

Chapter 4

Corporate Practices

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1. Introduction

In the 21st century, corporations are the dominant global organizational form. Of the 100 largest economies in the world in 2000, 51 were corporations and the combined sales of the world's top 200 corporations were larger than the combined economies of all countries excluding the biggest 10 (Anderson & Cavanagh, 2000). Today corporations influence every aspect of human experience, from diet, air pollution, work, and health care to personal identity, life style, sexuality, and governance. As corporations have displaced prior social influences, such as religion, family, community, and government, their impact on health has also increased. Although the preponderance of evidence suggests that the overall burden of disease imposed by consumer products such as tobacco, high fat-low nutrient foods, automobiles, and firearms is large and growing (Choi, Hunter, Tsou, & Sainsbury, 2005; Richmond, Cheney, & Schwab, 2005; Yach, Hawkes, Gould, & Hofman, 2004) public health researchers have rarely studied corporations or the free markets in which they are embedded as direct social determinants of health. Instead, they have focused on the social stratification, stresses, and inequities that the market system creates, leaving relatively unexamined the pathways by which corporate decisions influence population health.

In this chapter, we summarize the various ways that corporations influence health, then describe in more detail one increasingly important pathway – the impact on health of the products corporations manufacture and sell and their practices to maximize such sales. Finally, we examine the public health response to health-damaging corporate behaviors and suggest research and practice strategies to reduce their harm.

2. Corporations as a Social Determinant of Health

The corporation first emerged in Europe in the 16th and 17th centuries as a way of pooling capital in order to invest in commercial opportunities that no single investor could realize on his own. In the 19th century, corporations

helped to amass the capital necessary for building the railways, canals, and other infrastructure needed to sustain the Industrial Revolution. By the end of that century, both England and United States had passed laws that limited the personal liability of investors for the harm caused by their business activity and that loosened controls on mergers and acquisitions (Bakan, 2004; Berle & Means, 1968; Galbraith, 1952). These changes set the framework for the modern corporation, which Ambrose Bierce jocularly defined in 1911 as “an ingenious device for obtaining individual profit without individual responsibility” (Bierce, 1911).

In the past century, corporations have penetrated almost every sector of human experience. They set patterns of employment and working conditions for a significant sector of the working population (Hippert, 2002; LaDou, 2003), are a dominant voice in welfare, tax, trade, health care, and environmental policies within many nations and global organizations (Fort, Mercer, & Gish, 2004; Pollock & Price, 2003; Waitzkin, Jasso-Aguilar, Landwehr, & Mountain, 2005), and shape patterns of consumption and life style through the products they make and their advertising (Cross, 2002; De Graaf, Wann, & Naylor, 2001; Hawkes, 2006; Schor, 2004). They also increasingly operate privatized services, such as health care, education, corrections, and security, that were previously public (Sclar & Leone, 2001); control growing sectors of public space and media (Bagdikian, 2004; Mitchell, 2003); and influence individual consciousness in such diverse areas as family life, sexuality, body image, and self-worth (Schor & Holt, 2000). Through these and other pathways, corporations have become a major influence on individual and population health.

2.1. Levels of Analysis

The multiple pathways by which corporations influence health require researchers to focus their investigations on a specific level of analysis. In previous health research, these have included the free market capitalist system as a whole, a specific national economy, a particular industry, a single company, or a single product. Table 4.1 lists examples of research questions and selected studies at these different levels. Each approach has distinct advantages and disadvantages, depending on the objectives of the analyst. For example, advocates seeking to reduce gun violence might choose to look at the firearms industry as a whole to identify opportunities for policy intervention, while those seeking to remove *trans* fat from food products to prevent cardiovascular disease and diabetes may focus on this single but pervasive product.

Since a comprehensive review of the findings of each level of analysis is beyond the scope of this chapter, we seek to more generally explore the health impact of the business and political activities of corporations. These practices result from companies' decisions about production, pricing, distribution, and promotion of their products and from their political efforts to create an environment favorable for their business. Our focus is less “fundamental” than the capitalist

TABLE 4.1. Levels of analysis of health consequences of corporate system.

Level	Research questions	Selected references
Free market system as a whole	What are the overall health consequences of free market capitalism? How does global economic system explain global disparities in health?	Navarro, 2004; Engels, 1987;
National/regional economy	What is the relationship of a nation's or region's (e.g. European Union, NAFTA nations) economic and political system on health and health disparities? How do differences in market systems between two nations/regions explain differences in health?	Stillman, 2006; Navarro & Schmitt, 2005
Specific industry	What are the health benefits and costs of an industry (e.g. tobacco) on a nation, region or the globe?	Stebbins, 1990
Specific company	What are the health consequences of a specific company (e.g. McDonald's) on global, national or local health?	Spencer, Frank, & McIntosh, 2005
Specific product	What are the health consequences of a particular product (e.g., SUVs) on global, national or local health?	Cummings, 2002
Industry practices	What is the impact of specific practices (e.g., advertising, retail practices) on global, national or local population health? What is the attributable risk of a specific practice to selected outcomes or compared to other practices (e.g. impact of tobacco advertising or comparison of advertising and pricing)?	Austin, Melly, Sanchez, Patel, Buka, & Gortmaker, 2005

system as a whole but less proximate than the individual behaviors that corporate practices encourage.

Compared to analyses that study the health impact of the capitalist system (or any other system) as a whole, the focus employed here has greater potential for informing policies that can improve population health in the medium term. Given the current absence of social forces that can promise substantive transformation of the dominant global socioeconomic system, our more modest perspective appears to have more pragmatic public health value. Nevertheless, some believe that the system of social stratification, unequal distribution of resources, and market displacement of the public sector is itself the cause of current patterns of mortality and morbidity. For them, our perspective suggests more limited changes that may seem more symbolic than substantive. For example, ending advertising of harmful products to children and promoting strict regulation of products whose social costs may exceed their benefits, such as trans fats or Sport Utility Vehicles (SUVs), may seem too modest for those seeking more fundamental changes.

2.2. *Corporate Practices that Influence Health*

Corporations have an impact on health through their production processes, through their engagement in the political process, and through public consumption of the goods and services they produce. Production processes can influence health by exposing workers to unhealthy or unsafe working conditions. The International Labour Organization (ILO) estimates that among the world's 2.7 billion workers, at least 2 million deaths per year and many more illnesses and injuries are attributable to occupational diseases and injuries. The ILO also estimates that on average about 4 percent of the gross domestic product (GDP) of a nation is lost because of work-related diseases and injuries (Rosenstock, Cullen, & Fingerhut, 2006). In the United States, the economic costs of job-related injuries (\$145 billion) and illnesses (\$26 billion) are much higher than those for AIDS and Alzheimer's disease and are on par with those for cancer and circulatory diseases (Leigh, Markowitz, Fahs, Shin, & Landrigan, 1997). Studies of the proportion of deaths attributable to the practices of corporations are generally lacking; however, the recent history of occupational health shows strong corporate opposition to health and safety measures that reduce profit, challenge managerial authority, or increase government involvement in corporate oversight (Gochfeld, 2005; Rosner & Markowitz, 1989).

Production processes can also have a larger impact on health by exposing the population as a whole to the various pollutants or environmental damage that are manufacturing by-products. Corporate influence on environmental health has increased dramatically in the 20th century. Corporate actions have contributed to global warming, deforestation, ozone depletion, and air pollution (McNeill, 2000), each associated with specific causes of mortality and morbidity (Guerra, Snow, & Hay, 2006; Haines & Patz, 2004; McMichael, 2001). Business decisions regarding which manufacturing products to use and which control technologies to install determine the environmental consequences of their production processes.

Corporations also influence health through their engagement in the political process. Their activities in this arena have a direct effect on health through their efforts to create favorable occupational, environmental, consumer regulatory, and other policies. Corporations shape health indirectly through lobbying on trade, taxation, defense, human services, education, and other issues. For example, free trade policies espoused by multinational food companies have increased the availability and lowered the cost of high fat, high sugar foods, contributing to obesity and diabetes (Hawkes, 2006). Corporations seek to lower taxes both by locating operations off shore and by changing tax law, thus reducing government revenues available for health and human services. In health care, global health companies advocate for privatization of health services, making these services less available to the poor and less accessible to public oversight (Waitzkin et al., 2005).

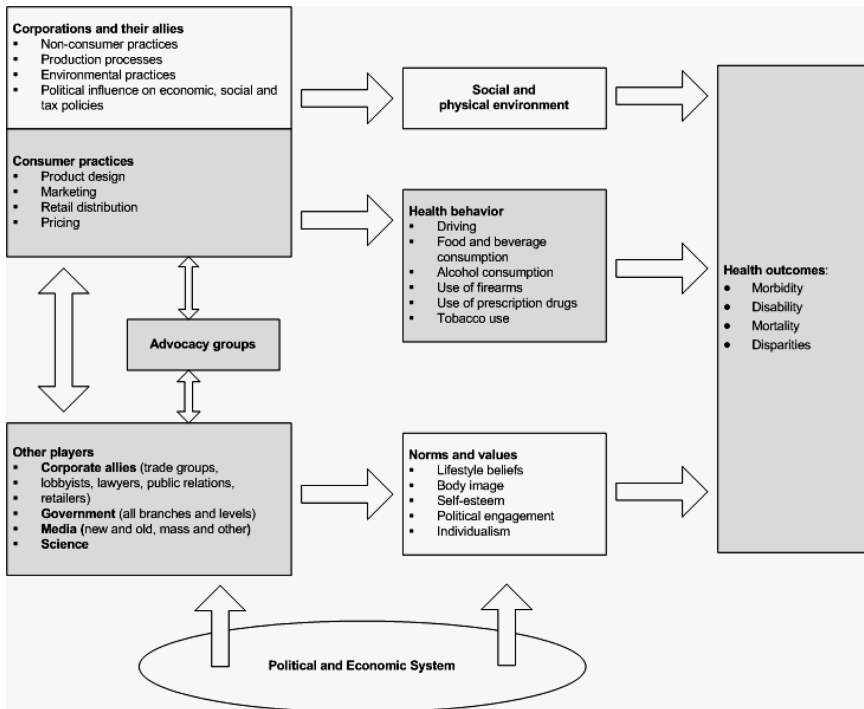


FIGURE 4.1. A conceptual model of the influence of corporate practices on health.

Figure 4.1 provides a conceptual model for the hypothesized pathways by which corporations influence health; the focus of this chapter is on the shaded portions of the figure that describe the impact of corporate practices on consumers. For the sake of brevity, we consider corporations and their allies, e.g., trade groups, lobbyists, lawyers, public relations firms, and retailers, as a single system. In fact, empirical research demonstrates complex relationships among these corporate partners (e.g., Hemenway, 2004; Kluger, 1997; Nestle, 2002), suggesting the need for further work to clarify the implications for public health intervention.

We further focus on six industries – alcohol, automobiles, firearms, food and beverages, pharmaceuticals, and tobacco. We selected these six because their products play a central role in mortality and morbidity in the developed world, their size makes them key players in the economy of the US as well as other developed and developing nations, and each has elicited public health efforts to modify harmful practices (illustrated by the box labeled “advocacy groups” in Figure 4.1). In addition, an extensive literature describes the health consequences of their products and, to a lesser extent, the role of corporate practices in shaping health risks, thus permitting a more systematic review of the findings of this body of literature. Table 4.2 summarizes the health impact of the products of these industries.

TABLE 4.2. Health impact of selected consumer products.

Industry/products	Health impact	Selected references
Alcohol	Motor vehicle accidents, cirrhosis, liver cancer, homicide, and suicide	Centers for Disease Control (CDC), 2004
Automobiles and other motor vehicles	Air pollution related respiratory diseases and cancer; driver, passenger, and pedestrian injuries and deaths	White, 2004; Environmental Protection Agency, 2004
Food and beverages	Obesity, heart disease, diabetes, some cancers	Katz, O'Connell, Yeh, Nawaz, Njike, Anderson, Cory, & Dietz, 2005
Firearms	Homicide, suicide, accidental and intentional injuries	Centers for Disease Control (CDC), 1999
Pharmaceuticals	Overuse, toxic effects	Centers for Disease Control (CDC), 2005
Tobacco	Cancers, heart disease, respiratory diseases	Stratton, Shetty, Wallace, & Bondurant, 2001

3. Summary of Evidence on Impact of Corporate Practices on Health

Four broad corporate practices have been linked to health outcomes: production and design, marketing, retail distribution, and pricing. Figure 4.2 lists the various mechanisms through which decisions in each practice can influence health. In this section, we review selected evidence to illustrate the pathways and mechanisms by which corporate practices in the target industries (alcohol, automobiles, firearms, food and beverages, pharmaceuticals, and tobacco) influence health and to illuminate future research needs and opportunities for intervention. In order to consider a wide range of relevant research, we include not only studies that have explicitly linked corporate practices to particular health indicators, but also those that examine the associations between corporate practices and health behaviors, e.g., tobacco use, diets associated with obesity, etc. We note that the availability and previous synthesis of evidence varies widely by industry. Tobacco, for example, has been studied most systematically; the literature on the food industry and health is only now expanding rapidly, while the literature on the firearms and pharmaceutical industries is sparser. Our goal is to highlight evidence that illustrates how practitioners and researchers have gone about examining the link between corporate practices and health. In the future, systematic reviews of the health impact of corporate practices by industry, practice, and health outcome are needed to advance our understanding.

3.1. Production and Design

Production and design refers to business decisions about where to invest capital and about the specific characteristics of a product. In market economies, corporate managers are expected to maximize profit for shareholders; failure to do so

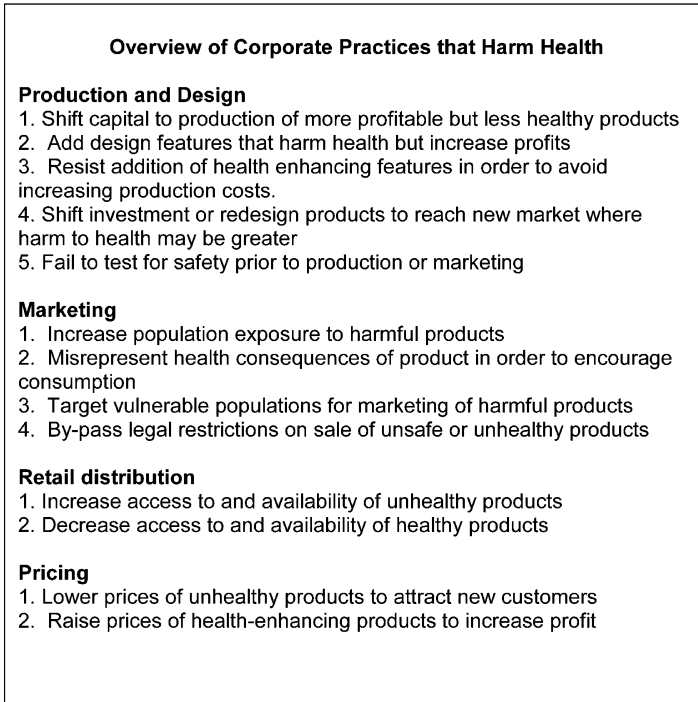


FIGURE 4.2. Overview of Corporate Practices that Harm Health

constitutes fiduciary neglect of their main responsibility (Friedman, 1982). A first step in maximizing profit is to assure that capital is invested in the most profitable ventures available, which are constrained by corporate history, technology, competitors, and law. A second step is to design a particular product so as to maximize profits. Unfortunately, as the following examples illustrate, the decisions about where to invest capital and how to design products may run counter to health.

3.1.1. Shifting Capital to Production of more Profitable but Less Healthy Products

To maximize profits, a company or industry can decide to shift its capital from the production of a less damaging to a more health damaging product in order to maximize profit. Sport Utility Vehicles (SUVs) provide a recent example. From the early 1990s to 2005, SUVs have been the best-selling and most profitable vehicles made by the US auto industry; each vehicle returns a profit 10–12 times higher than for conventional cars. During the 1990s, US auto makers invested billions of dollars in new factories to build these vehicles, meanwhile reducing their focus on producing less polluting and more fuel-efficient vehicles.

SUVs are characterized by a pick-up truck underbody, high ground clearance, enclosed rear cargo area, and available 4-wheel drive (Bradsher, 2002). SUVs, together with pickup trucks and minivans, are considered “light trucks,” a category that has its own regulatory standards separate from that of passenger cars. By 2000, light trucks accounted for 40 percent of US motor vehicles, double the 1980 rate (Coate & Vanderhoff, 2001).

SUVs pose several health and environmental problems. Because of their design, compared with other vehicles they are more likely to roll over, more likely than sedans to kill pedestrians and occupants of cars they hit, harder to steer, take longer to stop, and more likely to give their drivers a false sense of security that leads to riskier driving. They also produce more pollution than passenger cars, contributing to respiratory disease, cancer, global warming, and other conditions (Bradsher, 2002; Environmental Protection Agency, 2004; Haines & Patz, 2004; National Highway Traffic Safety Administration, 2005; White, 2004). Based on a review of scientific and government reports, Bradsher (2002) estimates that through the previously described mechanisms, SUVs account for roughly 3,000 excess deaths per year.

In recent years, rising gas prices and increased public concerns about SUV safety and pollution led to sharp declines in sales. US auto manufacturers find it difficult to abandon this sector of the market, however, because of their heavy investment in SUV production, the high unit profitability of SUVs, and the stiff competition from foreign auto makers in other sectors of the business (Wald, 2006).

In the last several decades, the food and beverage industries has chosen to use corn-based fructose rather than other sweeteners in processed foods and sweetened drinks. Between 1970 and 1990, the consumption of high fructose corn syrup increased by more than 1000%, far exceeding the changes in intake of any other food or food group (Bray, Nielsen, & Popkin, 2004). A variety of evidence suggests that these products have contributed to the epidemics of obesity and diabetes (Bray et al., 2004), yet government subsidies and changes in food production make corn syrup cheap and therefore highly profitable (Pollan, 2006).

Similarly, the decision by several domestic gun manufacturers to invest in and significantly increase production of “Saturday night special” handguns in the 1980s and 1990s contributed to an increase in homicides in that period (Hemenway, 2004: 133). According to one study, 60 percent of guns traced to crimes in the early 1990s were produced by Southern California’s “Ring of Fire” gun makers, who had recently expanded production of Saturday night specials (Wintemute, 1994).

In another example, pharmaceutical companies make investment decisions that adversely affect population health when they do not develop products that are life saving but unprofitable (e.g., vaccines (Andre, 2002)), often known as “orphan drugs” (Schieppati, Remuzzi, & Garattini, 2001), or to create products that are unnecessary but profitable, a practice labeled as “disease mongering” (Moynihan & Cassels, 2005).

3.1.2. Designing Features that Harm Health but Increase Profit

A second mechanism by which corporate practices can influence health is when producers modify their products in ways that harm health, often in order to increase sales or profits or reduce costs. The addition of trans fats to hundreds of US food products in the last four decades illustrates how product design intended to increase shelf life, and therefore profitability, can have dire health consequences. Trans fats are solid fats produced artificially by heating liquid vegetable oils in the presence of metal catalysts and hydrogen (Ascherio, Stampfer, & Willett, 1999). They are used to enhance the crispness, creaminess, stability, flavor, and shelf life of many processed and fast foods. By the late 1990s, roughly 40 percent of supermarket products contained trans fats, commonly identified on labels as partially-hydrogenated fats. In 1994, the Center for Science in the Public Interest (CSPI), a national advocacy organization, petitioned the Food and Drug Administration (FDA) to require that food manufacturers label the *trans* fatty acid (trans fat) content of their food products. The petition was based on new research showing that replacing trans fat with healthier oils could prevent between 30,000 and 100,000 premature cardiovascular deaths in the United States each year (Willett et al., 1993). In 1999, the FDA estimated that strengthening food labeling was likely to yield significant health and economic benefits, including saving 2,100 to 5,600 lives a year and \$3 billion to \$8 billion a year (Food and Drug Administration, 1999). Not until 2006, however, did new regulations go into effect requiring food companies to list the trans fat content on nutritional labels.

3.1.3. Resisting Addition of Health Enhancing Features in Order to Avoid Increasing Production Costs

In some cases, failure to change product design harms health. The auto industry has initially resisted almost every proposed safety or pollution reduction feature: e.g., mandatory seat belts, air bags, and improved fuel efficiency (Doyle, 2000). As early as 1965, Ralph Nader, in his book *Unsafe at Any Speed: The Designed-In Dangers of the American Automobile* (1965), described many examples of auto industry reluctance to spend money on improving safety.

The food industry also resists making changes. If the next 100 billion McDonald's burgers sold were vegetable-based rather than beef-based burgers, they would provide an additional 1 billion pounds of fiber and 660 million pounds of protein and would reduce saturated fats and total fat by 550 million pounds and 1.2 billion pounds, respectively (Spencer, Frank, & McIntosh, 2005). The higher profitability of meat-based products in the present economy makes such a transformation unlikely.

In another example, redesigning handguns and other firearms to include trigger locks, magazine safety devices, and owner identification systems and avoiding making guns that can be mistaken for toys could substantially reduce accidental and intentional injuries and deaths (Carbone, Clemens, & Ball, 2005; Hemenway, 2004). Despite evidence that gun locks and other safety features can mitigate the adverse consequences of guns in the home (Carbone et al., 2005), gun makers have resisted government efforts to make such features required or more routinely available (Siebel, 2000).

3.1.4. Shifting Investment or Redesigning Products to Reach New Markets where Harm to Health may be Greater

In another pathway, companies or industries make production or design decisions that result in new populations being exposed to harmful products. For example, liberalization of trade policies beginning in the 1980s and culminating in the 1994 North American Free Trade Agreement opened new opportunities for transnational food companies to invest and profit in Mexico. Between 1987 and 1999, for example, direct US investment in Mexican food processing companies increased from US\$210 million to US\$5.3 billion, a 25-fold increase. As a result, these companies sold more processed food in Mexico, per capita consumption of snack foods and carbonated beverages increased substantially, and obesity rates increased by more than 75 percent (Hawkes, 2006).

Similarly, when the regulatory environment and public opinion became less favorable to tobacco in the United States, the tobacco industry decided to invest in developing nations with less burdensome regulations (Mackay, 1992; Stebbins, 1990). In these nations, not only does tobacco directly impose future health problems on millions of people, expenditures on tobacco and its health consequences divert precious limited resources away from desperately needed basic human requirements (Stebbins, 1990).

Designing products to appeal to a new demographic group can expose additional people to a harmful product. If the targeted population happens to have a greater vulnerability (e.g., because of age, socioeconomic status, gender or other characteristics), these corporate decisions may contribute to the exacerbation of health disparities. For example, RJ Reynolds redesigned Camel cigarettes by including an additive to reduce throat irritation (Wayne & Connolly, 2002), and some companies have introduced cigarette brands with candy-like flavors (Carpenter, Wayne, Pauly, Koh, & Connolly, 2005); both of these changes were designed to appeal to young smokers. The tobacco industry also added menthol to attract women (O'Keefe & Pollay, 1996) and African-Americans (Sutton & Robinson, 2004), contributing to increased smoking rates among these groups (Ezzati & Lopez, 2003).

Similarly, in the last decade, the alcohol industry has developed and marketed wine coolers and "alcopops," sweetened alcoholic drinks designed to appeal to young drinkers (Mosher & Johnsson, 2005). Alcopops are frozen sweetened products that contain fruit juices and alcohol, a product that has been called "training wheels for drinkers" by public health advocates and that an industry spokesperson called "the perfect bridging beverage." The tobacco and alcohol industries invest capital in designing products that attract and retain future customers, counting on the addictive properties of their products to hold on to at least some portion of initiators.

3.1.5. Failing to Test for Safety Prior to Production or Marketing

To save money or the time needed to get a product to market, companies sometimes fail to test a product for safety adequately or ignore early warnings about possible harm. It now seems apparent that Merck failed to test Vioxx sufficiently prior to production and marketing and ignored potentially troublesome findings

in its own research (Topol, 2004). Both the Bridgestone/Firestone North American Tire Company and Ford Motor Company blamed each other for failing to act earlier on information that Ford Explorer SUVs equipped with Firestone tires had higher rates of accidents than comparable vehicles with other tires (Vernick, Mair, Teret, & Sapsin, 2003).

3.2. *Marketing*

Marketing describes corporate strategies and activities to encourage consumption and increase demand. It includes advertising, sales promotions, sponsorship of sports and music events, product placement, viral marketing, and websites and Internet campaigns (Ewen, 1977; Hawkes, 2006).

Corporations rely heavily on advertising as a tool to encourage consumption of their products, and evidence shows that for many products advertising is associated with increased consumption (Chen, Cruz, Schuster, Unger, & Johnson, 2002; Collins, Schell, Ellickson, & McCaffrey, 2003; Grube & Wallack, 1994; Mastro & Atkin, 2002; Wakefield, Flay, Nichter, & Giovino, 2003) and positive brand identification, itself associated with subsequent increases in consumption (Donovan, Jancey, & Jones, 2002).

Between 1990 and 2005, total inflation-adjusted expenditures on advertising in the United States increased by 50 percent, a measure of its growing role in business spending. In 2005, US advertisers spent \$933 per capita. The industries profiled here were among the biggest advertisers; of the nearly \$100 billion the top 100 global marketers spent in 2004, 24 percent was devoted to automotive advertising; 17 percent to food, restaurants, soft drinks, and candy; and 9 percent to pharmaceuticals (Assadourian, 2006).

3.2.1. Increasing Population Exposure to Harmful Products

Most directly, advertising can increase exposure to harmful products, thus magnifying their adverse impact on population health. For example, between 1999 and 2004, Merck spent more than \$500 million advertising Vioxx to consumers (Topol, 2004), and in 2003 alone the company spent another \$500 million advertising Vioxx to physicians (Brown, 2004). By 2004, when Merck withdrew the drug because of safety concerns, more than 20 million people had used Vioxx, generating \$10 billion in revenues for the company (Topol, 2004).

Despite the previously described health hazards associated with SUVs, the automobile industry, the nation's largest advertiser, has promoted the profitable SUVs heavily; automakers spent more than \$9 billion on SUV ads between 1990 and 2001 (Coate & Vanderhoff, 2001).

3.2.2. Misrepresenting Health Consequences of Products in Order to Encourage Consumption

Advertising can also contribute to health problems by understating risks inherent in products and overstating their potential benefits, leading consumers to choose

a more dangerous product than they would if they were fully informed. For example, despite evidence to the contrary, auto advertisements often suggested that SUVs were safer than passenger cars (Claybrook, 2003) and that they offered a way to escape the stresses of every day life by enabling drivers to scale mountains, ford rivers, and enter primal forests.

Merck advertisements implied that Vioxx and other COX-2 inhibitors (drugs in the same class as Vioxx) were superior painkillers compared to the much less expensive over-the-counter alternatives (Brown, 2004). Unfortunately, the evidence about the superiority of Vioxx and other COX-2 inhibitors is flimsy (Modica, Vanhems, & Tebib, 2005). This became particularly important when evidence emerged about the increased risk of stroke and myocardial infarction that attended Vioxx use (Topol, 2004).

Further, even when manufactures alert consumers to the adverse consequences of their products, they often do so in a way intended to minimize the impact. Although much public health effort has been expended on adding health warnings to tobacco products and to alcohol and tobacco advertisements, studies have suggested that these notices are developed to minimize their impact (Hammond, Fong, McNeill, Borland, & Cummings, 2006). One study found that the majority of adolescents viewing these advertisements do not even notice the public health warnings (Fischer, Richards, Berman, & Krugman, 1989).

3.2.3. Targeting Vulnerable Populations for Marketing of Harmful Products

All industries seek to target their advertising to potential customers. This practice affects public health when harmful products are more heavily advertised to populations who are already at higher risk of health problems. The tobacco industry has been particularly sophisticated in its use of targeted advertising to increase smoking in particular age, gender, racial/ethnic, and socioeconomic groups. For example, tobacco companies have conducted systematic and extensive research to design cigarette packaging in a way that it is most appealing to target customers (Wakefield, Morley, Horan, & Cummings, 2002). In addition, several studies have shown that Black and Latino groups and neighborhoods are disproportionately exposed to cigarette advertisements (Alaniz & Wilkes, 1998; Balbach, Gasior, & Barbeau, 2003; King, Siegel, & Pucci 2000; Muggli, Pollay, Lew, & Joseph, 2002; Wildey et al., 1992), as are poorer persons and neighborhoods (Luke, Esmundo, & Bloom, 2000). Similarly, tobacco advertising has targeted women, specifically appealing to their perceived needs and wants (Anderson, Glantz, & Ling, 2005; Toll & Ling, 2005). Targeted advertising of tobacco to youth occurs in venues frequented by youth, including bars and clubs (Gilpin, White, & Pierce, 2005; Sepe & Glantz, 2002) and stores where adolescents shop frequently (Celebucki & Diskin, 2002; Henriksen, Feighery, Schleicher, Haladjian, & Fortmann, 2004). Analyses of tobacco industry documents have suggested that industry marketing has explicitly aimed to target young smokers (Cummings, Morley, Horan, Steger, & Leavell, 2002), and studies have shown that nearly 90 percent of 13 year olds report exposure to cigarette marketing (Schooler, Feighery, & Flora, 1996).

The food industry similarly often targets children. Research has shown that food advertising during the television programs children watch most is dominated by advertisements for snack, convenience, and fast foods (Harrison & Marske, 2005), which may have a substantial impact on children's dietary habits and subsequent adult obesity (Henderson & Kelly, 2005). It has been estimated that American children see on average 40,000 commercials per year on television, the majority of which are for unhealthy foods (Horgen, 2005). The food industry has also targeted schools for marketing campaigns, seeking to capitalize on a captive population of future lifetime consumers (Shaul, 2000). When faced with growing evidence about the link between advertising for unhealthy foods and obesity and the looming threat of regulatory action to control such advertising, large food companies like Kraft have put a moratorium on food advertising for children (Mayer, 2005).

The alcohol industry has also targeted advertising at promising customers, including children and youth, women, minorities, and problem drinkers. These ads seek to introduce people to drinking and to encourage profitable patterns of consumption. Tobacco and alcohol billboards have been shown to be more prevalent in poor neighborhoods than adjoining better-off neighborhoods (Hackbarth, Silvestri, & Cospes, 1995; Hackbarth, Schnopp-Wyatt, Katz, Williams, Silvestri, & Pflieger, 2001), and alcohol advertising in magazines has specifically targeted gender groups (Alaniz & Wilkes, 1998; Jernigan, Ostroff, Ross, & O'Hara, 2004) and racial/ethnic groups (Jones-Webb, Baranowski, Fan, Finnegan, & Wagenaar, 1997). The alcohol industry has also used targeted advertising to shape drinking patterns among minorities (Cui, 2000), college students (DeJong, 2002), adolescents (Ellickson, Collins, Hambarsoomians, & McCaffrey, 2005; Garfield, Chung, & Rathouz, 2003; Grube & Wallack, 1994), and problem drinkers. One study found that alcohol advertisements in magazines expose young people aged 12 to 20 – and thus below legal drinking age – to 48 percent more beer advertisements, 20 percent more distilled spirits advertisements, and 92 percent more “alcopops” advertising than adults 21 and over (Center on Alcohol Marketing and Youth, 2005). National studies have demonstrated an association between increased exposure to alcohol advertising and increased adolescent consumption of alcohol (Snyder, Milici, Slater, Sun, & Strizhakova, 2006).

Another study found that in the same period that alcohol drinking among teenage girls increased dramatically, more alcohol advertising reached young women than young men (Jernigan et al., 2004). A study by the Center on Addiction and Substance Abuse (Foster, Vaughan, Foster, & Califano, 2006) estimated that 17.5 percent of US alcohol sales in 2001 came from underage drinking and 20.1 percent from adult “pathological” drinking, a category that used clinical definitions for alcohol abuse or dependence. These data illustrate the financial value of targeting these groups for advertising or other promotion.

In the late 1980s and early 1990s, gun manufacturers targeted women for advertising, using ads that highlighted fear of violence (Hemenway, 2004). Some studies claim that gun ads target children and youth (Langley, 2001) and that others demonstrate misleading claims about the safety benefits of firearms (Vernick, Teret, & Webster, 1997).

3.2.4. Bypassing Legal Restrictions on Sale of Unsafe or Unhealthy Products

Advertising also connects buyers to sellers, sometimes bypassing legal controls or safety standards. For example, one study found that 53 percent of 184 major city newspapers in the US accepted gun ads for all types of guns, regardless of whether or not the seller was a licensed gun dealer (Jacobs, 2002: 132). These advertising practices make it easier for those who cannot purchase guns legally to acquire a firearm. Similarly, tobacco and alcohol advertising and Internet sales can help underage consumers to buy these products (Ribisl, Williams, & Kim, 2003).

In another example, the drug company Parke-Davis promoted off-label use of gabapentin (brand name Neurontin, an agent to control epilepsy). A review of industry documents found that the company recruited local doctors to communicate favorable messages about gabapentin to their physician colleagues and paid medical communication companies to develop and publish articles about gabapentin in the medical literature and to suppress unfavorable study results (Steinman, Bero, Chren, & Landefeld, 2006). Ultimately, Warner-Lambert, then owner of Parke-Davis, agreed to plead guilty and pay more than \$430 million to resolve criminal charges and civil liabilities in connection with its illegal and fraudulent promotion of unapproved uses for the drug (“Drug maker to pay,” 2004).

3.3. Retail Distribution

Retail distribution refers to industry practices that affect product availability at the consumer level; manufacturers seek a retail distribution system that makes their products readily accessible to as many potential consumers as possible. Placement of fast food outlets, supermarkets or liquor stores; location of products within stores; adherence with legal industry restrictions on retail practices; or industry oversight of retail distribution of prescription drugs, firearms, or tobacco are examples of business decisions that affect product availability and therefore impact health.

The relationships between producers and retailers are complex and influenced by both national and local factors. At the national level, the state of the economy, profit margins in the industry, and the degree to which retailers have independent political muscle influence their ability to negotiate with producers. Locally, the competitive environment within various sectors and neighborhoods and the degree of vertical and horizontal integration with other retailers (e.g., Wal-Mart vs. the local bodegas) also influence the process and outcome of retailing decisions and thus their impact on health.

3.3.1. Increasing Access to and Availability of Unhealthy Products

Companies use retail distribution systems to make their products widely available and demonstrate ingenuity and flexibility in devising new retail strategies. For example, when laws have restricted or banned advertising, the tobacco industry

has moved to its retail network to find new customers. Tobacco companies have used incentive programs to ensure placement of tobacco products in visible locations (Feighery, Ribisl, Clark, & Haladjian, 2003) and made extensive use of point-of-purchase (POP) promotions (e.g., “buy two, get one free” specials) (Feighery, Ribisl, Schleicher, Lee, & Halvorson, 2001) to enhance tobacco sales. Evidence suggests that such promotions increase when limits are imposed on more traditional advertising. One analysis has shown that POP cigarette promotions increased notably in the aftermath of the tobacco Master Settlement Agreement (MSA) that imposed price increases and tobacco control programs (Loomis, Farrelly, Nonnemaker, & Mann, 2006). Studies of POP tobacco promotion have found that they increase positive images of smoking and beliefs in the availability of cigarettes (Donovan et al., 2002; Wakefield, Germain, Durkin, & Henriksen, 2006).

The food industry also uses POP promotions. Producers and distributors pay supermarkets to give prominent shelf space to higher-profit food items, often high-calorie, low-nutrient processed foods or sweetened beverages that contribute to obesity (Nestle, 2006a). In addition, supermarkets place products in such a way as to encourage young children to nag their parents to buy heavily advertised, often sweet and processed food (Nestle, 2006a).

As with tobacco, evidence suggests that retail availability of alcohol influences patterns of drinking. Point-of-purchase marketing has been shown to increase alcohol sales and consumption substantially, with one study showing that such promotions increased beer sales by as much as 17 percent (Beverage Industry, 2001). In a CDC study (2003) of nearly 4,000 alcohol outlets, 94 percent had some form of POP marketing.

Retail automobile dealers serve as the link between car manufacturers and consumers. The products they choose to promote most heavily, the discounts they offer, and their role in safety issues influence the vehicles customers purchase. Because SUVs were more profitable for dealers as well as manufacturers, dealers played an active role in promoting these vehicles, even though they were less safe and more polluting than other products (Bradsher, 2002). For example, some dealers built off-road tracks to allow adventuresome customers to test drive their SUVs, even though few owners actually go off road.

Retail availability of firearms influences who can get guns for what price. Use of largely unregulated guns shows, distribution of guns to unlicensed retailers, and willingness to accept straw purchasers are among the practices that have been associated with increased access to guns for those who would otherwise be barred from buying a weapon (Hemenway, 2004). One anecdote illustrates the practice: In 1999, a Milwaukee gun dealer posted a billboard bragging that his store had been rated first in sales of guns later used in crimes. The owner reported that the advertising and ranking helped business (McBride, 1999).

The density of retail outlets also affects product use. For example, a study in Chicago found that both minors and adults living in neighborhoods with a higher density of tobacco retail outlets were more likely to smoke than those living in lower density neighborhoods (Novak, Reardon, Raudenbush, & Buka, 2006).

Tobacco vending machines and sales of tobacco over the Internet make the products more readily available to minor and adult smokers (Centers for Disease Control, 1996; Ribisl, 2003).

Similarly, several analyses have shown spatial clustering of fast-food restaurants closer to schools, making it easier for children to find products that can contribute to overweight and obesity. Austin and colleagues (2005) showed that 78 percent of Chicago schools had at least one fast-food restaurant within 800 meters and that there was an estimated 3–4 times as many fast-food restaurants within 1.5 kilometers of schools than would be expected if fast-food restaurants were randomly distributed throughout the city. A national analysis, using data from the Behavioral Risk Factor Surveillance Survey, suggested that square miles per fast-food restaurant and residents per restaurant accounts for 6 percent of the variance in state obesity rates in multivariable hierarchical models that account for potential confounders including physical activity and fruit and vegetable intake (Maddock, 2004). These observations suggest that availability of obesogenic food may well be deleterious to health in and of itself and may be contributing to the obesity epidemic that has been extensively documented in the past 15 years.

Higher alcohol outlet density is also associated with higher consumption of alcohol and higher rates of alcohol-related health problems, including homicide and gonorrhea (Cohen et al., 2006; Gruenwald & Remer, 2006; Pollack, Cubbin, Ahn, & Winkleby, 2005).

In the alcohol, firearms and tobacco industries, laws often regulate retail distribution of these products, limiting access to certain populations. When producers or retailers oppose these laws or advocate against enforcement, they contribute to wider availability. One study found that the vigor of enforcement of retail tobacco laws influences tobacco availability to young people (Jason, Pokorny, Muldowney, & Velez, 2005). In addition, alcohol retailers seek to use the law to maximize the venues and hours in which they can sell alcohol in stores, bars, and other settings, further influencing alcohol availability. In the automobile industry, retail auto dealers play an active role in lobbying against safety and fuel efficiency regulations, providing the auto industry with a more acceptable public face (Doyle, 2000).

3.3.2. Decreasing Access to and Availability of Healthy Products

Distributors of lower cost and healthier foods, such as chain supermarkets, may be less likely to open retail facilities in low-income neighborhoods, in part because of the perception of lower profit margins, fears of crime, or neighborhood instability. As a result of such business decisions, disadvantaged communities have less access to affordable fresh fruits and vegetables and low-fat products. Several recent studies have documented the lower prevalence of supermarkets in low-income than in high-income neighborhoods (Moore & Diez-Roux, 2006; Morland, Wing, Diez-Roux, & Poole, 2002; Zenk et al., 2005).

To what extent are the locations of retail food outlets the result of decisions by major food companies as compared to more impersonal market forces or choices by local retailers? Evidence suggests that factors influencing these decisions are

specific to company, product, time, and place. For example, a vertically-integrated company such as McDonald's or Wal-Mart can decide when and where to open facilities or award franchises, thus giving these corporations a powerful voice in shaping the retail landscape, the American diet, and inequities in access to healthy and unhealthy foods (Quinn, 2005; Schlosser, 2001; Spencer et al., 2005). In contrast, the observation that the small grocery stores and bodegas prevalent in low-income urban neighborhoods (Moore & Diez-Roux, 2006) are less likely to stock fresh fruits and vegetables or low-fat dairy products (Glanz & Yaroch, 2004) appears to be a result of various market forces, e.g., turnover and economies of scale, rather than a central decision by any company.

Pharmacists and retail pharmacy chains make decisions that affect pricing, drug availability, and the information consumers have about drugs. Studies have shown that pharmacists often fail to inform consumers about available discounts (Lewis et al., 2002), thus increasing the price of drugs and presumably decreasing their availability to some consumers. In addition, some pharmacies have failed to substitute less expensive generics for more expensive brand name drugs, raising costs to consumers and profits for retailers and manufacturers. In some cases, these practices have led to legal action against retail drug stores (National Legislative Association on Prescription Drug Prices, 2005).

Retailers can also influence gun safety practices. It has been shown that gun locks are only sporadically available through gun retailers (Milne & Hargarten, 1999), and retailers rarely educate customers about safe gun storage (Sanguino, Dowd, McEnaney, Knapp, & Tanz, 2002).

3.4. Pricing

Pricing practices determine who pays how much for a product; therefore these practices influence who is exposed to what level of harmful products. Companies and their retail affiliates decide how much to charge various customers, whether or not to engage in legal or illegal price fixing, whether to oppose or support excise taxes, and how to relate to illicit markets (e.g., untaxed tobacco products).

Producers price products in order to maximize sales. Among the strategies they use are pricing loss leaders to attract customers who will then become loyal consumers, offering discounts or rebates, fixing prices with other producers to reduce competition (often an illegal practice), winning public subsidies so as to lower costs to consumers, and resisting taxes that will increase prices. Pricing practices influence health when unhealthy products become more attractive because of their lower price or health-promoting products become less attractive because of higher prices. We illustrate with a few examples from each of the target industries.

3.4.1. Lowering Prices of Unhealthy Products to Attract New Customers

A variety of evidence shows that as the price of tobacco increases, demand falls. One estimate suggests that a 10 percent increase in cigarette prices would reduce overall cigarette consumption by between 2.5 and 5 percent (Chaloupka,

Wakefield, & Czart, 2001). A review of tobacco company documents showed that the industry carefully studied the impact of price on demand and developed pricing strategies, such as promoting lower-cost generic brands, absorbing the cost of increased excise taxes, and offering discounts and coupons in order to retain more price-sensitive customers (Chaloupka, Cummings, Morley, & Horan, 2002). In addition, the tobacco industry has aggressively resisted increased excise taxes at local, state, and federal levels (Morley, Cummings, Hyland, Giovino, & Horan, 2002).

The federal government has long subsidized the US food industry, providing growers and manufacturers with the financial support needed to maintain prices lower than would be dictated by market forces alone. In recent decades, these policies have made corn-based products such as corn sweeteners the foundation of a significant portion of processed food both in the United States and globally; each year the federal government provides corn growers with \$4 billion in direct payments (Pollan, 2006). Some observers have linked the growing proportion of calories in the US diet derived from corn sweeteners with the parallel rise of obesity and diabetes (Gross, Li, Ford, & Liu, 2004).

Like other products, alcohol consumption is subject to price elasticity – higher prices lead to lower consumption. Studies show that beer consumption is insensitive to price while wine and distilled spirits are more sensitive (Chaloupka, Grossman, & Saffer, 2002). The alcohol industry has been relatively successful in resisting increased excise taxes, contributing to the decline in the real price of alcohol in recent decades (Chaloupka, Grossman et al., 2002). In California in 2005, the alcohol industry unsuccessfully campaigned to classify “alcopops” as a beer rather than a distilled spirit in order to benefit from the lower tax rate for beer and thus make the product more accessible to the price-sensitive youth market (Marin Institute, 2006).

As the allure of SUVs declined in recent years, the auto industry has offered a variety of price incentives, including rebates, discounts, and low-cost loans, in order to stimulate demand (Warner, 2004). While these efforts have not been able to reverse the trend, they have served to put more of these unsafe and polluting vehicles on the road, thus perpetuating their adverse health impact.

In the gun industry, the previously described increase in production of cheap Saturday night special guns (Wintemute, 1994) in the 1980s and 1990s ensured that low cost weapons would be available in the low-income communities most sensitive to price. This pricing strategy contributed to rising gun homicide rates in these areas in that period. Young people and low-level criminals seeking to purchase guns benefit most from low-cost weapons (Wintemute, 2002).

3.4.2. Raising Prices of Health-Enhancing Products to Increase Profit

Raising prices of health-enhancing products can discourage their use. For example, car manufacturers sometimes make new safety technology an option available at additional cost rather than a standard feature. Although this practice allows consumers to tailor the purchase to their own economic and safety needs,

it eliminates the lower price benefits from economies of scale. Thus, the average customer chooses a lower sticker price – and a less safe vehicle.

The pharmaceutical industry seeks to maintain control of drug prices – usually advocating for higher prices in order to preserve profits. It opposes more rapid introduction of generic drugs in order to sustain the monopoly benefits from high-priced drugs that a company has patented, opposes competition from manufacturers in other countries that sell at lower prices, opposes legislation that would allow the government to negotiate bulk discounts on drugs, and supports federal programs that subsidize drug costs for populations such as senior citizens (Angell, 2004; Baker, 2004). These practices make good business sense but often make it harder for individuals to get the drugs they need.

4. Interactions with Other Sectors

In order to achieve their business objectives in investment and product design, marketing, retail distribution, pricing, and other areas not reviewed here, corporations and their business associations interact with government, scientists, and mass media. To the extent that these interactions influence the health consequences of various corporate practices, they are of interest to public health researchers. In this section, we describe some of the ways that corporations in the six target industries seek to influence government, scientists, and mass media to support their goals.

4.1. Government

Corporations seek to influence all levels and branches of government to advance business policy objectives that contribute to profitability. In their interactions with government, corporations and their allies seek to advance their business goals in the four areas previously described, i.e., investment and product design, marketing, retail distribution, and pricing. Their broad goals are to avoid regulation or other types of public oversight of these and other practices, minimize taxes or other charges that reduce profits, maximize direct public support for their activities through subsidies or tax breaks, and retain the right to shift external costs imposed by their products or practices (e.g., pollution or health harm) to other sectors. To achieve these objectives, businesses carry out a variety of activities including lobbying, campaign contribution, litigation, public relations, and encouragement of a revolving door between government and business. In some cases, businesses resort to illegal activities such as bribery or influence peddling. Industry interactions with government are of public health interest when they prevent public officials from acting to protect health and safety or when they result in the wider availability and distribution of health-damaging products.

Lobbying and other legislative activities are a central tool for advancing corporate objectives. In 2000, the Center for Responsive Politics estimated that there were more than 20,000 registered lobbyists in Washington, D.C.

About 1,000 lobbyists work in the nation's capital for the food industry (Nestle, 2002) and 675 for the pharmaceutical industry (Brown & Doyle, 2004). More lobbyists work in state capitals. In the mid-1990s, for example, the tobacco industry had 25 lobbyists in Minnesota alone (Wolfson, 2001), working to defeat or water down that state's tobacco regulations. Between 1998 and 2005, total reported spending on lobbying increased by 160 percent to \$2.28 billion (Center for Responsive Politics, 2006).

Lobbyists work both to pass beneficial legislation and to defeat harmful laws. In 2003, for example, the pharmaceutical industry poured millions of dollars into a concerted – and successful – lobbying effort to convince Congress to pass legislation that would increase coverage of senior citizens for some prescription drugs and defeat provisions that would have allowed the federal government to negotiate lower prices on behalf of Medicare patients or import lower-cost medicines from Europe or Canada. Analysts estimated the law would increase drug company profits by \$13 billion a year. Pharmaceutical companies acted despite overwhelming public support for the restrictions they opposed and expert opinion that the measure would leave major gaps in coverage and fail to contain costs (Connolly, 2003). In 1994, lobbyists for the dietary supplement industry persuaded Congress and the President to label dietary supplements as foods rather than drugs, thus escaping FDA requirements for safety and effectiveness. A few years later, after aggressive advertising of the benefits of these products, deaths from supplements, such as ephedra, illustrated the public health costs of this deregulation and led to calls for renewed public oversight (Fontarosa, Drummond, & DeAngelis, 2003).

Campaign contributions and other electoral activities help to cement the friendly relationships between elected officials and industry by increasing the chances that the legislators or executive branch officials will be grateful or indebted to lobbyists. Many industry political action committees contribute to both parties, ensuring influence no matter what the outcome of an election. In 2002, for example, the drug industry contributed about \$22 million to the Republicans and almost \$8 million to Democrats (Brown & Doyle, 2004). The NRA and its gun industry allies offer not only financial support to sympathetic candidates, but also assistance in voter mobilization and campaigning (Diaz, 1999). This helps to explain why the gun industry and the NRA consistently win legislative victories even though public opinion polls show high levels of public support for restrictions on assault rifles and opposition to exempting gun manufacturers from liability suits.

Litigation allows industry to delay, weaken, or overturn laws and regulations it dislikes. Corporations and their allies go to court to seek action against individuals, organizations, and government agencies that they perceive as threats to their business goals. In 2000, for example, seven gun makers filed a suit against the US Secretary for Housing and Urban Development, the New York State Attorney General, and other state and local officials, claiming they were violating the gun makers' right to sell legal firearms by seeking to force them to accept a code of conduct on the sale and design of handguns. The manufacturers did not

seek monetary damages but instead asked the court to bar the officials from trying to convince local police departments to buy weapons only from companies that had signed the agreement (Brown & Abel, 2003). The automobile industry has regularly gone to court to challenge state and federal clean air and emission control legislation (Doyle, 2000).

Public relations fosters a positive public image for corporate America and blocks proposals that harm its perceived interests (Marchand, 1998). In some cases, the use of public relations strategies also involve interactions with the media, described in Section 4.3. When critics challenge the safety of a product, corporations and their trade associations often respond forcefully, looking to preclude action to limit profits, to restrict advertising, or to regulate manufacturing or distribution. For example, when the FDA proposed new regulations for vitamins, industry groups sponsored television ads showing soldiers storming suburban homes to seize vitamin C bottles (Kessler, 2001). To make their public messages more credible, industries may create front groups to act as their public voice. Philip Morris formed the National Smokers Alliance to contest tobacco regulation (Kessler, 2001), the tobacco, food, and restaurant industries funded the Center for Consumer Freedom to oppose smoking bans in public places and lower legal limits on blood alcohol levels (Brownell, 2003: 269), and the auto industry hired a Washington lobbying firm to create Nevadans for Fair Fuel Economy Standards, a paper organization that opposed higher mileage standards that would reduce pollution (Bradsher, 2002: 64).

Public relations seeks to frame the public dialogue on issues relevant to the industry (Dorfman, Wallack, & Woodruff, 2005), often articulating strikingly similar messages. These include “market mechanisms, not government action, provide the best remedies for dangers to consumers,” “it is wrong to restrict advertising of legal products,” “individuals are responsible for their own behavior,” and “having choices is the American way” (Brownell, 2003; Diaz, 1999; Menashe & Siegel, 1998). In many cases, public relations expenses are tax deductible, creating a public subsidy for messages intended to thwart policy changes to protect health.

The revolving door between government and business ensures that both sides of the interaction are friendly to corporate interests. For example, presidential adviser Karl Rove had been chief political strategist for Philip Morris before working for Bush, and President Bush’s first chief of staff, Andrew Card, had been General Motors’ top lobbyist in Washington, D.C. (Bradsher, 2002). Daniel Glickman, secretary of agriculture in the Clinton administration, left office to join a law firm that lobbies for agriculture and food companies (Nestle, 2002). In 1994, when Philip Morris needed someone to testify against FDA regulation of tobacco before Congress, it hired former FDA Commissioner Charles Edwards, paying him \$120,000 for the consultancy (Kessler, 2001). In 1998, 128 former members of Congress were listed as lobbyists, 12 percent of all senators and representatives who had left office since 1970 (Abramson, 1998; Nestle, 2002). Compared to the handful of lobbyists who advocate for public health, these personal and professional associations between elected and appointed officials and

corporate lobbyists provide industry with a competitive advantage in influencing legislation and regulation.

Illegal activities, such as bribery, influence peddling, or price fixing, are another strategy some corporations have used to advance their objectives. In the early 1970s, Ford Motor Company fabricated auto safety test data that it submitted to the government, leading to a \$7 million fine (Yates, 1983). In 1994, tobacco industry executives lied under oath to Congress about their prior knowledge of nicotine's addictiveness (Kessler, 2001), and in 1999, the US Justice Department reached a \$255 million settlement with the vitamin industry for price fixing, a practice that made its products more expensive for consumers (Nestle, 2002). Given spotty enforcement of regulations on corporate behavior, data are not available to ascertain whether illegal activities constitute the renegade actions of a few bad apples or a common business practice that endangers public health.

In sum, a variety of evidence shows that corporations act to increase the likelihood that the government will support or at least not oppose their business agenda. In some cases, these actions prevent or undermine government efforts to protect public health. To date, systematic investigation of the burden of disease that can be attributed to these activities has been lacking, suggesting the need for more research.

4.2. Science

Companies seek to influence the scientific community in order to develop or redesign more profitable products, win regulatory approval (e.g., FDA approval of Vioxx), and challenge scientific research that threatens their business interests (e.g., food industry-sponsored research to challenge university research on role of trans fats in cardiovascular disease). This strategy contributes to the development of unsafe or unhealthy products. Activities to influence science include sponsorship and publication of research by their own research departments, trade associations (e.g. the now defunct Tobacco Institute), university-based researchers, or scientific and professional organizations, as well as contributions to universities and professional organizations. Examples include food industry support for nutrition researchers who emphasize exercise rather than diet as the cause of obesity and several recent cases in which pharmaceutical companies have been accused of withholding evidence from their own research on the side effects of their drug products such as Vioxx, Paxil, and others (Harris, 2004; Topol, 2004).

Krimsky (2003), who has studied corporate behavior related to scientific research, uses the term "manufactured doubt" to describe the practice of sowing confusion to avoid or delay regulatory action. In some cases, scientists have hidden the industry sponsorship of their work, limiting the ability of the scientific community, policy makers, and the public to assess bias or conflict of interest (Hardell, Walker, Walhjalt, Friedman, & Richter, 2006). More broadly, some academic leaders have warned against growing corporate influence on the scientific research enterprise, compromising universities' ability to be an independent voice (Bok, 2003).

4.3. Mass Media

Corporations seek to influence mass media in order to create a social and political climate favorable to their agenda, to frame their messages, to combat threats to profitability, and to advance their specific economic, electoral, legislative, legal, and other policy goals (Ewen, 1996; Marchand, 1998). Activities include public relations, communications, philanthropy, organization of front groups, and public service campaigns. For the most part, these activities are seen as standard business practices and are therefore tax deductible. Corporations and their allies interact with the media in order to communicate their messages to the general public and government and more broadly to influence the public discourse on corporations and their role in society. Activities such as public relations (described above in Section 4.1), corporate philanthropy, and corporate (as opposed to product) advertising are of interest to public health to the extent they enable industry to better distribute products that harm health. Industry can also use its advertising power to discourage coverage of certain topics. For example, in a stark display of the power of the tobacco industry, in the 1980s no women's magazine that accepted tobacco advertising published a single article, editorial, or column on the harmful effects of tobacco, despite the fact that it was then that lung cancer surpassed breast cancer as the leading cause of cancer deaths among women (Anderson, 1995; Hertz, 2001).

As US and global media ownership becomes more concentrated among a handful of large multinational corporations (Bagdikian, 2004), often with links to industries that produce harmful products, the willingness of major media outlets to investigate corporate malfeasance or disease promotion may further diminish.

5. Societal Responses to Health-Damaging Corporate Practices

In the 19th century, reformers and public health and social science researchers called attention to the health impact of the emerging capitalist system. Engels' *The Condition of the Working Class in England* described how the English factory system contributed to the "wretched conditions" of the working class in England. Nine years later, John Snow, a physician-epidemiologist, convinced a local London parish to remove the handle from the Broad Street pump that a private company used to bring drinking water from a polluted river, contributing to the epidemic of cholera. Removing the pump handle was an early form of direct public oversight of corporate practices.

Later, health researchers called attention to the health consequences of working conditions, documenting higher rates of cancer, injuries, and other conditions among workers in particular industries. These occupational illnesses were often exacerbated by corporate unwillingness to sacrifice profits for improved working conditions. Recent research, for example, has demonstrated that from the

1920s on, the lead industry hid its knowledge of the toxic results of lead exposure (Markowitz & Rosner, 2002).

In the 20th century, reformers as well as public health professionals publicized the risks associated with the practices of various industries. In 1906, Upton Sinclair published *The Jungle*, an exposé of dangerous working conditions and the unsanitary products of the meat industry. In 1964, the US Surgeon General published the first report on smoking and health, beginning a continuing campaign to reduce the harm from the products of the tobacco industry. A year later, Ralph Nader published *Unsafe at Any Speed*, an investigation of the automobile industry's failure to protect car owners from known safety hazards. By the 1970s, consumer advocates were pressing for a federal agency to protect consumers against industries intent on profiting at the expense of public health.

Today, health professionals; consumer, health and environmental advocates; local officials; and others are modifying old strategies and developing new ones to contest corporations' power to shape health. Like the corporations they challenge, they have used a variety of strategies and tactics to achieve their goals of reducing the harm from corporate practices. These include electoral, legislative and legal strategies, media advocacy, community organizing, and others (Freudenberg, 2005).

While a review of this emerging domain of public health practice is beyond the scope of this chapter, several questions warrant further investigation. These include:

1. To what extent do the disparate activities designed to change corporate practices in several industries that have been launched by consumer, health and environmental activists constitute an emerging social movement (Wiist, 2006)? What are the relative advantages and disadvantages of a more comprehensive approach to changing corporate behavior as compared to the more common piece-meal approach?
2. What is the potential for establishing collaborative partnerships with industry to modify health-damaging practices? Under what political and economic circumstances will corporations engage in genuine joint ventures, and when are some efforts more cosmetic than substantive? Some recent evidence suggests that even when companies agree to cooperate, their practice does not necessarily match their commitment to achieving public health goals (Nestle, 2006b).
3. What are the characteristics of effective public health campaigns to change corporate practices? Are local or regional campaigns more effective than national ones? What "frames" serve to best mobilize constituencies in support of public health goals (Dorfman et al., 2005)?
4. What role can state and local health departments play in modifying corporate practices? Recent efforts to change the practices or density of food, tobacco, gun and alcohol retailers (Bragg, Galloway, Spohn, & Trotter, 2003; Schneider, Reid, Peterson, Lowe, & Hughey, 2005; Webster, Vernick, Bulzacchelli, 2006) or to institute local bans of trans fats in restaurant foods provide examples of potential roles.

5. Conclusion

We suggest that in the early part of the 21st century, corporate practices play a growing role in shaping daily behavior and well-being. In this chapter we have considered how corporate practices influence the health of populations through multiple mechanisms. Clearly, the link between corporate practices and any particular health indicator is complex, and a full understanding of each of the pathways linking corporate practices to population health can suggest multiple opportunities for intervention. Future research in the area can fruitfully both elucidate the precise links between corporate practices and population health and suggest avenues for intervention.

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