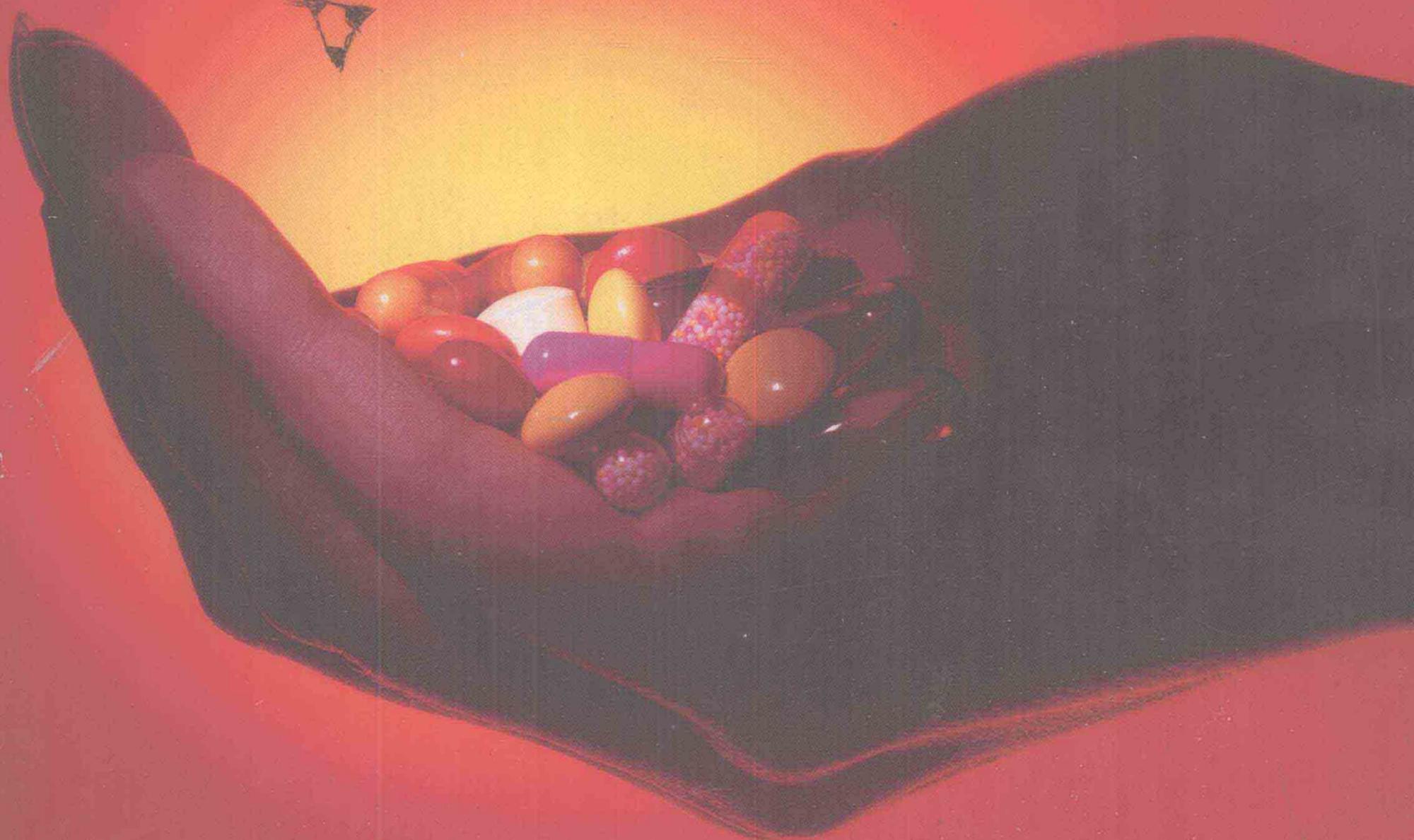


THIRD EDITION

# DRUGS

ACROSS THE SPECTRUM



RAYMOND GOLDBERG

# **Drugs Across the Spectrum**

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# Preface

## CONTENT AND ORGANIZATION

Mind-altering substances have had a profound effect on society ever since humans first roamed the planet. This book, I hope, will impart an understanding of drugs and their impact on individuals, families, communities, and society.

### Organization

*Drugs Across the Spectrum* is divided into three distinct sections. The first reviews drugs from an historical perspective, motivations for drug use, social implications of drug use, legal ramifications, and factors affecting how drugs interact with the human body. The second section focuses on specific categories of drugs, exploring their psychological and physiological effects. The last part critically examines various modes of drug treatment, the effectiveness of treatment, and the impact of prevention and education in addressing problems caused by drug use, misuse, and abuse.

In addition to providing a thorough review of illicit drugs, much attention is directed to licit, or legal drugs. This is pertinent because drugs such as tobacco and alcohol account for far more deaths and disabilities than illicit drugs. Millions of people use prescribed and over-the-counter drugs that are potentially harmful. Performance-enhancing drugs such as anabolic steroids are included as well, because of their increased use in the last several years.

## FEATURES

*Drugs Across the Spectrum* has features that other books dealing with drugs typically do not. Each feature is intended to make the information and concepts in the book applicable, relevant, and interesting to the reader. Rather than being abstract concepts, issues that warrant personal reflection. Many people face decisions about their own drug use or drug use by others. No one is immune to the effects of drugs. Anyone who contemplates using drugs or who teaches others about drugs should be aware of the potential effects of drug use upon themselves, their families, their communities, and society. Every individual is responsible for being informed about the personal and social effects of drugs. Knowledge and information are the cornerstones of making informed, responsible, and rational decisions.

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Some of the contemporary issues to this edition are:

- Drug abuse by older adults
- Alcohol and women
- Underage drinking
- Human growth hormones
- Creatine and androstenedione
- Cigar smoking

- Medicinal use of marijuana
  - Harm-reduction strategies
  - Mandatory minimum drug sentencing
  - Ketamine (Special K)
  - New drug prevention programs
- 
- Each chapter highlights important issues and pertinent information that promotes *critical thinking* and stimulates discussion.
  - *Learning objectives* are at the beginning of each chapter to put the chapter's content into a meaningful framework.
  - At the conclusion of each chapter is an *activity* to promote class discussion.
  - True and False questions appear at the end of each chapter as *self-tests*.
  - Brief *summaries* capsule the information contained in each chapter.
  - Throughout the text, *Key Terms* are highlighted and defined to clarify the content and give the student easy access to the meanings of vocabulary essential to their understanding.
  - Data is incorporated to support the textual presentation through *illustrative tables* and *figures* from the most current sources available.
  - The judicious use of *photographs* illustrates important information.
  - At the end of the text is an updated *Glossary* of the important terminology used in the book, along with a concise, clear definition for each term.
  - *World Wide Web sites*, with annotations, at the end of each chapter direct the reader to further, specific information related to the chapter topic. These entries are current and have been verified for authenticity.

## ANCILLARIES

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To assist the instructor in presenting the course in an interesting and comprehensive way, the following ancillaries are provided without charge to qualified adopters.

- Instructor Manual
  - Detailed outline of the text
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  - Ability to save and recall previously generated test to create a new version of the test, as the multiple-choice answers will rotate each time a test is printed.
- Available in Windows.

## ACKNOWLEDGMENTS

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This book has benefited from the assistance of many people. Those who were most instrumental in seeing the project come to fruition include Doug Morton, Publisher; Ruth Horton, Project Editor; Dona Mendoza, Assistant Project Editor, and Joanne Saliger and the staff at Ash Street Typecrafters. Their expertise and support throughout this endeavor are greatly appreciated.

I also would like to thank Kerry Redican for his thorough work on the *Instructor's Manual*. Last, I would like to thank my wife Norma and daughters Tara and Greta for their continuing love and support.

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# **An Overall Perspective**

**Part**

**I**



# Drugs in Perspective

**A**n historical perspective on drugs provides insight into the role that drugs have played over time. We also can benefit from a common understanding of what the terms *drug*, *drug misuse*, and *drug abuse* mean. Many factors affect how these words are defined. Is a substance defined as a drug according to its behavioral effects, pharmacological effects, its effects on society, its chemical make-up? If drugs are viewed as only illegal or menacing substances, we may not acknowledge substances such as caffeine and tobacco as drugs. If caffeine and tobacco are not considered drugs, one may think they cannot be misused or abused because only illegal drugs are misused or abused. Or a person may grow up thinking that any drug use, from aspirin to nasal decongestants, is unacceptable. If someone takes three aspirins a day, is he or she misusing or abusing drugs? What if a person has a glass of beer with dinner and a glass of wine each night before going to bed?

Living with a diabetic, asthmatic, or alcoholic person may alter one's perception of drugs. Religious groups and their rituals play a crucial role in how drug use is defined. For example, the Native American Church uses the hallucinogen peyote in a spiritual context but not recreationally. If college students were to experiment with hallucinogens to enhance their spirituality, however, this drug use would be perceived differently. Communion wine is part of the service in the Catholic Church and in some Protestant denominations. Drugs used within a religious framework are not likely to be abused.<sup>1</sup> The point is that any definition is limited and is influenced by one's experiences and background. Moreover, definitions are arbitrary.

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Try to recall events in your life that influenced how you look at drugs. What were the most important factors influencing your perception of drugs?

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## 1

*After completing this chapter, the reader should be able to describe:*

- How drugs affect society.
- How drug use, misuse, and abuse differ.
- The role of opium in wars between the Chinese and British governments.
- The economic effect of the rum trade in New England.
- The function of alcohol during the Colonial period.
- Factors leading to the increase in alcohol consumption in the United States in the early 1800s.
- Factors leading to the increase in morphine abuse in the United States in the 19th century.
- The importance of tobacco to the economic viability of the New World.

## DEFINITIONS

Although definitions for the word **drug** abound, there is no legal definition. One definition of **psychoactive drugs** is “substances that act to alter mood, thought processes, or behavior, or that are used to manage neuropsychological illness.”<sup>3</sup> When a substance affects one’s ability to get along with others, to work, to cope, or to think rationally, it can be classified a drug. Based on this definition, many substances could be designated as drugs. Drugs encompass illegal substances, prescription medicines, and over-the-counter medications.

Could foods be included as drugs? Many people crave ice cream and chocolate to cope with unpleasant experiences or simply to raise their spirits. Should these be considered drugs? Are they used differently than many substances identified as drugs? How would chocolate and ice cream connoisseurs react to the idea that they are drug users? No doubt, support groups for ice cream users would spring up!

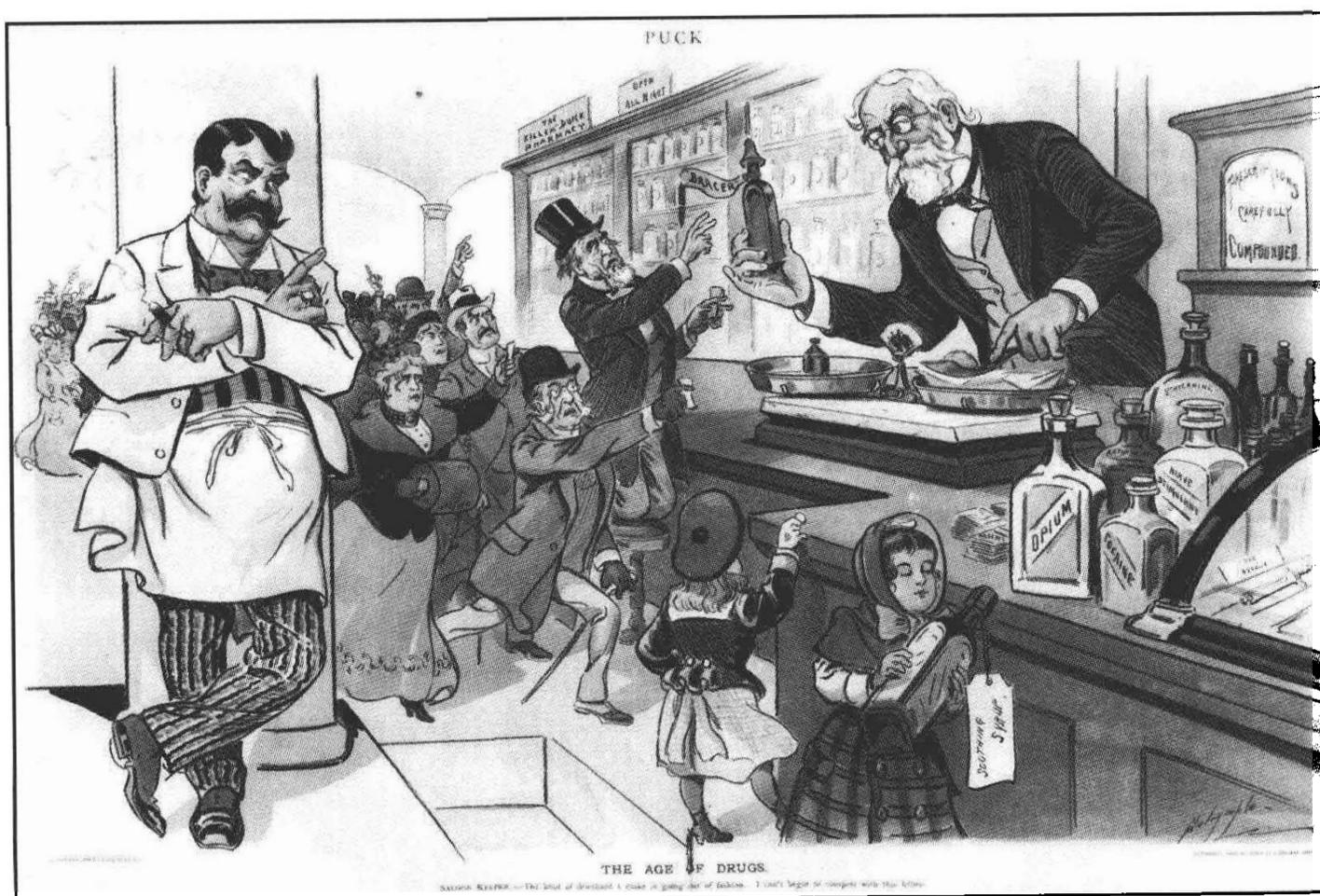
## Drug Misuse

**Drug misuse** refers to the unintentional or inappropriate use of prescribed or over-the-counter drugs. One group especially vulnerable to drug misuse is the elderly.<sup>4</sup> Although elderly people comprise a small proportion of the population, this group takes a disproportionate amount of prescribed and over-the-counter drugs. An estimated 17% of older adults

(60 years of age and older) misuse alcohol or prescription drugs.<sup>5</sup> Even aspirin can be fatal when used improperly.

Drug misuse arises from not understanding a drug’s effects. For example, if a student studies for a test and drinks alcohol to improve his or her study skills, the student is misusing alcohol because it does not improve learning. Misuse may arise from deluding oneself about one’s purpose for using drugs. This is illustrated by a person who consumes five glasses of wine daily and says it is for spiritual purposes. Examples of drug misuse are:

- Discontinuing prescribed medicines against the physician’s recommendation (some people, for example, stop taking blood pressure medication once their blood pressure is under control).
- Mixing drugs (some drugs, particularly depressants, can be fatal when consumed together).
- Consuming more of a drug than prescribed (if one pill or tablespoon is good, five are not five times as good!).
- Using more than one prescription at a time without informing the physician who wrote the prescription.
- Saving or using old medications (the properties of drugs and their effectiveness change over time).
- Not following the directions for a drug; some drugs are ineffective when taken at certain times, such as after eating.



**Drug misuse and abuse have existed throughout time.**

## Drug Abuse

**Drug abuse** is the intentional and inappropriate use of a drug resulting in physical, emotional, financial, social, or intellectual consequences. Any substance, if used by the wrong person, in the wrong dosage, or at the wrong time or place, can be abused. Some drug abuse perhaps results from emotional problems. A lifetime of major depression, for example, has been linked to the abuse of alcohol and other drugs.<sup>6</sup>

Two factors associated with drug abuse are dependency and chronic use. Whether chronic drug use is relevant to drug abuse is a pertinent question. For example, if a person drinks alcohol or uses heroin only on weekends and becomes disoriented from taking either drug, is that person abusing drugs? Does the illegal status of heroin and the legal status of alcohol affect our view of drug abuse? Millions of people smoke or chew tobacco daily or hourly. Are tobacco users drug abusers?

Of all adolescent deaths, 75% are related to drug abuse, and abusers are 8 to 10 times more likely than nonabusers to attempt suicide.<sup>7</sup> Drug abuse affects men and women alike. Females are estimated to comprise 30% of the drug-using population.<sup>8</sup>

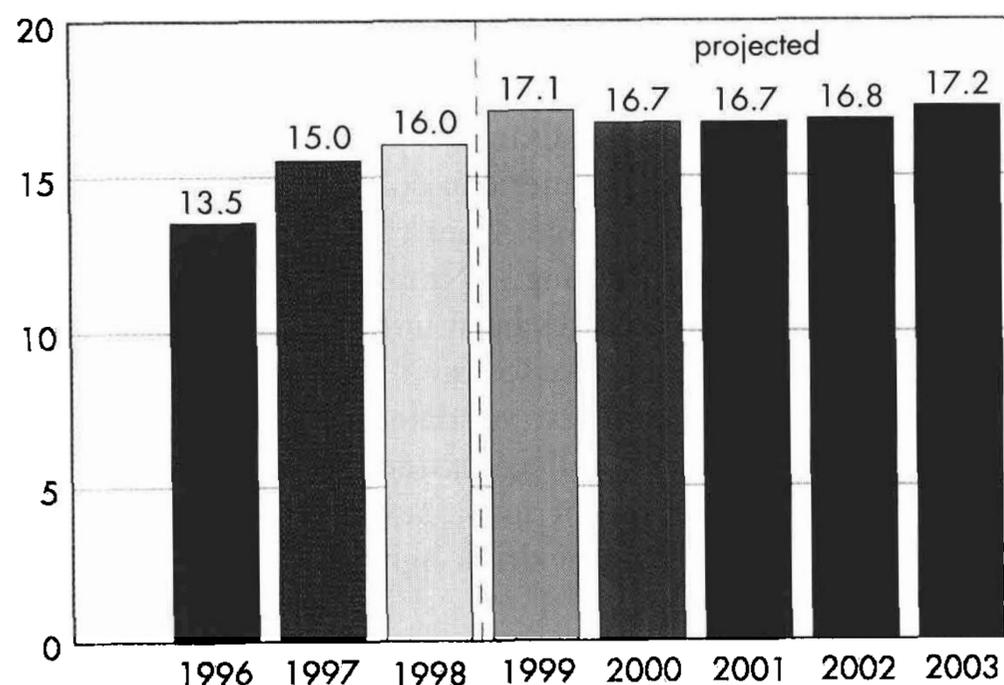
The concept of drug abuse may not relate to whether a drug alters consciousness or is used frequently but, rather, if the drug is socially acceptable. Alcohol, tobacco, and caffeine use is not considered deviant. Heroin use, in contrast, is not socially accepted. To many people, therefore, heroin use is abusive regardless of its effects or frequency of use. Most people who use drugs do not abuse drugs. Also, predicting which drug users will become abusers is difficult.<sup>9</sup>

## THE PREVALENCE OF DRUG USE

Drug abuse is an expensive problem. The Office of National Drug Control Policy places the health and social cost of drug use at \$67 billion annually.<sup>10</sup> Untreated alcohol and drug users fill 10% to 50% of hospital and emergency room beds, mostly for treatment of illnesses secondary to the addiction.<sup>11</sup> Of all persons admitted to general hospitals an estimated 20% to 40% have alcohol-related problems.<sup>12</sup>

More than 400,000 people are in American jails on any given day for violating a drug law. To address problems associated with drugs, the U.S. government is increasing its funding. By way of comparison, in 1980 the figure for combatting drug abuse was \$1 billion. In 1997, the government spent \$16 billion for drug control. Drug czar Barry McCaffrey asked Congress to allocate more than \$17 billion in 1999 to deal with drug abuse.<sup>13</sup> About two-thirds of that money was earmarked for domestic law enforcement and reducing the supply of drugs.<sup>14</sup> Figure 1.1 shows the drug control budget, including projections through the year 2003.

Nearly every American has used a mind-altering substance by having a glass of wine, a cigarette, a cup of coffee, a soft drink, or a cup of hot chocolate. In the United States about 2 billion prescriptions are dispensed each year. In 1997 the pharmaceutical industry spent \$917 million to advertise prescription drugs.<sup>15</sup> Recent sales of prescription drugs totaled



Source: "Budget Summary," National Drug Control Strategy, 1998 (Washington, DC: Government Printing Office, 1999).

**FIGURE 1.1**

National drug control budget.

**Drug** Any substance that alters one's ability to function emotionally, physically, intellectually, financially, or socially.

**Psychoactive drugs** Any substance that has the capability of altering mood, perception, or behavior.

**Drug misuse** The intentional or inappropriate use of prescribed or over-the-counter drugs.

**Drug abuse** The intentional and inappropriate use of a drug resulting in physical, emotional, financial, intellectual, or social consequences for the user.

\$85 billion and sales of over-the-counter drugs amounted to \$13 billion.<sup>16</sup> Adverse reactions to prescription medicines are the fourth to sixth leading cause of death in the United States in recent times. In 1994, more than 100,000 people died from adverse reactions to prescribed drugs.<sup>17</sup>

An estimated 13 million Americans (6% of those 12 years of age and older) have used illegal drugs. Between 1996 and 1997 the percentage of 12-year-olds who know a friend or classmate who has used either heroin or cocaine doubled.<sup>18</sup> Children most often initiate drug use by ages 12 or 13.<sup>19</sup> Ten million Americans have used marijuana, and 1.4 million have used cocaine. Thirteen million consumed 5 or more drinks of alcohol at one sitting in the past month, and 60 million people, including 4.1 million adolescents aged 12–17 smoked cigarettes.<sup>20</sup> Almost 5 million people in the United States ages 12 and over have been treated for a drug problem.<sup>21</sup>

## THE IMPACT OF DRUG USE AND ABUSE

In 1998 there were more than 30 alcohol-related deaths among students at American colleges and universities. Two in of every five American college students engage in binge drinking.<sup>22</sup> Not only has binge drinking at American colleges been linked to student deaths, but it also has been associated with weak academic performance, injuries, vandalism, and property damage.<sup>23</sup> Female college students who are heavy drinkers are more apt to be sexually coerced than students who abstain or drink lightly.<sup>24</sup>

**VANESSA WAS IN A FATAL CAR ACCIDENT LAST NIGHT. ONLY SHE DOESN'T KNOW IT YET.**



Photo courtesy of the National Institute on Drug Abuse, U. S. Department of Health and Human Services.

*Drug and alcohol use can make people more willing to have unplanned and unprotected sex.*

Up to 86% of homicide offenders were under the influence of alcohol at the time of the offense, as were 37% of assault offenders, 60% of sexual offenders, and 13% of child abusers.<sup>25</sup> Nearly one-third Americans will be involved in an alcohol-related crash at some time in their lives. In 1996, there were more than 16,000 alcohol-related traffic fatalities.

Some people are concerned that drug use is destroying the very fabric of society, that families and communities are undermined by drug use, and that moral decay will fester. In many instances, however, family and community problems might be the precursors to, rather than the effects of, drug abuse.<sup>26</sup> When addressing drug-related problems, there is a sense of frustration that something must be done. One public opinion poll indicated that stopping the flow of drugs was an important foreign policy goal to 85% of the Americans polled.<sup>27</sup>

Articles in *Newsweek*, the *New York Times*, the *Washington Post*, and other publications point out that LSD is making a comeback in the 1990s. Heroin use also is rising. The cost of heroin is declining, purity is up, and more people are admitted to hospital emergency rooms or dying from heroin overdoses.<sup>28</sup> The purity of heroin went from 5% in the 1980s to 59% in 1995.<sup>29</sup>

Nearly a half a million Americans die each year from tobacco, alcohol, and illegal drugs. More women today die from lung cancer than breast cancer.<sup>30</sup> Approximately \$8 billion in Medicaid expenditures goes to people admitted to hospitals because of their drug abuse.<sup>31</sup> Table 1.1 shows the estimated number and percentage of preventable deaths from drugs and other activities.

Illegal drug use has a substantial connection to crime.<sup>32</sup> About one-half of all violence is drug-related.<sup>33</sup> Approximately half of convicts in federal prisons are there because of drug-related crimes, and the drug trade has spawned terror and violence in many neighborhoods.<sup>34</sup> More teenage males die from gunshot wounds than from all natural causes combined.<sup>35</sup> Drug-related offenses in 1960 in the United States were fewer than 30,000, in contrast to current estimates exceeding 1 million.<sup>36</sup> Almost 60% of juveniles arrested in December 1994 tested positive for drugs.<sup>37</sup> Table 1.2 shows the number of drug-related murders compared to total murders in the United States between 1986 and 1997.

Newspaper headlines recount stories of drug-crazed people perpetrating crimes on others, individuals whose drug use results in fatal diseases, males and females pawning their bodies for drugs, and

**TABLE 1.1** Preventable Deaths in United States

Cause	Preventable Deaths	
	Estimated Number	Percentage of Total
Tobacco	400,000	37.7%
Diet/Activity Patterns	300,000	28.3
Alcohol	100,000	9.4
Toxic Agents	90,000	8.5
Microbial Agents	60,000	5.7
Firearms	35,000	3.3
Sexual Behavior	30,000	2.8
Motor Vehicles	25,000	2.4
Illicit Use of Drugs	20,000	1.9
<b>Total</b>	<b>1,060,000</b>	<b>100.0</b>

Source: *Substance Abuse and Mental Health Statistics Sourcebook*, by B. E. Rouse (DHHS Publication No. 95-3604) (Washington, DC: Government Printing Office, 1995).



*Having low birthweight babies is a side effect of drug use by pregnant women.*

women delivering drug-addicted and drug-impaired babies. An estimated 5.5% of the 4 million women who gave birth in the United States in 1992 used illegal drugs while they were pregnant.<sup>38</sup> Drugs account for an estimated 3% of congenital abnormalities.<sup>39</sup> An estimated \$500 million would be saved in the cost of obstetric and newborn care if cocaine abuse could be controlled.<sup>40</sup> At the other end of the lifespan, an estimated 17 percent of Americans 60 years

of age and older misuse alcohol or prescription drugs.<sup>41</sup>

The leading cause of death of Americans 25 to 44 years of age is the acquired immunodeficiency syn-

drome (AIDS).<sup>42</sup> Most of the cases arise among injection drug users, their sex partners, and their children.<sup>43</sup> By April 1996, injected drug use was responsible for more than 150,000 cases of AIDS.<sup>44</sup> In the District of Columbia, one quarter of the nearly 12,000 AIDS cases

**Are drugs really a problem in society, or is the concern excessive? The drawbacks to using drugs are numerous. In the attempt to reduce drug use and abuse, what is the best approach? Should drug policy focus on reducing the supply of drugs or the demand for drugs? Which approach would result in the least harm?**

through 1994 were linked to injection drug use, most by heterosexuals.<sup>45</sup> Those who used alcohol and other drugs while having sex were more likely to engage in high-risk sexual behaviors.<sup>46</sup>

Drugs are widely available. In New York City marijuana can be purchased from seemingly legitimate businesses — news stands, record shops, video rental outlets and so on.<sup>47</sup> To curb drug availability, billions of dollars are allocated for drug enforcement, prevention, and treatment. From 1981 to 1992, the federal government's expenditures to interdict drugs rose from \$350 million to \$2 billion.<sup>48</sup> High schools and colleges conduct drug tests, especially with athletes. Passing a drug test is a condition of employment for most companies.

**TABLE 1.2** Drug-Related Murders: United States, 1989–1997

	1989	1991	1993	1995	1997
Number of Homicides	18,954	21,676	23,180	20,232	15,289
Drug-related Murders	1,402.5	1,343.9	1,274.9	1,011.6	779.7
Percent Drug-Related Murders	7.4	6.2	5.5	5.0	5.1

Note: Includes only those homicides where circumstances were known.

Source: *Drugs and Crime Facts*, U. S. Department of Justice, Office of Justice Programs, Washington DC, May 1999.

Drugs unquestionably can lead to violent behavior, dependency, mental and physical maladies, strained relationships among siblings, children, parents, and spouses, work-related problems, legal dilemmas, problems in school, financial difficulties, accidents and injuries, and death. Over the last 20 years the United States has become much less tolerant of drug use.<sup>49</sup>

A report from the Brookings Institute suggested that the debate over how to address the drug problem is based on speculation not on fact.<sup>50</sup> It is unclear how much of a drug a person has to take before problems arise and how often one has to use drugs before becoming dependent or developing a psychological or medical problem. No hard-and-fast rules are available for determining when drugs become a problem for an individual.<sup>51</sup> Figure 1.2 illustrates many of the problems associated with using alcohol and other drugs.

## AN HISTORICAL PERSPECTIVE OF DRUG USE

Many drugs used today, such as opium and marijuana, have long histories. Other drugs, such as designer drugs (drugs altered molecularly in the laboratory), major and minor tranquilizers, amphetamines, herbal ecstasy, Rohypnol, and LSD have

relatively short histories. In any case, every culture sanctions the use of some drugs and strongly disapproves of others.

## Alcohol

Beverages might have been fermented intentionally as early as the Neolithic period, about 10,000 B.C.<sup>52</sup> Wine made from berries and beer has existed since 6400 B.C. The Bible includes several references to wine, including passages warning against immoderate consumption.<sup>53</sup> The early Egyptians revered wine and beer, attributing spiritual qualities to it; they also cautioned others about spending too much time in taverns.<sup>54</sup>

The early Hebrews were fond of alcoholic beverages, as were the ancient Chinese, Greeks, and Romans.<sup>55</sup> Bacchus was the Roman god of wine, and Dionysius the Greek god of wine. Dionysius was credited with celebrating the harvest and the origins of life. Hippocrates, the Greek father of medicine, recommended wine for therapeutic purposes.<sup>56</sup> Plato praised moderate wine consumption for its healthful benefits and for the happiness it brought.<sup>57</sup>

The Egyptians developed the process of **distillation**, which produces a higher alcohol content than fermentation. Consuming distilled spirits was the privilege of nobility. The word *alcohol* originated from the Arabic *alkuhl*, meaning “the essence.”

By the end of the 13th century, after alcohol was introduced to Europe, Arnauld de Villeneuve, a University of Montpellier medical professor, called alcohol *aqua vitae*, the “water of life.” In 16th-century England, *aqua vitae* was associated with increased criminal activity. The Irish referred to alcohol as “whiskey.” Not surprisingly, it was the Scots who came up with *scotch*, made by drying fermented barley in kilns fired with burning peat, a process that gives scotch its distinctive taste.

Brandy, made by fermenting fruit juice, is derived from the Dutch expression “burnt wine.” Gin comes from the Dutch *junever*, a term derived from the juniper berries contained in the distillation. In the 1600s the Russians made vodka by adding water to fermented potatoes



**FIGURE 1.2**

America's problem with alcohol and other drugs.