The Tobacco Epidemic: An Historical Overview

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- Research—health effects of active and passive smoking
- Served as consultant editor and senior editor for Reports of the Surgeon General on Smoking and Health

Image source: Institute for Global Tobacco Control
“Discovery” and Early Use of Tobacco and the Foundations of the Modern Epidemic
“Discovered” in the Americas in 1492 by Columbus

“The Spanish upon their journey met with great multitudes of people, men and women with firebrands in their hands and herbs to smoke after their custom.”

- Christopher Columbus’ journal, November 6, 1492

Image source: [www.nps.gov/colo/jthanout/TobaccoHistory.html](http://www.nps.gov/colo/jthanout/TobaccoHistory.html), retrieved 1/2/05
Early Forms of Use in the Americas

- Smoking
- Ingested orally as syrup
- Snuff
- Chewing tobacco
- Enemas
Tobacco

Image source: jones.house.gov/html/photo.cfm?id=140&cat=3, retrieved 11/2/05

Wild Tobacco
(Nicotiana rustica)

Cultivated Tobacco
(Nicotiana tabacum)

Any of numerous species of Nicotiana or the cured leaves of several of the species that are used after processing in various ways for smoking, snuffing, chewing, and extracting nicotine.


Tobacco is a plant originally indigenous to the Americas. However, tobacco found in modern tobacco products is not the same as the wild tobacco found growing in the Americas in the 15th century. Today’s cultivated tobacco has been highly engineered for consumption and nicotine extraction.
Global Spread of Tobacco

- 1530—Europeans begin cultivation in Santo Domingo
- 1556–59—Introduced in France, Spain, Portugal, and Japan
- 1560—Introduced to East Africa
- 1600—Smoking well established in Japan; introduced in India
Global Spread of Tobacco

- 1612—John Rolfe plants first commercial crop in Virginia
- 1619—Africans brought to Virginia as indentured tobacco workers
- 1710—Russia’s Peter the Great encourages his courtiers to smoke tobacco to look more European
King James on Smoking—
“Smoking is a custom loathsome to the eye, hateful to the nose, harmful to the brain, dangerous to the lungs, and in the black, stinking fume thereof nearest resembling the horrible Stygian smoke of the pit that is bottomless.”

King James on Passive Smoking—
“The wife must either take up smoking or resolve to live in a perpetual stinking torment.”

King James I, A Counterblaste to Tobacco, 1604

Source: www.nps.gov/colo/Jthanout/TobaccoHistory.html, 11/2/05
Early Concern

1600

Chinese Philosopher Fang Yizhi points out that smoking “scorches one’s lung”

Early Health Warnings

- 1761—John Hill in England warns of cancer of nose for snuff users (first clinical study?)

- 1889—Langley and Dickinson publish study on the effects of nicotine on nerve cells

- 1912—Monograph on lung cancer published by Dr. Isaac Adler
Early Efforts at Control

- 1604—King James I increases import tax by 4,000%
- 1620—Prohibited in Japan
- 1633—Death penalty for smoking in Turkey
- 1638—Use or distribution punishable by decapitation in China
- 1639—Banned in New Amsterdam (New York)
- 1890—26 U.S. States and territories outlaw sale to minors
Motivation for Early Efforts at Control

- Tobacco seen as an “evil plant” associated with savages from the New World
- Tobacco use viewed as a sin
- Addictive qualities begin to be recognized
  - Smokers are described as “besotted” or “bewitched”
- Initial health concerns include cancer, impotency, “drunkenness”
Evolution of the Modern Cigarette

- 1789–99
  - During the French Revolution, cigarette use popularized as least like aristocratic snuff
- 1832
  - Invention of rolled cigarette in Turkey
- 1852
  - Introduction of matches
- 1880
  - Bonsack machine patented
- 1912
  - Book matches perfected by Diamond Co.

Image source: http://resourcescommittee.house.gov/subcommittees/emr/usgsweb/examples/, 11/2/05
Birth of the “Modern” Cigarette

- 1913
  - Birth of the “modern” cigarette
  - R.J. Reynolds introduces the Camel brand

Image source: [www.cdc.gov/tobacco/sgr/sgr4kids/adbust.htm](http://www.cdc.gov/tobacco/sgr/sgr4kids/adbust.htm) retrieved 2/28/06
The Manufactured Cigarette

- Tipping paper & plugwrap paper
- Monogram ink
- Cigarette paper & adhesive
- Filter
- Ventilation holes
- Tobacco and additives

Smoke Components

- PAHs
- Benzo(a)pyrene
- Aza-arenes
- N-Nitrosamines
- Aromatic amines
  - 2-Naphtylamine
  - 4-Aminobiphenyl
- N-Heterocyclic amines
- Aldehydes

- Organic compounds
  - 1, 3-Butadiene
  - Benzene
  - Vinyl chloride
  - Acrylamide

- Inorganic compounds
  - Arsenic
  - Chromium
  - Polonium-210

The Process of Manufacturing a Modern Cigarette

- Primary Area—Processing
  - Increase moisture
  - Casing application
  - Redrying process
  - Cutting process
  - Humidifying
  - Final blending

Source: Brown and Williamson Tabacco Corporation.
Manufacturing in the Factory.
Cigarette Manufacturing Operation.
Retrieved June 2000, from
http://www.bw.com/4_mfgplant/2_inthefactory/cigmanufact.html

Image source:
The Process of Manufacturing a Modern Cigarette

Secondary Area: Fabrication

- Cigarette-making machine
  - Wraps tobacco into paper
  - Applies adhesive
  - Cuts to a specified length

- Filter rod machine

- Cigarette packer


1854—Philip Morris begins making cigarettes in London

1860—348 tobacco factories in North Carolina and Virginia, almost all producing chewing tobacco

1874—Washington Duke builds first factory
1878—Liggett & Myers Co. incorporates

1884—J.B. Duke signs contract with Bonsack

1899—R.J. Reynolds incorporates

1901—Imperial Tobacco Group formed in U.K.

1906—Brown and Williamson Tobacco Co. formed

1910—Duke’s American Tobacco Co. controls 92% of world tobacco business

1911—U.S. Supreme Court dissolves Duke’s trust; American Tobacco, R.J. Reynolds, Liggett & Myers, Lorillard, and British American Tobacco emerge
“What the [tobacco] industry wants people to believe is that a cigarette is nothing but a natural product grown in the ground, ripped out, stuffed in a piece of paper and served up. It's not. It's a meticulously engineered product. The purpose behind a cigarette . . . is to deliver nicotine—an addictive drug.”
— Jeffrey Wigand
The Changing Cigarette

- 1913—Introduction of the American blend
- 1940s—Change in cigarette length
- 1954—Introduction of filter tips; reconstituted tobacco added to blend; addition of flavorants
- 1950s—Porous wrapper in wider use
- 1960s—Expanded blends reduce total volume; introduction of ammonia technology
- 1970s—Ventilation and dilution techniques perfected
- 1980s—Further change in length
- 1990s—Alternative smoking prototypes

The Changing Cigarette: Advertising

Not only... LABORATORY TESTS... which showed edema of the rabbit conjunctiva, averaging 2.7 from the smoke of ordinary cigarettes... compared with 0.6 from Philip Morris Cigarettes.

But also... CLINICAL TESTS... which showed that when smokers changed to Philip Morris, substantially every case of irritation of the nose or throat due to smoking cleared completely or definitely improved...

...conclusively prove

PHILIP MORRIS CIGARETTES to be definitely and measurably LESS IRRITATING

According to a recent Nationwide survey:

More Doctors smoke Camels than any other cigarette!

Image source: http://cancercontrol.cancer.gov/tcrb/monographs/5/m5_foreword.pdf retrieved 2/28/06
The Changing Cigarette: Advertising

The Changing Cigarette: Advertising

The American Medical Association voluntarily conducted independent tests of filters and filter cigarettes. As reported in the Journal of the American Medical Association, these tests proved that all the filter cigarettes tested were most effective for removing tars and nicotine. This type of filter is used by Kent, and other brands.

The Changing Cigarette

Tar and Nicotine Content of U.S. Cigarettes, Sales-Weighted Average Basis, 1957–1987

Year
Sales-Weighted tar (mg)
Sales-Weighted Nicotine (mg)

1957–Reconstituted Tobacco
1959–Porous Paper
1967—Expanded Tobacco
1971–Ventilation

Tar
Nicotine

**Sales-Weighted Tar and Nicotine Yields: 1968–1997**


Chart is based on data in Table 2-1, pg 14 of Monograph 13.

According to pg 2 of same, figures before 1968 were estimated.
How Yields are Measured

- Federal Trade Commission (FTC) method
  - Originated in early efforts of tobacco industry researchers to compare cigarettes, when most brands had similar characteristics
  - Variation in cigarettes over past 30 years necessitated a standard protocol

- Standardized smoking machine simulates precise manner of smoking (e.g., puff size, puffing rate, puff duration)

- Labelling conventions based on FTC method
  - ‘Ultra-Light’ brands yield 1-5 or 6 mg tar
  - ‘Light’ brands yield 6 or 7-15 mg of tar
  - ‘Regular/Full-Flavor’ brands yield > 15 mg tar
Weakness of the FTC (ISO) Method

- Does not quantify actual delivery of toxins to smoker due to large variation in individual smokers’ puff profiles

- Number of ways to increase delivery
  - Blocking filter air vents with lips/fingers
  - Increasing puff number and/or volume

Continued
### Cigarette Filters

<table>
<thead>
<tr>
<th>‘Light’ brands</th>
<th>Full flavor brands</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Have more filter perforations</td>
<td>• Have less filter perforations</td>
</tr>
<tr>
<td>% filter ventilation = 27.27</td>
<td>% filter ventilation = 12.65</td>
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</tbody>
</table>

For more information on the industry’s rational for ammonia technology and other changes to cigarettes, see the lecture entitled “Nicotine Addiction”
Section B

Scientific Discovery and Efforts at Control
1938: Dr. Raymond Pearl reports smokers do not live as long as non-smokers

Data source: http://medicolegal.tripod.com/pearl1938.htm retrieved 2/26/06
1939—Franz Hermann Muller of Germany finds strong dose-response between smoking and lung cancer.

Early Health Warnings

Fig. 6.8. “You Don’t Smoke It—It Smokes You! Signed, the Chain Smoker.” Nazi authorities worried that nicotine created an alien allegiance when your body was supposed to belong to the state and the Führer. Source: Reine Luft 23 (1941): 90.

1950: Three Key Case-Control Studies

- Morton Levin publishes study linking smoking and lung cancer in the *Journal of the American Medical Association* (JAMA)

- Ernst L. Wynder and Evarts A. Graham publish study in JAMA in which 96.5% of lung cancer patients interviewed were smokers

- Richard Doll and Bradford Hill publish study in the *British Medical Journal* finding that heavy smokers are 50 times more likely to get lung cancer
1953—Wynder’s landmark study showed that tobacco painted on the backs of mice produced tumors

1954—Doll and Hill’s study of British doctors published in *British Medical Journal*
A Frank Statement to Cigarette Smokers

“We accept an interest in people’s health as a basic responsibility, paramount to every other consideration in our business.”

“We believe the products we make are not injurious to health.”

“We always have and always will cooperate closely with those whose task it is to safeguard the public health.”
The Industry Reacts

- Announced formation of Tobacco Industry Research Committee (TIRC) in 1954; later renamed Council for Tobacco Research
- Launched a campaign of fraud and deceit designed to mislead American people

Image source: [http://cancercontrol.cancer.gov/tcrb/monographs/5/m5_foreword.pdf](http://cancercontrol.cancer.gov/tcrb/monographs/5/m5_foreword.pdf) retrieved 2/26/06
The Present Position: Main Evidence Against Smoking

“...I am going to start by asking you to face certain facts, certain vital statistics... The vital statistics I would like you to bear in mind are 7, 57, 139, and 227.

...They are the death rates per 100,000 per year from cancer of the lung of men who were non-smokers (they are the 7), men who smoked 1–14 cigarettes daily (they are the 57), men who smoked 15–24 cigarettes daily (they are the 139) and men who smoked 25 or more cigarettes daily (they are the 227).... Those vital statistics are basically the reason why we are here tonight... These vital statistics are really vital. They threaten the life of the tobacco industry in every country of the world.”
Advisory Committee concluded that cigarette smoking is—
- A cause of lung and laryngeal cancer in men
- A probable cause of lung cancer in women
- The most important cause of chronic bronchitis
- “A health hazard of sufficient importance to warrant appropriate remedial action”

Hypothesis: Smoking Causes Lung Cancer

Studies: Levin, Wynder, Doll

Evidence Evaluation: SGR 1964

Policy: Health Warning on all cigarette packs 1967
Reports of the Surgeon General

Image source: Institute for Global Tobacco Control
Smoking-Caused Diseases

Cancers
Leukemia—1990
Nasal and Oral
Pharynx—1982
Larynx—1980
Esophagus—1982
Lung—1964
Stomach—2001
Pancreas—1990
Kidney—1982
Ureter—1990
Liver—2001
Cervix—2001
Bladder—1990

Chronic Diseases
Stroke—1983
Coronary Heart Disease—1979
Aortic Aneurysm—1983
Atherosclerotic Peripheral Vascular Disease—1983
Chronic Obstructive Pulmonary Disease (COPD)—1964

Age-adjusted Cancer Death rates in Males, US, 1930-2001

Age-adjusted Cancer Death rates in Females, US, 1930-2001

http://www.cancer.org/docroot/MED/content/MED_1_1_Most-Requested_Graphs_and_Figures_2005.asp retrieved 2/26/06
Effects of Cigarette Smoking on Survival to Ages 70 and 85 in 40-Year Prospective Study of Male British Doctors

Mortality Risks and Smoking-Attributable Deaths

Changes in Cigarette-Related Mortality Risks and Percentages of Deaths Attributable to Active Cigarette Smoking

<table>
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<tr>
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<tbody>
<tr>
<td></td>
<td>Relative Risk</td>
<td>Percent</td>
<td>Relative Risk</td>
<td>Percent</td>
</tr>
<tr>
<td>Overall Mortality</td>
<td>1.7</td>
<td>42.2</td>
<td>2.3</td>
<td>57.1</td>
</tr>
<tr>
<td>Lung Cancer</td>
<td>11.9</td>
<td>91.6</td>
<td>23.2</td>
<td>95.7</td>
</tr>
<tr>
<td>Coronary Heart Disease</td>
<td>1.7</td>
<td>41.5</td>
<td>1.9</td>
<td>46.2</td>
</tr>
<tr>
<td>Chronic Obstructive Pulmonary Disease</td>
<td>9.3</td>
<td>89.2</td>
<td>11.7</td>
<td>91.4</td>
</tr>
<tr>
<td>Stroke</td>
<td>1.3</td>
<td>21.9</td>
<td>1.9</td>
<td>46.8</td>
</tr>
<tr>
<td>Other Smoking-Related Cancers(^a)</td>
<td>2.7</td>
<td>63.4</td>
<td>3.5</td>
<td>71.2</td>
</tr>
</tbody>
</table>

**Females**

|                                | Relative Risk   | Percent  | Relative Risk          | Percent  |
| Overall Mortality              | 1.2             | 18.7     | 1.9                    | 47.9     |
| Lung Cancer                    | 2.7             | 63.4     | 12.8                   | 92.2     |
| Coronary Heart Disease         | 1.4             | 27.0     | 1.8                    | 45.1     |
| Chronic Obstructive Pulmonary Disease | 6.7           | 85.0     | 12.8                   | 92.2     |
| Stroke                         | 1.2             | 15.2     | 1.8                    | 45.7     |
| Other Smoking-Related Cancers\(^a\) | 1.8            | 45.0     | 2.6                    | 60.8     |

\(^a\)Sites include larynx, oral cavity, esophagus, bladder, kidney, other urinary, and pancreas.
U.S. Age-Adjusted Lung Cancer Death Rate & Cigarette Consumption


Image retrieved on 2/8/06 from the American Cancer Society: http://www.cancer.org/docroot/PRO/content/PRO_1_1_Cancer_Statistics_2005_Presentation.asp
Industry Regarding Addiction in 1994

- Seven CEOs of cigarette companies testify before Congress that it is their opinion that nicotine is not addictive

Cigarette smoking and addiction

“We agree with the overwhelming medical and scientific consensus that cigarette smoking is addictive. It can be very difficult to quit smoking, but this should not deter smokers who want to quit from trying to do so.”

Source: http://philipmorris.com/default.asp retrieved 2/26/06
Cigarette smoking and disease in smokers

- “There is an overwhelming medical and scientific consensus that cigarette smoking causes lung cancer, heart disease, emphysema, and other serious diseases in smokers. Smokers are far more likely to develop serious diseases, like lung cancer, than non-smokers. There is no "safe" cigarette. These are and have been the messages of public health authorities worldwide. Smokers and potential smokers should rely on these messages in making all smoking-related decisions.”

Source: [http://philipmorris.com/default.asp](http://philipmorris.com/default.asp) retrieved 2/26/06
Secondhand Smoke

Standard Mortality for Lung Cancer


2. Environmental Tobacco Smoke: Measuring exposures and assessing health effects. Medical Research Council

Health Effects of SHS Exposure in Children

- Sudden infant death syndrome (SIDS)
- Acute respiratory illnesses (ARI)
- Chronic respiratory symptoms
- Reduced lung function growth
- Asthma and exacerbation of asthma symptoms
- Acute and chronic middle ear disease
Health Effects of SHS Exposure in Adults

- **Established**
  - Lung cancer
  - Respiratory symptoms
  - Cardiovascular disease
  - Exacerbation of asthma

- **Potential**
  - Reduced lung function
  - Other cancers
1986—Surgeon General’s *Report on Passive Smoking*
1993—EPA classifies SHS as a “Class A” carcinogen
1994—Canadian scientists report finds evidence of cigarette smoke in fetal hair
1998—California becomes first state to ban smoking in bars
The Industry Counterattack

- Discount science
- Maintain controversy
- Hire consultants
- Produce counter-science
“The massive effort launched across the tobacco industry against one scientific study is remarkable.”


Excerpt from Acknowledgements – “*The paper was completed at Colorado State University, with partial support from several tobacco companies; the methods and analysis here are however entirely those of the authors and should not be otherwise ascribed.*”


Excerpt from Acknowledgements – “*This research was supported by a grant from The Tobacco Institute, Washington, D.C., USA. We thank Dr Myron Weinberg, President of the Weinberg Group/WASHTECH, for encouraging us to develop this critique.*”
Undermining Epidemiology


Junkscience.com

“All the junk that’s fit to debunk”

Articles:

- Secondhand smokescreen

- Passive smoke – the EPA’s betrayal of science
“It seems to us that the companies have sought to undermine the scientific consensus until such time as that position appears ridiculous. So the companies now generally accept that smoking is dangerous (but put forward distracting arguments to suggest that epidemiology is not an exact science, so that the figures for those killed by tobacco may be exaggerated); are equivocal about nicotine's addictiveness; and are still attempting to undermine the argument that passive smoking is dangerous.”

— U.K. House of Commons Health Committee

Section C

The Spread of the Tobacco Epidemic in the U.S.
The Spread of the Tobacco Epidemic in the U.S.

- 1776—“I say, if you can’t send money, send tobacco.”
  - George Washington’s request to help finance the American Revolutionary War

- 1861–65—During the U.S. Civil War, tobacco given with rations; many Northerners introduced to tobacco
The Spread of the Tobacco Epidemic in the U.S.

- 1900—Four billion cigarettes sold in U.S.
- 1914–18—Cigarettes included with war rations
- 1923—Camel has 45% of U.S. market
- 1924—Philip Morris introduces Marlboro as a women’s cigarette

Image source: http://memory.loc.gov/ammem/awhhtml/awgc1/periodicals.html retrieved 2/9/06
The Spread of the Tobacco Epidemic in the U.S.

- 1939—Sixty-six percent of U.S. males younger than forty are smokers
- 1939–45—During World War II, cigarettes included in rations; Roosevelt makes tobacco a protected crop
- 1940—U.S. per capita cigarette consumption has doubled since 1930 to 2,558 per year
- 1948—Lung cancer increasing five times faster than other cancers (now second most common)
- 1954—Marlboro cowboy campaign created for Philip Morris

Continued
The Spread of the Tobacco Epidemic in the U.S.

- 1956—Lung cancer death rate among U.S. white males is 31/100,000
- 1964—Marlboro Country ad campaign launched; sales rise ten percent per year
- 1969—R.J. Reynolds sponsors Winston Cup NASCAR races
- 1981—Annual U.S. consumption peaks at 640 billion cigarettes
Yearly per Capita Cigarette Consumption

Overall, lung cancer incidence rates decreased 1.6 percent per year between 1992 and 1998, due mainly to a decline of 2.7 percent per year in men and a leveling off of rates in women, both manifestations of reductions in tobacco smoking since the 1960s.

1954—First tobacco liability suit
   - Pritchard vs. Liggett & Meyers (dropped by plaintiff 12 years later)

1954—Philip Morris hires David R. Hardy as lawyer (begins relationship with Shook, Hardy & Bacon Law Firm)

1963—Seven liability suits filed

1964—17 liability suits filed
U.S. Tobacco Industry Litigation

- 1994—Minnesota first state to sue the tobacco industry; Philip Morris files $10 billion libel suit against ABC for *Day One* report

- 1995—Supreme Court orders the release of confidential industry documents
1997—Attorneys General and tobacco companies come to historic settlement—U.S. $206 billion over the next 25 years

1997—Flight attendants suing for suffering caused by secondhand smoke settle with industry for $300 million
Section D

The Global Epidemic
The Global Tobacco Health Burden

- Single most important cause of preventable death in the world
- Projected to be leading cause of death by 2020s—one in eight deaths
- Predicted to kill 500,000,000 people alive today
DALYs Attributable to Diarrhea, HIV, and Tobacco

Adapted from The Global Burden of Disease -
The Global Tobacco Health Burden

- Kills four million a year, expected to kill 8.4 million a year by 2020
- One in two long-term smokers killed by their addiction
- Half of the deaths occur in middle-ages (35–69)

70% of tobacco deaths in the 2020s will be in developing countries (DC)
Regional Attributable Mortality—2020

- Africa and Middle East—1.1 million
- China—2.2 million
- India—1.5 million
- Latin America/Caribbean—450,000

Source: WHO Tobacco Free Initiative.
Closing gender gap—over 236 million women smoke globally

Only \( \approx 3\% \) of women in Southeast Asia smoke cigarettes

High exposure to secondhand smoke
## The Global Tobacco Burden—Women

### Estimated Smoking Prevalence by Gender and Number of Smokers in Populations Aged 15 or More, by World Bank Region, 1995

<table>
<thead>
<tr>
<th>World Bank Region</th>
<th>Smoking Prevalence (%)</th>
<th>Total Smokers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Males</td>
<td>Females</td>
</tr>
<tr>
<td>East Asia and Pacific</td>
<td>59</td>
<td>4</td>
</tr>
<tr>
<td>Eastern Europe and Central Asia</td>
<td>59</td>
<td>26</td>
</tr>
<tr>
<td>Latin America and Caribbean</td>
<td>40</td>
<td>21</td>
</tr>
<tr>
<td>Middle East and North Africa</td>
<td>44</td>
<td>5</td>
</tr>
<tr>
<td>South Asia (cigarettes)</td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td>South Asia (bidis)</td>
<td>20</td>
<td>3</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>33</td>
<td>10</td>
</tr>
<tr>
<td>Low/ Middle Income</td>
<td>49</td>
<td>9</td>
</tr>
<tr>
<td>High Income</td>
<td>39</td>
<td>22</td>
</tr>
<tr>
<td>World</td>
<td>47</td>
<td>12</td>
</tr>
</tbody>
</table>

Note: Numbers have been rounded.

Continued
“No discussion of the tobacco industry in the year 2000 would be complete without addressing what may be the most important feature on the landscape, the China market. In every aspect, China confounds the imagination.”

The Global Tobacco Burden—Youth

- Every day 80,000 to 100,000 youths become regular smokers
- One-fifth of young people begin before they are ten years old
- High exposure to secondhand smoke
- Predicted to kill 250 million children and adolescents alive today
Global Youth Tobacco Survey (GYTS)

Percentage of Students Currently Using Any Form of Tobacco

- Buenos Aires: 33%
- Bahamas: 19%
- Bolivia (Cochabamba): 27%
- Chile (Coquimbo): 40%
- Cuba: 18%
- India (Bihar): 59%
- Palau: 58%
- Poland (Urban): 34%
- Russian Federation (Moscow): 35%
- South Africa: 33%
- Ukraine (Kiev): 41%
- United States: 23%

Data source: [http://www.cdc.gov/tobacco/global/GYTS.htm](http://www.cdc.gov/tobacco/global/GYTS.htm) retrieved 2/26/06
Smoking Prevalence among Men in Chennai, India, by Education Levels

- **Illiterate**
  - 64%
- **<6 Years**
  - 58%
- **6-12 Years**
  - 42%
- **>12 Years**
  - 21%

Spreads Worldwide Through...

- Trade liberalization
- Direct foreign investment by industry
- Advertising and marketing by industry
Top Tobacco Companies’ Global Market Share, 1999

- China National Tobacco Corp: 25%
- Philip Morris: 17%
- Japan Tobacco: 13%
- British American Tobacco: 16%
- Reemstma: 2%
- Other Companies Combined: 27%

Total World Cigarette Production in Trillions, 1950–1998

Total World Cigarette Production in Trillions, 1950–1998

“Tobacco exports should be expanded aggressively, because Americans are smoking less.”

— Vice President Dan Quayle, 1990
Philip Morris International Tobacco Operations