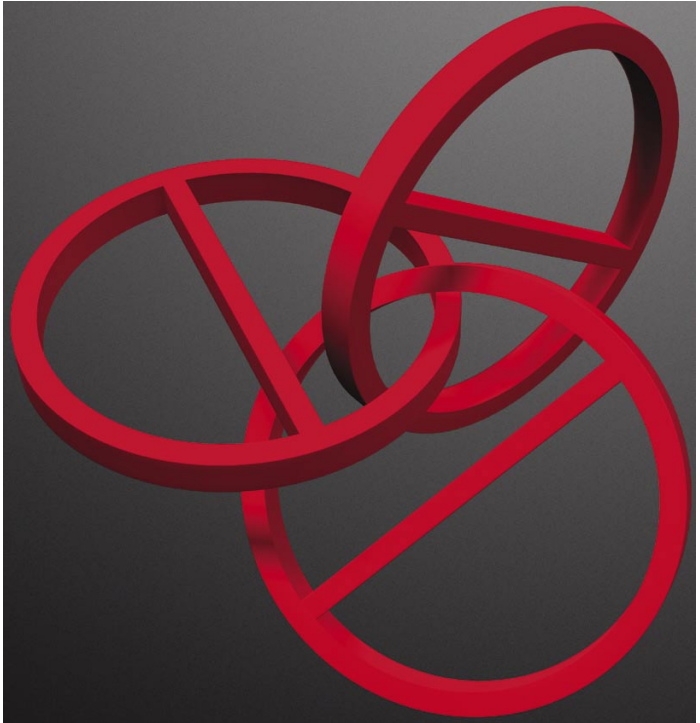


# NIH State-of-the-Science Conference Statement on Tobacco Use: Prevention, Cessation, and Control



**NIH Consensus and State-of-the-Science Statements**

Volume 23, Number 3  
June 12–14, 2006

NATIONAL INSTITUTES OF HEALTH  
Office of the Director



# **NIH State-of-the-Science Conference on Tobacco Use: Prevention, Cessation, and Control**

**June 12–14, 2006**

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**William H. Natcher Conference Center  
National Institutes of Health  
Bethesda, Maryland**

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# Contents

Introduction.....	1
Agenda .....	3
Panel Members.....	9
Speakers .....	11
Planning Committee.....	13
Abstracts .....	17
<b>Background and Overview</b>	
<b>Gary A. Giovino, Ph.D., M.S.....</b>	<b>19</b>
<b>I. What Are the Effective Population- and Community-Based Interventions To Prevent Tobacco Use in Adolescents and Young Adults, Including Among Diverse Populations?</b>	
Cultural Approaches to Community and School-Based Tobacco Prevention for Adolescents and Young Adults, Including Priority Populations <b>Lourdes Baezconde-Garbanati, Ph.D., M.P.H.....</b>	29
Programs and Policies for Prevention <b>John P. Pierce, Ph.D. ....</b>	37
Policy Interventions and Surveillance <b>Jean Forster, Ph.D., M.P.H.....</b>	43
<b>II. What Are the Effective Strategies for Increasing Consumer Demand for and Use of Proven Individually Oriented Cessation Treatments, Including Among Diverse Populations?</b>	
Increasing Consumer Demand for Effective Tobacco Cessation Treatments: The Promise for Breakthrough Innovation <b>C. Tracy Orleans, Ph.D. ....</b>	49
Increasing Demand for and Use of Cessation Treatments Among Low-Income and Blue-Collar Populations <b>Elizabeth M. Barbeau, Sc.D., M.P.H.....</b>	53
Evidence-Based Practice Center Presentation: Increasing Demand for and Use of Effective Tobacco Cessation Treatments Among Individuals <b>Cathy L. Melvin, Ph.D., M.P.H.....</b>	59

# Background and Overview

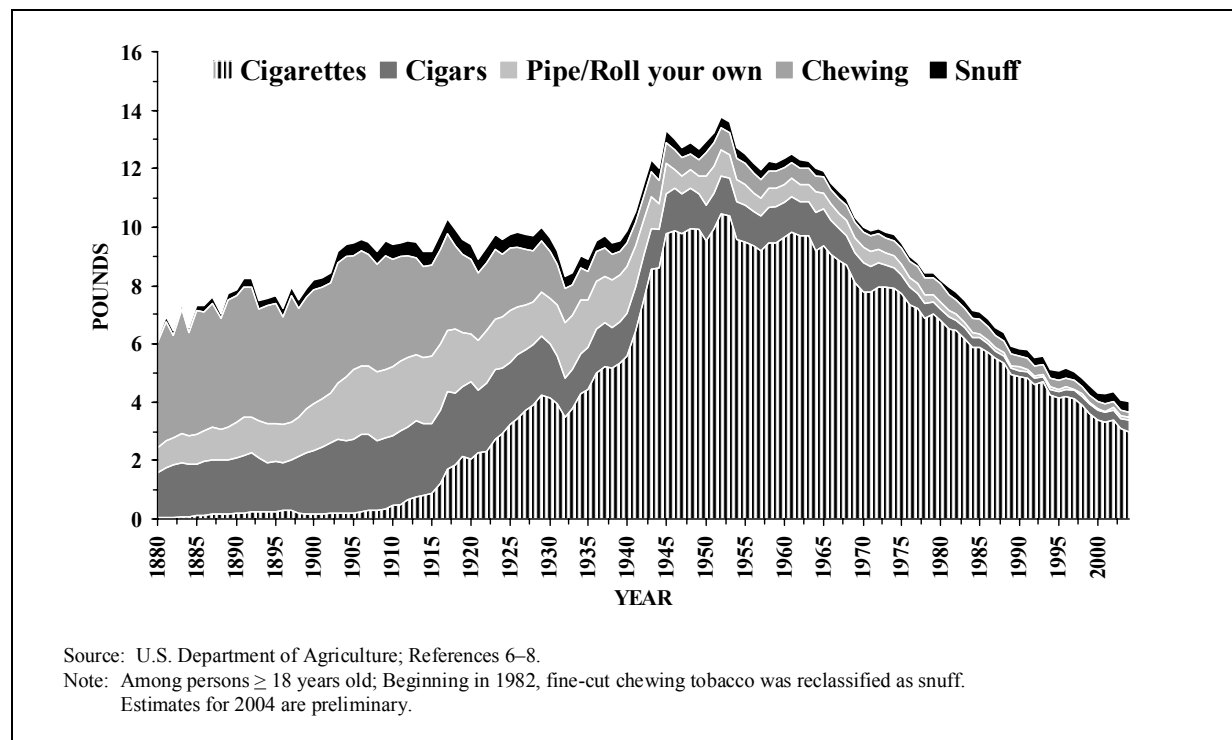
Gary A. Giovino, Ph.D., M.S.

## Introduction

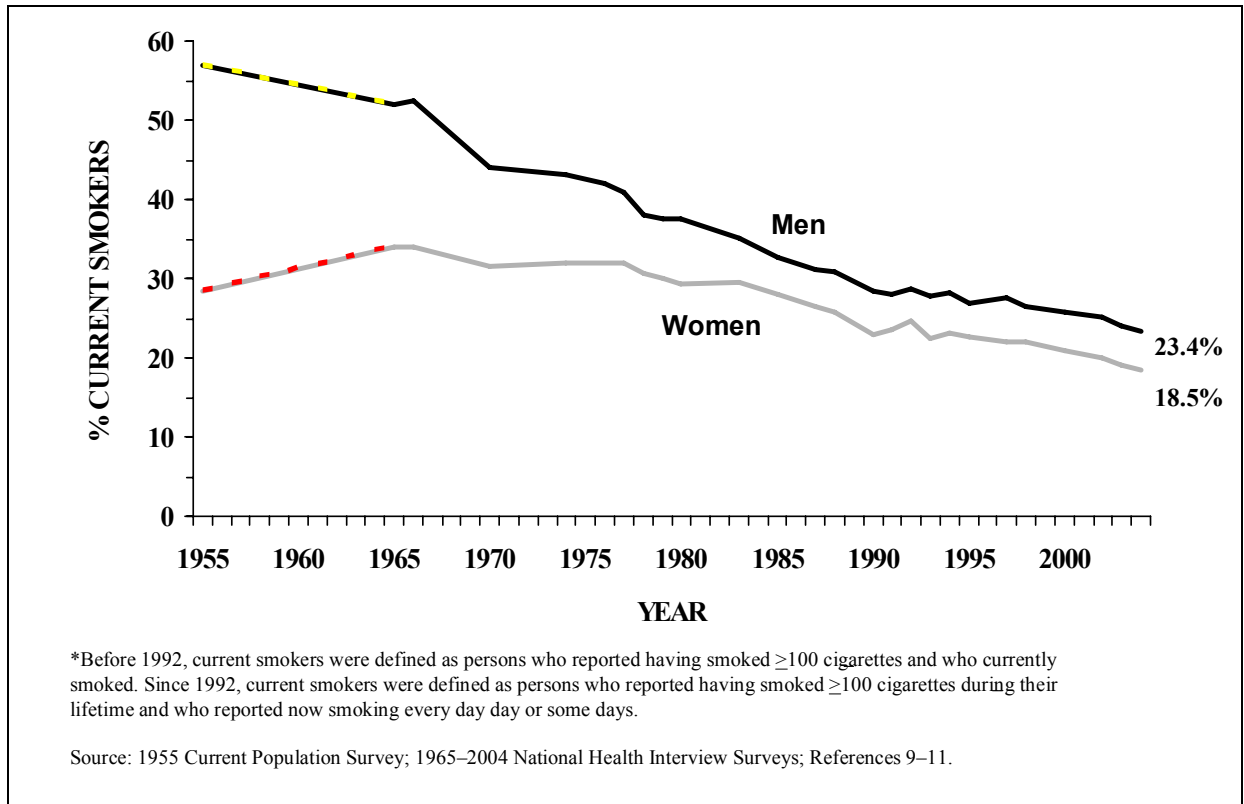
Tobacco use, primarily in the form of cigarettes, has caused more than 14 million premature deaths in the United States since 1964.<sup>1,2</sup> Tobacco use remains the single leading preventable cause of death in the United States, with at least 8.6 million Americans living with serious disease(s) caused by their smoking, 400,000 current and former smokers dying annually from smoking-attributable diseases, and 38,000 nonsmokers dying annually because of exposure to tobacco smoke pollution.<sup>2-4</sup> Peto and colleagues<sup>5</sup> estimate that one-half of all smokers, especially those who began as teens, can expect to die of tobacco use. Of these, approximately one-half will die in middle age, losing on average 20–25 years of life expectancy.

Overall U.S. consumption of tobacco products has been declining for several decades (figure 1).<sup>6-8</sup> From 1995 through 2004, consumption (in pounds) declined for cigarettes (by 24%), smoking tobacco (i.e., pipe or roll-your-own) (by 23%), and chewing tobacco (by 64%); however, consumption increased for cigars (by 78%) and snuff (by 13%).<sup>8</sup> The prevalence of cigarette smoking among U.S. adults has decreased substantially, from 42.4% in 1965 to 20.9% in 2004 (figure 2).<sup>9-11</sup> Consumption of cigarettes has been increasing in developing nations, while decreasing in the United States and most high-income countries.<sup>12</sup>

**Figure 1.** Trends in Per Capita Consumption of Various Tobacco Products—United States, 1880–2004

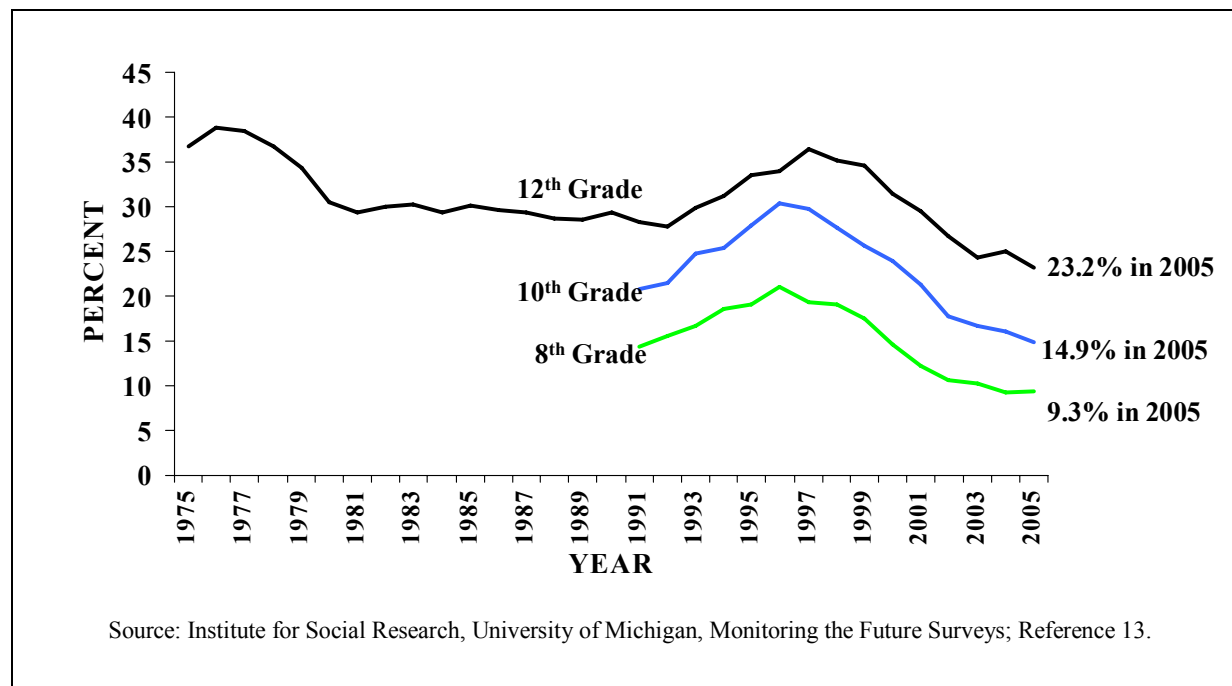


**Figure 2.** Trends in Cigarette Smoking\* Among Adults Aged ≥18 Years, By Sex—United States, 1955–2004



In 2004, the prevalence of cigarette smoking in the United States was higher for men (23.4%) than women (18.5%); for American Indians/Alaska Natives (33.4%) than for Hispanics (15.0%) and Asians (11.3%); for high school dropouts (34.0%) and those with a GED diploma (39.6%) than for those with an undergraduate (11.7%) or graduate (8.0%) degree; and for those living in poverty (29.1%) than for those living at or above the poverty line (20.6%).<sup>11</sup> Among the estimated 42.4% (90.2 million) of persons who had ever smoked at least 100 lifetime cigarettes, 50.6% (45.6 million) were former cigarette smokers.<sup>11</sup> Among U.S. secondary school students, cigarette smoking prevalence increased markedly in the 1990s, peaking in 1996 for 8th and 10th graders and in 1997 for 12th graders (figure 3) and then subsequently declining.<sup>13</sup> The 2005 data suggest that progress toward fewer student smokers is slowing and may even be stopping. Patterns of prevalence suggest that future tobacco-attributable disease will be increasingly concentrated in socially disadvantaged populations, further exacerbating health disparities.

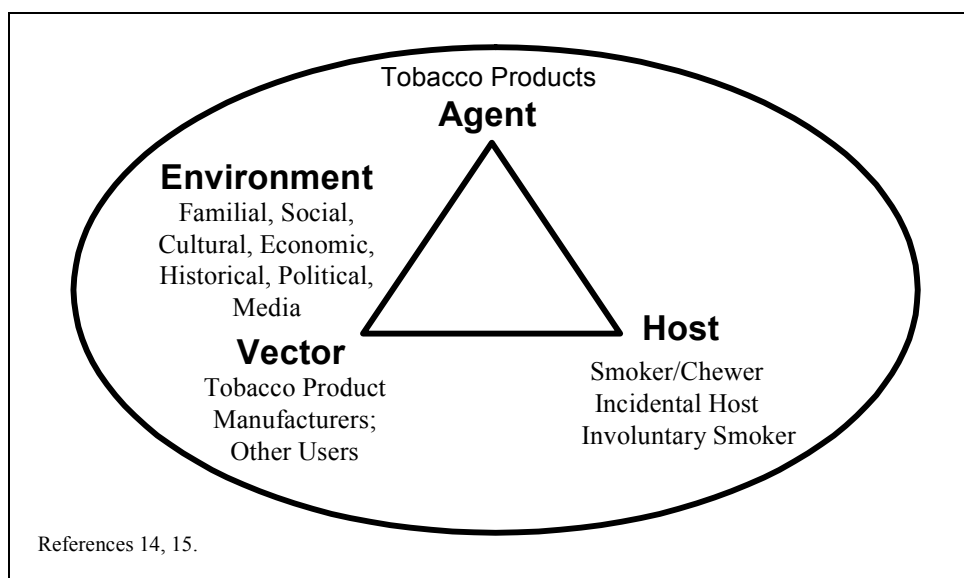
**Figure 3.** Trends in Cigarette Smoking Anytime in the Past 30 days by Grade in School—United States, 1975–2005



Tobacco use is a multilevel problem that is influenced by a number of factors. An epidemiologic model of tobacco use and nicotine addiction (figure 4) highlights the importance of understanding the roles of the Agent (tobacco product), Host (smoker/user or potential smoker/user), Vector (tobacco product manufacturers), and Environment (e.g., familial, social, economic, and media factors).<sup>14–15</sup>

Tobacco products have been changed substantially over the years to influence performance on standard machine tests and the bioavailability of nicotine.<sup>16–19</sup> Light and ultra-light cigarettes tacitly promise health benefits, but are as hazardous as full flavor varieties.<sup>1,17</sup> Cigarette companies have studied the smoothness of their products, in response to young smokers' concerns about harsh taste.<sup>20,21</sup> Research on traditional products and potential reduced-exposure products (PREPs) is needed to determine likely human exposures to nicotine and toxic/carcinogenic compounds.<sup>22</sup> In addition, the price of the product influences use, with increasing prices leading to decreased use, both by reducing the number of users and decreasing consumption among continuing users.<sup>23</sup>

**Figure 4.** Epidemiologic Model of Nicotine Addiction and Tobacco Control



The host is the person who uses the product. Some relevant host risk factors include biological susceptibility to addiction, in utero exposure to nicotine, motivation to start or quit, misperceptions, comorbidities, adverse childhood experiences, and self-esteem.<sup>24-27</sup> This model also includes an incidental host, representing children and adults who are exposed to tobacco smoke pollution and are thus at increased risk of respiratory illnesses, lung cancer, coronary heart disease, and other diseases.<sup>28,29</sup>

In epidemiology, the vector is the organism that transports the agent to susceptible individuals.<sup>30</sup> Tobacco companies market their products to maximize appeal and allay health concerns.<sup>26,27,31,32</sup> They undermine public health efforts by resisting the implementation of health-promoting programs and policies.<sup>33-37</sup> They attempt to manipulate the work of scientists studying the health effects of their products.<sup>34,38-40</sup> Companies have used pricing strategies, such as discount coupons and multipack discounts, to offset the effects of tax increases.<sup>41</sup>

Environmental factors include familial, social, cultural, economic, historical, political, and media-based influences. For example, smoking by peers, siblings, and parents, as well as norms established in the home, can influence uptake.<sup>26,42</sup> Tobacco growing and tobacco product manufacturing have in many countries become culturally established and economically powerful enterprises that greatly influence political decisions and even attitudes about use.<sup>34,36,37,43-45</sup> Other environmental factors include smoke-free air laws and policies, advice to quit from a health professional, and media influences, such as appearances of smoking in movies, pro-tobacco advertising and promotion, and anti-tobacco messages from the public health sector.<sup>15</sup> The number of States passing smoke-free laws protecting all workers is increasing rapidly. As of April 2006, approximately 43% of U.S. adults live in an area where smoking is banned in private offices, restaurants, and/or bars.<sup>46</sup> Still, many workers, especially those in the hospitality industry, remain unprotected.<sup>47</sup> Laws protecting nonsmokers can also help smokers reduce consumption.<sup>48</sup> In addition, substantial progress has been made in reducing children's exposure in homes.<sup>49</sup>

Research activities and interventions can address one or more factors on the continuum from cells to society, all with the ultimate goal of minimizing tobacco use to the lowest level possible.<sup>50</sup>

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