THE TOBACCO ATLAS

THIRD EDITION

IN MEMORY OF

JUDITH D. WILKENFELD (1943–2007) AND RONALD M. DAVIS (1956–2008)

FOR THEIR LIFETIME ACHIEVEMENTS IN BATTLING THE TOBACCO PANDEMIC

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THIRD EDITION

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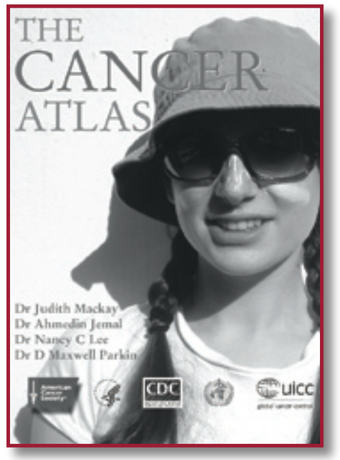

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CONTENTS

CONTENTS

CONTENTS

FOREWORD

John Seffrin

Tobacco alone is predicted to kill a billion people this century, 10 times the toll it took in the 20th century, if current trends hold. Of the approximately 650 million smokers alive today—10 percent of the current world population—one in two of those who continue to smoke will die of smoking-related diseases. An increasing proportion of those deaths will occur in low- and middle-income countries, which will be faced with the severe financial, social, and political consequences. There is no doubt that tobacco use and its health effects have created an epidemic on a global scale.

Yet the extraordinary level of suffering and death from this epidemic is not inevitable. With comprehensive and concerted action, we can reduce or eliminate many of the dangers associated with tobacco, and in so doing, we can save hundreds of millions of lives. But in order to be successful in our fight against tobacco, we must know what this enemy looks like throughout the world.

That's why the information contained in *The Tobacco Atlas* is so crucial. Along with detailed tobacco statistics on nearly every country around the globe, this publication offers in-depth information on the prevalence of tobacco and health, the costs of tobacco, the tobacco trade throughout the world, how tobacco is promoted and marketed, and the tobacco control efforts already under way. The scope of this timely and compelling data means that this single resource can help advocates in every nation get the knowledge they need to combat the scourge of tobacco in their communities and on the worldwide stage.

The Tobacco Atlas also provides a more intangible, but no less powerful, weapon in the fight against tobacco—hope. The significant updates and exciting developments chronicled in this publication prove that we are indeed making progress against tobacco and they pave the way for greater strides in the future.

Tobacco is a serious foe. But armed with comprehensive information like that found in this publication, we are better prepared to repel the industry's relentless assault and move ever closer to a day when we can finally declare victory over tobacco.

John R. Seffrin, PhD, Chief Executive Officer, American Cancer Society

FOREWORD

Peter Baldini

Decades of research have shown that tobacco harms every person exposed to it and kills half of its regular users. We are only now, however, truly delving into how the epidemic systematically affects adults, children, workers and local economies. The research presented in *The Tobacco Atlas*, third edition, is unique in how it graphically depicts the depth and breadth of the problem.

Great care has been taken to frame this world-class research in a way that is accessible to you—the policy maker, the advocate, the journalist and the researcher. Common throughout is vivid evidence that the health burden is shifting from high-income countries to their low and middle-income counterparts. Among the many detailed and vibrant charts, you will see confirmation of the shocking increase in smoking among youth, the vast number of diseases caused by tobacco use, and the nefarious activities of the tobacco industry.

We are also pleased to present a new online version of *The Tobacco Atlas*, available at www.tobaccoatlas.org. There you will be able to interact with the data like never before to distil the information that is most relevant to you. Researchers will find direct access to the raw numbers and policy makers, advocates and media will find rich features and tools to bring their local and regional epidemics to light.

The evidence presented herein and online, however, must do more than clearly articulate the scope and dimensions of the problem. It should be applied actively to strengthen the case for policy change. The World Health Organization released in 2008 a comprehensive package of policy interventions, which provides a sustainable roadmap to reduce the number of deaths caused by tobacco use. Whereas *The Tobacco Atlas* vividly captures the problem, this proven set of interventions, called MPOWER, provides the solution.

In a comprehensive MPOWER report distributed to governments and leaders around the world, WHO established that only 5 percent of the world's population live in countries that fully protect their population with any one of the key measures that reduce smoking rates. The report, available at www.who.int/tobacco/mpower, also found that tobacco taxes, the single most effective strategy, could be significantly increased in nearly all countries, providing a source of sustainable funding to implement and enforce the recommended MPOWER policies.

Great progress has been made since the last edition of *The Tobacco Atlas* but much more needs to be done. Use this new publication to stem and eventually reverse the most preventable public health crisis of our time.

Peter Baldini, Executive Director, World Lung Foundation

REVIEWS

Reviews of previous editions of *The Tobacco Atlas*

"*The Tobacco Atlas* is the best thing of its kind I've ever seen."

—C. Everett Koop, Former U.S. Surgeon General

"Informative, so easy to read, beautiful to look at."

—Dr. Annie J. Sasco

"I profited from reading the 2006 second edition of *The Tobacco Atlas*."

—Dr. R. F. Gillum, Faith-Based and Community Organizations, Centers for Disease Control and Prevention

"It's really helpful and an informative guide for tobacco control advocates."

—Syed Mahbubul Alam Tahin

"Excellent."

—Professor Gérard Dubois

"A comprehensive, attractively produced profile of all major aspects of the tobacco epidemic and what has been done so far to try to reduce it."

—David Simpson

"A manual of immense value for all people involved in smoking control."

—Dr. Kjell Bjartveit

"A beautiful and informative book."

—Professor Tai Hing Lam, Department of Community Medicine, University of Hong Kong

"We are making an addictive product that causes death and diseases among smokers. But we know, and *The Tobacco Atlas* points this out, that smoking will continue. People will continue to smoke, and something needs to be done about it."

—Chris Nelson, Manager, Regulatory Affairs, Philip Morris Asia

PREFACE

The Tobacco Atlas is intended for readers interested in the effect tobacco has on health, politics, economics, big business, corporate behavior, globalization, smuggling, tax, religion, allocation of resources, poverty, gender issues, human rights, children, human development, and the future.

This third edition of *The Tobacco Atlas* maps the history, documents the current situation, and predicts the future of the tobacco epidemic. The chapters illustrate that tobacco is not simply a matter of personal choice, but also involves a political and economic panoply of global social and demographic change, government policy, and corporate strategies, including tobacco industry activities such as smuggling, deceptive marketing, and evasion of corporate responsibility. This Atlas reflects the importance of multilateral approaches to reduce the epidemic, requiring action by the World Health Organization, other UN agencies, governmental and non-governmental organizations (NGOs), the private sector, and concerned individuals—in fact, the whole of civil society.

Since the previous edition of *The Tobacco Atlas* was published in 2006, there have been several significant developments in global tobacco control. To date, 162 countries have ratified the WHO Framework Convention on Tobacco Control, the first application of international law to further public health. In 2008, the World Health Organization issued the MPOWER report, a comprehensive analysis of global tobacco use and control efforts. The MPOWER report provides an unprecedented level of detail and a roadmap for effective solutions. The recent contributions of major international donors, such as the Bloomberg Philanthropies and the Bill and Melinda Gates Foundation, have improved the global tobacco control environment by significantly increasing levels of funding for tobacco control efforts in low-and middle-resource countries.

As the costs of tobacco have been more carefully studied in different national economies, policy makers and the public are realizing that tobacco control benefits the health and wealth of nations and individuals. More countries have passed legislation to increase tobacco taxes, ban tobacco promotion, require health warnings, and create smoke-free areas in public places. In many countries, tobacco industry documents are being analyzed to expose the harmful activities of the tobacco industry and hold it responsible for damages. The most effective national tobacco control plans integrate comprehensive tobacco control activities into existing health and education programs.

Despite progress in policy development and public awareness, the world's total number of smokers and the number of tobacco-related deaths continues to grow. This unfortunate trend, due largely to global population increases, is likely to continue for the foreseeable future. Tragically, the tobacco burden is falling increasingly on low- and middle-resource countries, and the concern that more women are smoking cannot be underestimated.

The publication of this third edition of the atlas marks a critical juncture in the unfolding pandemic. With an eye on the past century and the remainder of this century ahead, we can choose to stand by idly while the tobacco industry causes another one billion deaths in the twenty-first century, or we can embrace the spirit of the Framework Convention on Tobacco Control by implementing robust and effective measures to protect people's health and the wealth of nations. Millions of lives, trillions of dollars, and the world's prospects for an equitable future hang in the balance.

Omar Shafey, Scientific Integrity Consulting LLC, Atlanta, USA
Michael Eriksen, Georgia State University, Atlanta, USA
Hana Ross, American Cancer Society, Atlanta, USA
Judith Mackay, World Lung Foundation, Hong Kong, SAR China

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We would like to thank the staff at Bookhouse Group, Inc., including Rob Levin, Renee Peyton, Jill Dible, Bob Land, Tony De Feria, the translation teams, international design firm, and other team members who worked on this edition of the atlas. Special recognition goes to Sarah Fedota, Bookhouse Group managing editor, who received a diagnosis of lung cancer while working on the atlas. A lifelong nonsmoker exposed to secondhand smoke, Sarah's poignant struggle, strength, and dignity as a cancer survivor serve as an inspiration to all.

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3 Female Smoking
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22 FCTC
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23 Smoke-Free Areas
The Global Smokefree Partnership
http://www.globalsmokefreepartnership.org

24 Marketing Bans
Daniel Ferrante, Tobacco Free Initiative, World Health Organization

25 Warning Labels
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Chapter 1: Types of Tobacco Use
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- Three kreteks: Tony De Feria
- Sticks: Tony De Feria

Chapter 2: Male Smoking
- Little boy standing next to sitting man who is smoking: World Lung Foundation/ Gary Hampton

Chapter 3: Female Smoking
- Balloon seller: World Lung Foundation/ Sudipto Das

Chapter 8: Health Risks
- Anatomy figure: Tony De Feria

Part Four: Promotion
- People in front of Marlboro stand: World Health Organization/Jim Holmes

Chapter 17: Marketing
- Lucky Strike: World Lung Foundation/ Damien Schumann

Part Five: Taking Action
- Death masks: World Lung Foundation/ Sudipto Das

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Part Six: World Tables
- Man smokes while reading to daughter: AP Images/Greg Baker

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GLOSSARY

Addiction – Physiological or psychological dependence on a substance characterized by neurochemical changes, compulsive drug-seeking behavior, dose tolerance, withdrawal symptoms, uncontrolled craving, and self-destructive behavior. Common addictive drugs include alcohol, opiates, and nicotine.

Advertising – Any commercial effort to promote tobacco consumption, including the display of trademarks, brand names, and manufacturer logos; marketing of tobacco products; sponsorship of sports and other social and cultural activities; and other methods.

BCE – Before the Common Era

Billion – 1,000 million

Bupropion – An antidepressant pharmaceutical used as a smoking cessation aid. A norepinephrine and dopamine reuptake inhibitor as well as a nicotinic antagonist, bupropion was first approved for smoking cessation in 1997.

Cancer – A type of disease in which abnormal cells divide uncontrollably. Cancer cells can invade nearby tissues and spread through the bloodstream and lymphatic system to other parts of the body. Tobacco consumption significantly increases incidence and mortality due to many types of cancer, especially cancers of the lung and oral cavity. Tobacco is also associated with cancers of the pharynx, larynx, esophagus, pancreas, cervix, kidney, bladder, colon, and other organs.

Carcinogen – A substance that causes cancer. Tobacco contains many potent chemical carcinogens, including tobacco-specific nitrosamines (TSNAs), polyaromatic hydrocarbons (PAHs), and volatile organic compounds (VOCs).

Chronic bronchitis – Inflammation of the bronchial mucous membrane characterized by cough, hypersecretion of mucus, and expectoration of sputum over a long period of time, associated with increased vulnerability to bronchial infection. Smoking greatly increases incidence of chronic bronchitis and risk of death due to respiratory disease.

Chronic obstructive pulmonary disease (COPD) – A chronic lung disease, such as asthma or emphysema, in which breathing becomes slowed or forced. Smoking increases risk of death due to COPD and other respiratory diseases. See also "Chronic bronchitis."

Consumption – Total cigarette consumption is the number of cigarettes sold annually in a country, usually in millions of sticks. Total cigarette consumption is calculated by adding a country's cigarette production and imports and subtracting exports. "Per adult" cigarette consumption is calculated by dividing total cigarette consumption by the total population of those who are 15 years and older. Smuggling may account for inaccuracies in these estimates.

Contraband – Smuggled, counterfeit, or otherwise illicit products. See also "Illicit trade in tobacco products."

Coronary artery disease – Also known as coronary heart disease. The narrowing or blockage of the coronary arteries (blood vessels that carry blood and oxygen to the heart) usually caused by atherosclerosis (a build-up of fatty material [cholesterol] and plaque inside the coronary arteries). Tobacco consumption greatly increases the incidence and mortality due to coronary artery diseases.

Costs – Macroeconomic costs associated with tobacco use.

> **Direct costs:** Health costs related to diseases caused by tobacco; health-care costs, such as hospital services, physician and outpatient services, prescription drugs, nursing home services, home health care, allied health care; changed expenditures due to increased utilization of services.
>
> **Indirect costs:** Productivity costs caused by tobacco-related illness or premature death; loss of productivity and earnings.
>
> **Total costs:** The sum of direct and indirect tobacco-attributable costs to society.

Cotinine – Nicotine's major metabolite. Because cotinine has a significantly longer half-life than nicotine, cotinine measurement can be used to estimate tobacco exposure levels. Cotinine is commonly measured in blood serum, urine, and saliva.

Counterfeit tobacco products – Illegally manufactured cigarettes or other products bearing a trademark without the consent of the trademark owner. See also "Illicit trade in tobacco products."

Emphysema – A pathological condition of the lungs marked by an abnormal increase in the size of the air spaces, resulting in labored breathing and an increased susceptibility to infection. It can be caused by irreversible expansion of the alveoli or by the destruction of alveolar walls. Smoking is a major risk factor for emphysema.

Environmental tobacco smoke (ETS) – See Secondhand smoke (SHS).

Excess mortality – The amount by which death rates for a given population group (e.g., smokers) exceeds that of another population group chosen as a reference or standard (e.g., nonsmokers).

Framework Convention on Tobacco Control – The World Health Organization (WHO) Framework Convention on Tobacco Control (WHO FCTC) is the first global treaty negotiated under the auspices of the World Health Organization. WHO FCTC establishes the international public health and legal template for national tobacco control activities.

Global Youth Tobacco Survey (GYTS) – The World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC) developed the GYTS to track tobacco use among young people across countries using a common methodology and core questionnaire.

GNI – Gross national income.

Harm reduction – A public health philosophy that seeks to mitigate health hazards by replacing high-risk products or activities with lower-risk products or activities. In tobacco control, harm reduction is proposed for smokers who do not want to stop smoking or are unable to do so despite many attempts. Harm reduction seeks to reduce the adverse health effects of smoking by removing harmful constituents or encouraging smokers to switch to alternative modes of tobacco consumption that are considered less harmful than smoking—for example, smokeless tobacco. The approach is controversial because all forms of tobacco consumption are harmful, and medically acceptable smoking cessation approaches do not employ tobacco as a cessation aid.

Health professionals – Dentists, health science practitioners, hospital staff, medical doctors, nurses, pharmacists, ancillary medical staff, and students in these disciplines.

Health warnings – Government-mandated medical statements or graphic images placed on tobacco products, packaging, or advertisements.

Illicit manufacturing – Illegal manufacturing of tobacco products in defiance of tax, licensing, or monopolistic laws that restrict the manufacture of tobacco products. See also "Illicit trade in tobacco products."

Illicit trade in tobacco products – Any practice or conduct prohibited by law, relating to production, shipment, receipt, possession, distribution, sale, or purchase of tobacco products, including any practice or conduct intended to facilitate such activity. See also "Contraband, Counterfeit tobacco products, Illicit manufacturing, and Smuggling."

Ingredient – Every component of the tobacco product that is smoked or chewed, including all genetically modified, blended, and introduced components, additives, flavorings, and other constituents, including paper, ink, adhesives, hardening agents, filters, and other materials used in the manufacturing process and present in the finished product in burned or unburned form.

Marketing – A range of activities aimed at ensuring the continued sales and profitability of a product, including advertising, promotion, public relations, and sales.

Nicotiana tabacum – The tobacco plant. Its leaves contain high levels of the addictive chemical nicotine and many cancer-causing chemicals, especially polyaromatic hydrocarbons (PAHs). The leaves may be smoked (in cigarettes, cigars, and pipes), applied to the gums (as dipping and chewing tobacco), or inhaled (as snuff). Tobacco use and exposure to secondhand tobacco smoke causes many types of cancer, as well as heart, respiratory, and other diseases.

Nicotine – An addictive, poisonous alkaloid chemical found in tobacco. It is also a stimulant that increases heart rate and oxygen use by cardiac muscle. Nicotine is also used as an insecticide. The lethal dose for a human adult is about 50mg.

Nicotine replacement therapy (NRT) – A type of smoking cessation treatment that provides low doses of nicotine to ease cravings experienced by addicted smokers. NRTs include devices such as transdermal patches, nicotine gum, nicotine nasal sprays, and inhalers.

Passive smoking – Inhaling cigarette, cigar, or pipe smoke produced by another individual. See also "Secondhand smoke (SHS)."

Polyaromatic hydrocarbon (PAH) – A type of organic compound composed of several benzene rings. PAHs, many of which are carcinogenic, are produced during charbroiling of meat, incomplete combustion of fossil fuels, and the burning of tobacco. Tobacco smoke is the most common source of human exposure.

Prevalence – Smoking prevalence is the percentage of smokers in the total population. Adult smoking prevalence is usually defined as the percentage of smokers among those aged 15 years and older.

Promotion – Special offers, gifts, price discounts, coupons, company websites, specialty item distribution, telephone solicitation, and other methods to facilitate the sale or placement of cigarettes. Also includes allowances paid to cigarette retailers, wholesalers, full-time company employees, and all other persons involved in cigarette distribution.

Retailer – A person engaged in a business that includes the sale of tobacco products to consumers.

Risk – The likelihood of incurring a particular event or circumstance (e.g., risk of disease measures the chance of an individual contracting a disease).

Secondhand smoke (SHS) – Smoke inhaled by an individual not actively engaged in smoking. SHS is composed of mainstream smoke (exhaled by smokers) and sidestream smoke (from the tip of the cigarette, cigar, or pipe). Secondhand smoke contains the same harmful chemicals that smokers inhale. Also known as environmental tobacco smoke (ETS) or passive smoking.

Smoke-free area – Area where smoking or holding a lighted cigarette, cigar, or pipe is prohibited.

Smokeless tobacco – Snuff, chewing tobacco, and other forms of tobacco used orally; not a safe alternative to smoking. Smokeless tobacco is as addictive as smoking, and it causes cancer of the gum, cheek, lip, mouth, tongue, and throat.

Smoker – Someone who smokes any tobacco product either daily or occasionally.

Smuggling – The illegal importation of products. See also "Illicit trade in tobacco products."

> **Large-scale organized smuggling of tobacco products:** illegal transportation, distribution, and sale of large consignments of cigarettes and other tobacco products.
>
> **Small-scale smuggling or "bootlegging":** individual or small group purchases of tobacco products in low-price jurisdictions in amounts that exceed the limits set by customs regulations, for resale in high-price jurisdictions.

Stroke – An abnormal condition in which a blood vessel in the brain bursts or is clogged by a blood clot leading to the death of brain cells. Strokes usually result in temporary or permanent neurological deficits and/or death. Smoking significantly increases the risk of stroke.

Tar – The raw anhydrous nicotine-free condensate of smoke.

Tar and nicotine yield – The amount of tar and nicotine in one cigarette, as determined by a machine designed to measure the chemical content of cigarette smoke. Machine yields of cigarette tar and nicotine levels may not reflect the actual level of exposure experienced by smokers. See also "Tobacco smoke condensate."

Tobacco attributable mortality – The number of deaths attributable to tobacco use within a specific population.

Tobacco control organization – A nonprofit organization with a goal of reducing tobacco consumption or protecting nonsmokers from the effects of secondhand smoke.

Tobacco industry documents – Previously secret, internal industry records that are now available in the public domain as a result of court rulings.

Tobacco product – Any product manufactured wholly or partly from tobacco that is ingested by smoking, inhalation, chewing, sniffing, or sucking.

Tobacco production – The volume of actual tobacco leaves harvested from the field, excluding harvesting and threshing losses and any part of the unharvested tobacco crop.

Tobacco smoke condensate (TSC) – Sticky particles comprising thousands of chemicals created by burning tobacco.

Tobacco-specific nitrosamine (TSN or TSNA) – A group of seven toxic chemicals found only in tobacco products. N'-nitrosonornicotine (NNN), (4-methylnitrosamino)-1-(3-pyridyl)-1-butanone (NNK), and N-oxide, 4-(methylnitrosamino)-1-(3-pyridyl N-oxide)-1-butanol (NNAL; a metabolic product of NNK) are the most carcinogenic.

Tobacco taxes – The sum of all types of taxes levied on tobacco products. There are two basic methods of tobacco taxation:

> **Nominal or specific taxes:** Based on a set amount of tax per unit (e.g., cigarette) or gram of tobacco. These taxes are often differentiated according to the type of tobacco product (e.g., filtered vs. nonfiltered cigarettes, pipe tobacco vs. cigars).
>
> **Ad valorem taxes:** Assessed as a percentage markup on some determined value (tax base), usually the retail selling price of tobacco products or a wholesale price. These taxes include any value-added tax (VAT) where applicable.

Tobacco use – The consumption of tobacco products by burning, chewing, inhalation, or other forms of ingestion.

Varenicline – A pharmaceutical smoking cessation aid that acts as a partial agonist of nicotinic acetylcholine receptors. It became available beginning in 2006.

Volatile organic compound (VOC) – An organic (carbon-containing) compound that evaporates at room temperature. VOCs contribute significantly to indoor air pollution and respiratory disease.