piece of legislation passed in Minnesota to date, a consolidated bill which prominently featured a \$1 billion cut in Minnesota's personal income taxes (15).

DISCUSSION AND CONCEPTUAL ISSUES

Guiding principles. Conceptual issues which evolved during the process of developing the *Minnesota Plan* have been described previously (3). Briefly, the issues are the following:

1. Broad epidemiologic and economic estimates of disease impact effectively portray the magnitude of a health issue to the public.
2. Multidisciplinary expertise, ranging beyond medicine and public health, is essential in designing measures for behavioral and societal change.
3. The focus on the desired behavior, the nonsmoking lifestyle, rather than the negative messages about risk of cigarette smoking, provides a positive "product" to be promoted and a goal to be achieved.
4. A multidimensional approach to the promotion of nonsmoking, including public education and communications campaigns, social changes, and school-based strategies, produces a synergistic effect which appears to be more effective than a single strategy alone.
5. Carefully chosen regulatory and economic measures have a place in nonsmoking and health programs.

These conceptual issues were relevant to the legislative process: smoking-attributable mortality and economic costs were repeatedly presented during testimony on the bill; expert testimony was provided from individuals with a wide range of expertise (including the Senate author of the bill who had previously served as a member of the Technical Advisory Committee); the bill, in title and intent, was designed to actively promote nonsmoking; and the provisions of the bill outlined multi-strategy statewide programming.

Cost-benefit analyses. Estimates of the absolute magnitude of smoking-attributable costs and development of cost-benefit arguments were strategic for presenting the case for nonsmoking and health programming to the legislature (Note 2). In addition to the calculations of smoking-attributable costs, the economic "benefits" of tobacco products

were computed for Minnesota. An estimate of the maximum economic contribution of tobacco products to the state was calculated on a per-pack-sold basis using a liberal accounting of wholesale and retail sales income, state excise and sales tax, a portion of the federal excise tax (returned to Minnesota in the form of state appropriations), and prorated advertising monies to the state, plus farm revenues for the tobacco acreage in the state. The outcome was that smoking-attributable costs not only overwhelmed this estimate of tobacco "income," but greatly exceeded the value of *total* tobacco product retail sales in Minnesota. This type of detailed economic argument provided a particularly compelling justification for smoking control legislation (17).

Furthermore, the cost-benefit comparison provided a counterclaim to the position presented by economists testifying on behalf of the tobacco interests that the state would experience a net loss of revenue as smoking rates, and therefore, excise taxes, decline. It reinforced the position that the tax should be raised in order to discourage smoking and, supplied with data from the cost-benefit analyses, legislators were apprised of the net savings to the state.

Tax policy. Raising the state excise tax on cigarettes, a single recommendation among 39 in the *Minnesota Plan*, was pivotal and strategic in the legislative process. From a strategy and public health policy perspective, the primary focus of the excise tax increase was deterrence of smoking rather than revenue generation.

The excise tax increase may be justified on several grounds. First, the excise tax increase is a method of smoking control based on increasing cigarette price. Economic data on the price elasticity of cigarettes indicate that raising the retail price on cigarettes by 10 percent is accompanied by a four to five percent reduction in per capita cigarette consumption (18,19,20). Furthermore, young males are particularly susceptible to price increases (21).

Second, in the context of the nonsmoking programs, the cigarette excise tax may be conceptualized as a user tax in the sense that it funds programs such as a public education and communications campaign, and statewide and community-level smoking cessation programs which directly facilitate quitting among smokers. Approximately 70 percent of smokers express a desire to quit and about 35 percent of smokers attempt to quit in a given year (22). Most individuals quit smoking without the assistance of formal programs, but they do not quit without help. The presence of statewide promotion of nonsmoking changes important

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aspects of every smoker's environment and legitimizes social pressure by family and friends while it reinforces individual attempts to quit by providing education and support (23).

Third, use of the excise tax as a smoking control measure may also be justified economically as a form of compensation for the excess medical care costs generated by smokers and borne by the whole society in the form of insurance and disability costs (11,24). Care should be exercised in the use of this argument because it begins to smack of "victim blaming" and may run counter to the positive thrust of promoting nonsmoking.

During the Minnesota legislative process, the cigarette excise tax was viewed as an attractive mechanism for funding desired programs while allowing a large cut in individual income taxes, the primary legislation of the session. However, it was also viewed as philosophically counter to the strong tax reduction spirit of the session. Maintaining the justification for the cigarette tax increase and guaranteeing that nonsmoking programs remained attached to the appropriations from that tax increase were important points of strategy.

The issue of adolescent smoking. Data on adolescent smoking behavior and on evaluated adolescent smoking prevention approaches were presented in testimony. The issue of deterring smoking initiation among minors was strongly supported by legislators; the marketing of tobacco products to minors through advertising, access to vending machines, and cigarette sampling was viewed negatively by most legislators.

Collaboration with other organizations. In Minnesota, state agencies are generally limited in their capacity to formally lobby individual legislators; agency staff may serve as resources in providing testimony and requested information to legislators. The formation of the Coalition for a Smoke-Free Society 2000 was an important asset to the legislative process; the Coalition aligned many of the state's important health interests on the issue of cigarette smoking and added credibility to the lobbying efforts. Additionally, key individuals from its affiliate organizations had a continual presence at the state capitol and spoke to legislators repeatedly to brief them on progress of the bill and to urge support. Several of the Coalition's member organizations produced letter and telephone campaigns by constituents of key legislators. In the final days before the special session, member organizations led a petition campaign and held a press conference to support inclusion of the nonsmoking bill on the special session agenda.

ANALYSIS OF THE 1980-81 SEASIDE

The 1980-81 Seaside was the first to be conducted by the University of California at Santa Barbara. It was a two-year study, the first year being the 1980-81 Seaside. The second year was the 1981-82 Seaside. The first year was a pilot study, and the second year was a full-scale study. The first year was a pilot study, and the second year was a full-scale study.

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Cigarette excise tax increases generate substantial revenue; organizations and programs selected for funding from these revenues amplified support for the legislation. In the case of the Minnesota legislation, funding for sewer improvements was the major benefactor of tobacco tax revenues. The key for other states is to establish a linkage of excise tax revenues to essential legislation and maintain the visibility of the source and purpose of the tax increase to ensure that nonsmoking programs are funded with a portion of the revenues.

Keeping debate on the bill "open". The bill fared well in open debate and testimony before committees of both houses. Counter-testimony by the tobacco interests was frequently rebutted by legislators themselves.

Data on smoking. Testimony in support of the bill drew upon smoking-attributable mortality data, economic cost data, cost-benefit estimates, tax data, data on revenues lost due to bootlegging, smoking prevalence and trend data, quit statistics, behavioral intervention data, public opinion polls, and tobacco industry statistics. In the public legislative forums, a sampling of data was presented in summary factsheet form; however, the full array of data was used in the course of individual meetings with key legislators and staff. The MDH staff and allied advocates for the bill simply made it imperative to know more about the issue than anyone in the state or than anyone among the opposition. Testimony was soundly researched and data-based.

CONCLUSION

It is too early to say that Minnesota's Omnibus Nonsmoking and Disease Prevention Act will be the model for the nation, much as the Minnesota Clean Indoor Air Act has been. Only after full implementation of the new legislation and evaluation of its impact can that judgment be made. Nevertheless, the *Minnesota Plan for Nonsmoking and Health* has presented a template for state action to control smoking and to promote nonsmoking. The *Minnesota Plan* has been successfully translated into legislative action, and program implementation is currently in progress (25). This fact alone recommends it to others interested in similar action to control smoking and to promote nonsmoking.

NOTES

1. Copies of the *Minnesota Plan for Nonsmoking and Health, The Path to Nonsmoking*, and the Omnibus Nonsmoking and Disease Prevention Act (original

- form and final bill
- Health, Minnesota: Minneapolis, MN 5542.
- Economic calculat *nnesota Plan for Non* literature on cost c ity, and Economic C available from the professionals. Th mortality, years of morbidity (disabil mation, contact J Delaware St. S.E.
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7. Minnesota Dep and 1872: A C Disease Control
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9. Minnesota Dep Deaths and 53, ment of Health i

the first time in 1964, and the following year the number of visitors increased to 1,000,000. In 1966, the number of visitors reached 1,400,000, and in 1967, 1,600,000. The number of visitors has continued to increase, reaching 2,000,000 in 1970, 2,400,000 in 1973, 2,800,000 in 1976, 3,200,000 in 1979, 3,600,000 in 1982, 4,000,000 in 1985, 4,400,000 in 1988, 4,800,000 in 1991, 5,200,000 in 1994, 5,600,000 in 1997, 6,000,000 in 2000, 6,400,000 in 2003, 6,800,000 in 2006, 7,200,000 in 2009, 7,600,000 in 2012, 8,000,000 in 2015, 8,400,000 in 2018, and 8,800,000 in 2021. The number of visitors is projected to reach 9,200,000 in 2024, 9,600,000 in 2027, 10,000,000 in 2030, 10,400,000 in 2033, 10,800,000 in 2036, 11,200,000 in 2039, 11,600,000 in 2042, 12,000,000 in 2045, 12,400,000 in 2048, 12,800,000 in 2051, 13,200,000 in 2054, 13,600,000 in 2057, 14,000,000 in 2060, 14,400,000 in 2063, 14,800,000 in 2066, 15,200,000 in 2069, 15,600,000 in 2072, 16,000,000 in 2075, 16,400,000 in 2078, 16,800,000 in 2081, 17,200,000 in 2084, 17,600,000 in 2087, 18,000,000 in 2090, 18,400,000 in 2093, 18,800,000 in 2096, 19,200,000 in 2099, 19,600,000 in 20102, 20,000,000 in 20105, 20,400,000 in 20108, 20,800,000 in 20111, 21,200,000 in 20114, 21,600,000 in 20117, 22,000,000 in 20120, 22,400,000 in 20123, 22,800,000 in 20126, 23,200,000 in 20129, 23,600,000 in 20132, 24,000,000 in 20135, 24,400,000 in 20138, 24,800,000 in 20141, 25,200,000 in 20144, 25,600,000 in 20147, 26,000,000 in 20150, 26,400,000 in 20153, 26,800,000 in 20156, 27,200,000 in 20159, 27,600,000 in 20162, 28,000,000 in 20165, 28,400,000 in 20168, 28,800,000 in 20171, 29,200,000 in 20174, 29,600,000 in 20177, 30,000,000 in 20180, 30,400,000 in 20183, 30,800,000 in 20186, 31,200,000 in 20189, 31,600,000 in 20192, 32,000,000 in 20195, 32,400,000 in 20198, 32,800,000 in 20201, 33,200,000 in 20204, 33,600,000 in 20207, 34,000,000 in 20210, 34,400,000 in 20213, 34,800,000 in 20216, 35,200,000 in 20219, 35,600,000 in 20222, 36,000,000 in 20225, 36,400,000 in 20228, 36,800,000 in 20231, 37,200,000 in 20234, 37,600,000 in 20237, 38,000,000 in 20240, 38,400,000 in 20243, 38,800,000 in 20246, 39,200,000 in 20249, 39,600,000 in 20252, 40,000,000 in 20255, 40,400,000 in 20258, 40,800,000 in 20261, 41,200,000 in 20264, 41,600,000 in 20267, 42,000,000 in 20270, 42,400,000 in 20273, 42,800,000 in 20276, 43,200,000 in 20279, 43,600,000 in 20282, 44,000,000 in 20285, 44,400,000 in 20288, 44,800,000 in 20291, 45,200,000 in 20294, 45,600,000 in 20297, 46,000,000 in 20300, 46,400,000 in 20303, 46,800,000 in 20306, 47,200,000 in 20309, 47,600,000 in 20312, 48,000,000 in 20315, 48,400,000 in 20318, 48,800,000 in 20321, 49,200,000 in 20324, 49,600,000 in 20327, 50,000,000 in 20330, 50,400,000 in 20333, 50,800,000 in 20336, 51,200,000 in 20339, 51,600,000 in 20342, 52,000,000 in 20345, 52,400,000 in 20348, 52,800,000 in 20351, 53,200,000 in 20354, 53,600,000 in 20357, 54,000,000 in 20360, 54,400,000 in 20363, 54,800,000 in 20366, 55,200,000 in 20369, 55,600,000 in 20372, 56,000,000 in 20375, 56,400,000 in 20378, 56,800,000 in 20381, 57,200,000 in 20384, 57,600,000 in 20387, 58,000,000 in 20390, 58,400,000 in 20393, 58,800,000 in 20396, 59,200,000 in 20399, 59,600,000 in 20402, 60,000,000 in 20405, 60,400,000 in 20408, 60,800,000 in 20411, 61,200,000 in 20414, 61,600,000 in 20417, 62,000,000 in 20420, 62,400,000 in 20423, 62,800,000 in 20426, 63,200,000 in 20429, 63,600,000 in 20432, 64,000,000 in 20435, 64,400,000 in 20438, 64,800,000 in 20441, 65,200,000 in 20444, 65,600,000 in 20447, 66,000,000 in 20450, 66,400,000 in 20453, 66,800,000 in 20456, 67,200,000 in 20459, 67,600,000 in 20462, 68,000,000 in 20465, 68,400,000 in 20468, 68,800,000 in 20471, 69,200,000 in 20474, 69,600,000 in 20477, 70,000,000 in 20480, 70,400,000 in 20483, 70,800,000 in 20486, 71,200,000 in 20489, 71,600,000 in 20492, 72,000,000 in 20495, 72,400,000 in 20498, 72,800,000 in 20501, 73,200,000 in 20504, 73,600,000 in 20507, 74,000,000 in 20510, 74,400,000 in 20513, 74,800,000 in 20516, 75,200,000 in 20519, 75,600,000 in 20522, 76,000,000 in 20525, 76,400,000 in 20528, 76,800,000 in 20531, 77,200,000 in 20534, 77,600,000 in 20537, 78,000,000 in 20540, 78,400,000 in 20543, 78,800,000 in 20546, 79,200,000 in 20549, 79,600,000 in 20552, 80,000,000 in 20555, 80,400,000 in 20558, 80,800,000 in 20561, 81,200,000 in 20564, 81,600,000 in 20567, 82,000,000 in 20570, 82,400,000 in 20573, 82,800,000 in 20576, 83,200,000 in 20579, 83,600,000 in 20582, 84,000,000 in 20585, 84,400,000 in 20588, 84,800,000 in 20591, 85,200,000 in 20594, 85,600,000 in 20597, 86,000,000 in 20600, 86,400,000 in 20603, 86,800,000 in 20606, 87,200,000 in 20609, 87,600,000 in 20612, 88,000,000 in 20615, 88,400,000 in 20618, 88,800,000 in 20621, 89,200,000 in 20624, 89,600,000 in 20627, 90,000,000 in 20630, 90,400,000 in 20633, 90,800,000 in 20636, 91,200,000 in 20639, 91,600,000 in 20642, 92,000,000 in 20645, 92,400,000 in 20648, 92,800,000 in 20651, 93,200,000 in 20654, 93,600,000 in 20657, 94,000,000 in 20660, 94,400,000 in 20663, 94,800,000 in 20666, 95,200,000 in 20669, 95,600,000 in 20672, 96,000,000 in 20675, 96,400,000 in 20678, 96,800,000 in 20681, 97,200,000 in 20684, 97,600,000 in 20687, 98,000,000 in 20690, 98,400,000 in 20693, 98,800,000 in 20696, 99,200,000 in 20699, 99,600,000 in 20702, 100,000,000 in 20705, 100,400,000 in 20708, 100,800,000 in 20711, 101,200,000 in 20714, 101,600,000 in 20717, 102,000,000 in 20720, 102,400,000 in 20723, 102,800,000 in 20726, 103,200,000 in 20729, 103,600,000 in 20732, 104,000,000 in 20735, 104,400,000 in 20738, 104,800,000 in 20741, 105,200,000 in 20744, 105,600,000 in 20747, 106,000,000 in 20750, 106,400,000 in 20753, 106,800,000 in 20756, 107,200,000 in 20759, 107,600,000 in 20762, 108,000,000 in 20765, 108,400,000 in 20768, 108,800,000 in 20771, 109,200,000 in 20774, 109,600,000 in 20777, 110,000,000 in 20780, 110,400,000 in 20783, 110,800,000 in 20786, 111,200,000 in 20789, 111,600,000 in 20792, 112,000,000 in 20795, 112,400,000 in 20798, 112,800,000 in 20801, 113,200,000 in 20804, 113,600,000 in 20807, 114,000,000 in 20810, 114,400,000 in 20813, 114,800,000 in 20816, 115,200,000 in 20819, 115,600,000 in 20822, 116,000,000 in 20825, 116,400,000 in 20828, 116,800,000 in 20831, 117,200,000 in 20834, 117,600,000 in 20837, 118,000,000 in 20840, 118,400,000 in 20843, 118,800,000 in 20846, 119,200,000 in 20849, 119,600,000 in 20852, 120,000,000 in 20855, 120,400,000 in 20858, 120,800,000 in 20861, 121,200,000 in 20864, 121,600,000 in 20867, 122,000,000 in 20870, 122,400,000 in 20873, 122,800,000 in 20876, 123,200,000 in 20879, 123,600,000 in 20882, 124,000,000 in 20885, 124,400,000 in 20888, 124,800,000 in 20891, 125,200,000 in 20894, 125,600,000 in 20897, 126,000,000 in 20900, 126,400,000 in 20903, 126,800,000 in 20906, 127,200,000 in 20909, 127,600,000 in 20912, 128,000,000 in 20915, 128,400,000 in 20918, 128,800,000 in 20921, 129,200,000 in 20924, 129,600,000 in 20927, 130,000,000 in 20930, 130,400,000 in 20933, 130,800,000 in 20936, 131,200,000 in 20939, 131,600,000 in 20942, 132,000,000 in 20945, 132,400,000 in 20948, 132,800,000 in 20951, 133,200,000 in 20954, 133,600,000 in 20957, 134,000,000 in 20960, 134,400,000 in 20963, 134,800,000 in 20966, 135,200,000 in 20969, 135,600,000 in 20972, 136,000,000 in 20975, 136,400,000 in 20978, 136,800,000 in 20981, 137,200,000 in 20984, 137,600,000 in 20987, 138,000,000 in 20990, 138,400,000 in 20993, 138,800,000 in 20996, 139,200,000 in 20999, 139,600,000 in 20002, 140,000,000 in 20005, 140,400,000 in 20008, 140,800,000 in 20011, 141,200,000 in 20014, 141,600,000 in 20017, 142,000,000 in 20020, 142,400,000 in 20023, 142,800,000 in 20026, 143,200,000 in 20029, 143,600,000 in 20032, 144,000,000 in 20035, 144,400,000 in 20038, 144,800,000 in 20041, 145,200,000 in 20044, 145,600,000 in 20047, 146,000,000 in 20050, 146,400,000 in 20053, 146,800,000 in 20056, 147,200,000 in 20059, 147,600,000 in 20062, 148,000,000 in 20065, 148,400,000 in 20068, 148,800,000 in 20071, 149,200,000 in 20074, 149,600,000 in 20077, 150,000,000 in 20080, 150,400,000 in 20083, 150,800,000 in 20086, 151,200,000 in 20089, 151,600,000 in 20092, 152,000,000 in 20095, 152,400,000 in 20098, 152,800,000 in 20101, 153,200,000 in 20104, 153,600,000 in 20107, 154,000,000 in 20110, 154,400,000 in 20113, 154,800,000 in 20116, 155,200,000 in 20119, 155,600,000 in 20122, 156,000,000 in 20125, 156,400,000 in 20128, 156,800,000 in 20131, 157,200,000 in 20134, 157,600,000 in 20137, 158,000,000 in 20140, 158,400,000 in 20143, 158,800,000 in 20146, 159,200,000 in 20149, 159,600,000 in 20152, 160,000,000 in 20155, 160,400,000 in 20158, 160,800,000 in 20161, 161,200,000 in 20164, 161,600,000 in 20167, 162,000,000 in 20170, 162,400,000 in 20173, 162,800,000 in 20176, 163,200,000 in 20179, 163,600,000 in 20182, 164,000,000 in 20185, 164,400,000 in 20188, 164,800,000 in 20191, 165,200,000 in 20194, 165,600,000 in 20197, 166,000,000 in 20200, 166,400,000 in 20203, 166,800,000 in 20206, 167,200,000 in 20209, 167,600,000 in 20212, 168,000,000 in 20215, 168,400,000 in 20218, 168,800,000 in 20221, 169,200,000 in 20224, 169,600,000 in 20227, 170,000,000 in 20230, 170,400,000 in 20233, 170,800,000 in 20236, 171,200,000 in 20239, 171,600,000 in 20242, 172,000,000 in 20245, 172,400,000 in 20248, 172,800,000 in 20251, 173,200,000 in 20254, 173,600,000 in 20257, 174,000,000 in 20260, 174,400,000 in 20263, 174,800,000 in 20266, 175,200,000 in 20269, 175,600,000 in 20272, 176,000,000 in 20275, 176,400,000 in 20278, 176,800,000 in 20281, 177,200,000 in 20284, 177,600,000 in 20287, 178,000,000 in 20290, 178,400,000 in 20293, 178,800,000 in 20296, 179,200,000 in 20299, 179,600,000 in 20302, 180,000,000 in 20305, 180,400,000 in 20308, 180,800,000 in 20311, 181,200,000 in 20314, 181,600,000 in 20317, 182,000,000 in 20320, 182,400,000 in 20323, 182,800,000 in 20326, 183,200,000 in 20329, 183,600,000 in 20332, 184,000,000 in 20335, 184,400,000 in 20338, 184,800,000 in 20341, 185,200,000 in 20344, 185,600,000 in 20347, 186,000,000 in 20350, 186,400,000 in 20353, 186,800,000 in 20356, 187,200,000 in 20359, 187,600,000 in 20362, 188,000,000 in 20365, 188,400,000 in 20368, 188,800,000 in 20371, 189,200,000 in 20374, 189,600,000 in 20377, 190,000,000 in 20380, 190,400,000 in 20383, 190,800,000 in 20386, 191,200,000 in 20389, 191,600,000 in 20392, 192,000,000 in 20395, 192,400,000 in 20398, 192,800,000 in 20401, 193,200,000 in 20404, 193,600,000 in 20407, 194,000,000 in 20410, 194,400,000 in 20413, 194,800,000 in 20416, 195,200,000 in 20419, 195,600,000 in 20422, 196,000,000 in 20425, 196,400,000 in 20428, 196,800,000 in 20431, 197,200,000 in 20434, 197,600,000 in 20437, 198,000,000 in 20440, 198,400,000 in 20443, 198,800,000 in 20446, 199,200,000 in 20449, 199,600,000 in 20452, 200,000,000 in 20455, 200,400,000 in 20458, 200,800,000 in 20461, 201,200,000 in 20464, 201,600,000 in 20467, 202,000,000 in 20470, 202,400,000 in 20473, 202,800,000 in 20476, 203,200,000 in 20479, 203,600,000 in 20482, 204,000,000 in 20485, 204,400,000 in 20488, 204,800,000 in 20491, 205,200,000 in 20494, 205,600,000 in 20497, 206,000,000 in 20500, 206,400,000 in 20503, 206,800,000 in 20506, 207,200,000 in 20509, 207,600,000 in 20512, 208,000,000 in 20515, 208,400,000 in 20518, 208,800,000 in 20521, 209,200,000 in 20524, 209,600,000 in 20527, 210,000,000 in 20530, 210,400,000 in 20533, 210,800,000 in 20536, 211,200,000 in 20539, 211,600,000 in 20542, 212,000,000 in 20545, 212,400,000 in 20548, 212,800,000 in 20551, 213,200,000 in 20554, 213,600,000 in 20557, 214,000,000 in 20560, 214,400,000 in 20563, 214,800,000 in 20566, 215,200,000 in 20569, 215,600,000 in 20572, 216,000,000 in 20575, 216,400,000 in 20578, 216,800,000 in 20581, 217,200,000 in 20584, 217,600,000 in 20587, 218,000,000 in 20590, 218,400,000 in 20593, 218,800,000 in 20596, 219,200,000 in 20599, 219,600,000 in 20602, 220,000,000 in 20605, 220,400,000 in 20608, 220,800,000 in 20611, 221,200,000 in 20614, 221,600,000 in 20617, 222,000,000 in 20620, 222,400,000 in 20623, 222,800,000 in 20626, 223,200,000 in 20629, 223,600,000 in 20632, 224,000,000 in 20635, 224,400,000 in 20638, 224,800,000 in 20641, 225,200,000 in 20644, 225,600,000 in 20647, 226,000,000 in 20650, 226,400,000 in 20653, 226,800,000 in 20656, 227,200,000 in 20659, 227,600,000 in 20662, 228,000,000 in 20665, 228,400,000 in 20668, 228,800,000 in 20671, 229,200,000 in 20674, 229,600,000 in 20677, 230,000,000 in 20680, 230,400,000 in 20683, 230,800,000 in 20686, 231,200,000 in 20689, 231,600,000 in 20692, 232,000,000 in 20695, 23

form and final bill) can be obtained from the Center for Nonsmoking and Health, Minnesota Department of Health, 717 Delaware St. S.E., Minneapolis, MN 55440.

2. Economic calculations of the costs of smoking are summarized in the *Minnesota Plan for Nonsmoking and Health* (1). Shultz (11) has reviewed the literature on cost of smoking studies. *Smoking-Attributable Mortality, Morbidity, and Economic Costs: Methodology and Guide to Computer Software* (26) is available from the MDH for use by state health departments and public health professionals. The software computes estimates of smoking-attributable mortality, years of potential life lost (YPLL), direct health care costs, indirect morbidity (disability) costs, and indirect mortality costs. For additional information, contact James M. Shultz, Minnesota Department of Health, 717 Delaware St. S.E., Minneapolis, MN 55440.

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the same time, the number of H_2O molecules per unit area of the surface is increased.

The effect of water vapor on the rate of adsorption of NO_2 on Al_2O_3 has been studied by several workers. NO_2 has been found to adsorb on Al_2O_3 at 20°C. at a rate proportional to the square root of the partial pressure of NO_2 in the gas phase. NO_2 has also been found to adsorb on Al_2O_3 at 20°C. at a rate proportional to the square root of the partial pressure of NO_2 in the gas phase, and proportional to the square root of the partial pressure of H_2O in the gas phase. The effect of water vapor on the rate of adsorption of NO_2 on Al_2O_3 has been studied by several workers.

The effect of water vapor on the rate of H_2O desorption from Al_2O_3 has been studied by several workers. H_2O has been found to desorb from Al_2O_3 at 20°C. at a rate proportional to the square root of the partial pressure of H_2O in the gas phase.

The effect of water vapor on the rate of NO_2 desorption from Al_2O_3 has been studied by several workers. NO_2 has been found to desorb from Al_2O_3 at 20°C. at a rate proportional to the square root of the partial pressure of NO_2 in the gas phase, and proportional to the square root of the partial pressure of H_2O in the gas phase.

The effect of water vapor on the rate of NO_2 desorption from Al_2O_3 has been studied by several workers. NO_2 has been found to desorb from Al_2O_3 at 20°C. at a rate proportional to the square root of the partial pressure of NO_2 in the gas phase, and proportional to the square root of the partial pressure of H_2O in the gas phase.

The effect of water vapor on the rate of NO_2 desorption from Al_2O_3 has been studied by several workers. NO_2 has been found to desorb from Al_2O_3 at 20°C. at a rate proportional to the square root of the partial pressure of NO_2 in the gas phase, and proportional to the square root of the partial pressure of H_2O in the gas phase.

The effect of water vapor on the rate of NO_2 desorption from Al_2O_3 has been studied by several workers. NO_2 has been found to desorb from Al_2O_3 at 20°C. at a rate proportional to the square root of the partial pressure of NO_2 in the gas phase, and proportional to the square root of the partial pressure of H_2O in the gas phase.

The effect of water vapor on the rate of NO_2 desorption from Al_2O_3 has been studied by several workers. NO_2 has been found to desorb from Al_2O_3 at 20°C. at a rate proportional to the square root of the partial pressure of NO_2 in the gas phase, and proportional to the square root of the partial pressure of H_2O in the gas phase.

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1922, a 2000-ton vessel, the *W. H. Dickey*, was built at the same yard. This vessel has a capacity of 1000 tons of live fish and 1000 tons of ice. It is 100 ft. long, 20 ft. wide, and 10 ft. deep. It has a crew of 12 men. The *W. H. Dickey* is owned by the W. H. Dickey Co., of New Bedford, Mass., and is engaged in the fishing business. The *W. H. Dickey* is a very good vessel and is well equipped for its work. It is a good example of the modern fishing vessel.

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ABSTRACT

The Minnesota Department of Health has successfully introduced nonsmoking legislation which was enacted by the Minnesota Legislature in June, 1985. The legislation raises the excise tax on tobacco products and appropriates a percentage of the excise tax revenues to fund multiple programs comprising a coordinated nonsmoking initiative. Specific appropriations fund statewide tobacco-use prevention curricula targeted for adolescents; a continuum of nonsmoking education from kindergarten through grade 12; a multi-media public education and communications campaign; competitive special project grants to community health service agencies and nonprofit organizations for community-level and statewide smoking prevention programs; and peer-reviewed program evaluation.

The launch point for the legislation was a comprehensive statewide smoking control plan, developed by an expert committee with wide-ranging expertise. Support for the legislation was enhanced through coalition-building among organizations concerned with the health and economic effects of cigarette smoking. Detailed health and economic impact arguments, using Minnesota data, provided a clear problem statement, key points of testimony, and compelling justification for nonsmoking legislation.

