THE TAXPAYER’S BURDEN FROM PRODUCT-RELATED HARM

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Hundreds of billions of dollars are spent every year in the public sector as a result of death, injury, and illness associated with products. The taxpayer takes on this burden, a reality that ought to be considered by courts and policy-makers when setting the standards for liability and levels of regulation governing products. Yet, to date, the government has made no attempt to trace specific government expenditures to product-related injuries. Indeed, due to the dearth of government data on the subject, no one to the authors’ knowledge has even constructed an estimate of product-related public expenditures. This article attempts to bridge this gap by gauging the taxpayer’s burden from two vantage points. First, the article collects data with regard to government spending potentially related to product harm and then approximates the percentage of expenditures traceable to such harm. The result of this methodology is an estimated $327.8 billion annual burden on the taxpayer. As a check on this figure, the article approaches the question from the opposite direction. Marshaling existing data on the annual number of product-related injuries, the article assigns an average per-injury cost and then assesses the percentage of the total cost borne by the government. According to this second methodology, the annual taxpayer burden associated with products is $1.089 trillion. Despite consistent attempts by the authors to adopt conservative measures in conducting this study, the resulting numbers are astounding and must not be ignored in the policy debates ongoing in courts, legislatures, and media centers across the country.

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I. INTRODUCTION

Victor Guaraldi hitched a ride with a friend one Saturday to the grocery. Although Victor had a job as a nurse at a local retirement home, Victor had not yet put together enough money to buy a car. On the way to the grocery, while rounding a bend in the road, the wheel of his friend’s car snapped off underneath the carriage and was forced by the weight of the collapsing car into the cabin, crushing Victor’s legs. Victor was hospitalized for weeks, underwent several surgeries, and was never again able to walk with a normal gait. Victor sued the manufacturer of the vehicle, alleging defective design and manufacture of the car’s wheel assembly. Victor won his suit and recovered his medical expenses, his lost income during the hospitalization, and an amount approximating his pain and suffering.

Victor’s experience was a model of civilized society’s treatment of an injury caused by a product. Victor’s injury was compensated. The cost of his injury was absorbed by the offending manufacturer, and presumably the price of the manufacturer’s product thereafter more closely reflected the societal cost of producing it.

Unfortunately for Victor, the consequences of the accident did not stop with his legal judgment. The pain in his legs persisted, and he required further surgery. The combination of days missed from work and his weakened job performance led to the loss of his job. Without a job, he lost health insurance coverage and eventually qualified for Medicaid. In addition, without income, he relied on food stamps, unemployment benefits, and temporary welfare. In many respects, the defective wheel assembly in his car led to Victor becoming a ward of the State.

Victor’s story is not extraordinary. Tort recovery often proves insufficient to compensate the injured for the full extent of their costs. In addition, for each injured person for whom, like Victor, tort recovery proves insufficient, there are scores more for whom tort recovery is unavailable—because they cannot prove that the product was defective (or cannot establish legal liability for any number of reasons), because the prospect of suit is too daunting, because the value of their claim is less than the considerable costs of suit, or because they lack the information necessary to gain access to the tort process. In such cases, the costs of injury fall on a variety of sources—to the victims themselves, if they are solvent; to family and friends; to charitable organizations. But by far the largest donor is the taxpayer.

This article follows the trail of the costs associated with product-related injuries beyond the courthouse steps and to Uncle Sam. The article’s objective is to estimate the annual taxpayer burden stemming from government programs that pick up the pieces with respect to deaths, injuries, and illnesses associated with products.

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1 This story is a slightly altered version of a series of factual events that occurred to one of the author’s family members. The name “Victor Guaraldi” is fictitious.
Before engaging the numbers, however, the article addresses necessary antecedents. In Part II, the article defines the scope of the inquiry and explains the study’s methodology. Parts III and IV present the heart of the economic analysis, utilizing two alternative methods for deriving the taxpayer’s share of the costs associated with products. Finally, Part V offers analysis and conclusions regarding the study’s findings.

II. SCOPE AND METHODOLOGY

A. The Scope of the Inquiry

The first step in determining the taxpayer’s burden from product-related harm is to define the parameters of the project. This article is designed to fill a yawning gap in the data informing debates over tort reform and the proper balance of administrative and judicial response to product-related harm. The focus of such debates is typically on the inefficiencies of product regulation and the tort process, as well as on the alleged negative downstream effects of regulation and tort liability on the insurance industry, the medical profession, and commercial entities. Of less frequent focus in such debates—particularly those involving the realm of potentially harmful products—is the full cost of the relevant injuries. This article is aimed at fleshing out an often overlooked repository for such costs -- the government. With this context in mind, we turn to a discussion of the precise scope of this inquiry. Under current law, a person injured by a product may sue the product’s manufacturer for strict liability (liability regardless of fault) if a product is defective in its design, manufacture, or warning. Thus, one might argue that the most salient scope of this project would be to calculate the taxpayer’s burden stemming from injuries caused by “defective” products. This approach, however, would result in a grossly under-inclusive sample for two reasons.

First, it would exclude products that society might want to regulate and which result in human injuries, but which are not inherently defective—for example, cigarettes, firearms, fireworks, prescription drugs, or sushi. Second, as a practical matter, such an approach would encounter significant informational barriers. A product cannot clearly be deemed “defective” until it has been determined to be so by some legal authority. Yet only a small percentage of injuries caused by defective products result in legal action, let alone in legal judgments as to the products’ defectiveness. Thus, to limit the universe of this study to those products deemed “defective” would be drastically under-inclusive.

Of course, a study not just of defective products, but of all “product-related injuries” runs the risk of being over-inclusive on two metrics. First, such a definition encompasses products that unavoidably pose some risk of injury, but for which the products’ utility clearly outweighs the risk—kitchen knives, for example. The policy considerations with which this article is...
concerned might not be implicated by the typical injuries associated with kitchen knives, but such injuries will inevitably be included in this study’s sample. Second, the term “product-related injuries” fails to exclude injuries caused primarily by user error or the error of some third party—in other words, the term does not limit the study’s data to injuries primarily “caused by” products. Continuing the kitchen knife hypothetical, for example, one would imagine that most (although not all) knife-related injuries involve some error by the knife’s user. One might argue that accidental knife cuts are not properly considered in a study of the taxpayer burden of product-related injuries. Yet the data considered in this study include such injuries.

Although these points have some merit, the inclusive scope of the study is both necessary and serves the purposes of the inquiry. First, the inclusive nature of the study leaves to policymakers decisions regarding which of the many products associated with injuries are deserving of legal attention. One can imagine products, the utility of which is great and the injuries with which they are associated are primarily the result of user error, but which society would still prefer to see regulated—lawn mowers, Super Glue, or ATVs, for example. Indeed, even the design of a particular kitchen knife might lead to an unacceptably high rate of injuries, triggering a desire for regulation. The aim of this study is not to judge products’ merits along a spectrum of “defectiveness” or even “dangerousness,” but to highlight the taxpayer’s burden resulting from injuries associated with a broad population of products. We leave to Congress and the courts the job of sorting out which of these costs can and should be mitigated.

The second justification for the broad scope of this project is that each of the available sources for information regarding product injuries also eschews any investigation into causation. Government agencies from the Consumer Product Safety Commission to the Centers for Disease Control typically characterize information on relevant injuries and deaths as those “associated with, but not necessarily caused by, products.” This approach makes obvious sense. In a strict application of causal reasoning, any injury involving a product is, at least in part, “caused by” the product. But for the existence of cars, for example, there would be no car accidents. But both the colloquial and legal understandings of causation require something more—they require a causal connection between some notion of wrongfulness or defect, and injury. Thus, in the realm of product-related injuries, a plaintiff in court must prove not only that the product caused the injury, but also that the product’s defect caused the injury. Were government agencies and their sources charged with tracking injuries not only associated with products, but “caused by” products, they would be drawn into the fact-intensive and judgment-laden task of determining the relative “defectiveness” of the product and the user’s behavior—a task properly left to the courts. Hence because the most reliable sources of injury data track “product-related injuries,” our attempt to marshal such data must be similarly broad.

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7 The study focuses only on product-related, unintentional injuries.
8 Poor design of the knife might also be involved, even though the appearance may erroneously be user error.
9 For example, the coding instruction sheet used in the CPSC’s primary data-collection effort states the following: Product-related is defined to . . . all cases where the injury scenario mentions a consumer product . . . . In addition, code an illness only if a consumer product/activity is associated with the onset of the illness. . . . It is not necessary to determine that a product was at fault to report an associated injury. CONSUMER PROD. SAFETY COMM’N, NEISS CODING MANUAL, at 5–6 (2010) [hereinafter NEISS CODING MANUAL], available at http://www.cpsc.gov/neiss/completemanual.pdf.
A few further notes on the scope of the present inquiry:

Study limited to costs attendant to the people subject to product-related physical harm. First, this study inquires only as to the public costs attendant to the people subject to product-related harm—for example, hospital bills, lost wages, disability needs, unemployment support due to physical injury, etc. Product-related harm is, of course, commonly associated with a host of other real costs. These include, for example, the foregone future earnings of a child no longer able to attain an advanced education because he/she had to enter the workforce prematurely to make up for the lost income of an injured parent, the long-term mental health problems or substance abuse associated with depression from a disabling injury, or the loss of one’s home or car when payments can no longer be made. Many such costs end up being borne by the taxpayer. For a contemporary example, consider the BP oil spill. Although the spill’s causes are still being investigated, initial accounts suggest that the failure of a number of products contributed to the disaster. The explosion of the oil rig resulted in eleven deaths and 17 injuries, and the spill that followed will likely affect many people’s physical health in the years to come. But the taxpayer’s burden from the spill will include a host of other costs—the economic impact on fishing, shipping, and tourism along the Gulf coast; the cost of the government’s role in containment and clean-up; the cost of environmental mitigation; and the largely inchoate widespread emotional harm. For purposes of this study, only costs stemming from the lost lives and related harm would be processed. Thus, for example, lost productivity of businesses along the Gulf Coast would not be included, but lost productivity for an injured worker would be included. In this respect, the numbers emerging from this study remain the tip of the iceberg of the taxpayer’s burden associated with products.

Study limited to taxpayer’s share of proximate injuries. Similarly, this study only calculates the more direct costs stemming from physical injuries. When a person is injured by a product, the resulting harm often reverberates through time and extends to the victim’s circle of family and friends, and sometimes beyond. For instance, suppose that one is paralyzed in an ATV accident. Not only is one likely to suffer immediate physical pain, lost wages, and loss of enjoyment of life; one might also suffer injuries that are causally linked to one’s paralysis, but which are not proximate in time to the accident—as an extreme example, years later one might fail to escape a fire in a building that one might have escaped but for the paralysis. In addition, one’s family and friends might suffer as a result of the injury in ways that are not easily traced—for example, were one to become depressed as a result of the paralysis, one’s children might be affected in far-reaching ways. This study does not account for the far-reaching costs associated with either hypothetical, but is limited to costs more proximately suffered by the victim and traceable to government-provided services.

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10 For scenarios and synthetic cohorts designed to measure some of these costs, see Shapiro, supra note 2, at 777–88.

11 NBC Nightly News: Deepwater Horizon Rig: What Went Wrong? (NBC television broadcast May 21, 2010), available at http://www.msnbc.msn.com/id/37279113/ (reporting on initial investigation showing that spill was caused by “improper well design, improper cement design . . . flawed design and maintenance of the final line of defense – the blowout preventer”).
Injuries caused by natural resources and hazardous substances. As indicated by the example of the BP oil spill, human manipulation of natural resources can result in serious, widespread injuries. The law does not treat unmodified natural resources, not yet in the stream of commerce, as products. For this reason, this article does not contemplate the damage caused by such resources per se. When such resources cause harm due to the failure of products used to mine or transport them, however, or where resources cause injury during their use as products by consumers, this study does contemplate the resulting costs. Thus, for example, this article would not encompass injuries associated with the Exxon Valdez oil spill, which was caused by pilot error rather than a failed product and which involved a resource not yet in the stream of commerce. Nor does the article consider the costs imposed on coal miners by their exposure to coal dust, despite tens of billions of dollars spent to compensate coal miners for Black Lung disease and an operating cost to the Department of Labor of over $32 million year. Natural resources are to be contrasted with man-made hazardous substances, which do fall within the scope of this study. Pollution created by products such as cars and airplanes, pesticides and horticultural chemicals that find their way into our food and water, asbestos (in manufactured form), and lead paint are but a few examples of products and by-products that result in illnesses and deaths. The primary challenge with including this category is that hard evidence of a clear association between the relevant substance and a particular injury is often elusive. This study avails itself of what evidence exists, in the end no doubt under-reporting illnesses and deaths associated with many harmful substances.

B. Methods for Determining the Taxpayer’s Share of Product-Related Harm

The following pages amass a mountain of information regarding the number and average cost of product-related fatalities, injuries, and illnesses, as well as the total dollars spent by the government on programs that might be utilized by those who have suffered product-related harm. What the raw data do not provide, however, is the connection between the two. There exists no mechanism, public or private, for tracking who ends up paying for the various kinds of harm associated with products.

Because the precise connection between product-related harm and related government spending remains hidden, this study approaches the problem from two directions, using two methods. The first method, described in detail in Part III, begins by identifying the government’s total annual spending on each program that might be used by one suffering from product-related harm. This spending is then adjusted by estimating the percentage of funds that goes to those who seek government assistance due to product-related harm. In addition to this baseline cost, Method 1 adds three other types of costs to taxpayers—foregone tax revenue for lost income due to product-related harm, the cost of regulating the product industry, and other product-related harm not otherwise included.

12 See RESTATEMENT (SECOND) OF TORTS § 402(a) (1965) (stating that only products that have been sold provide the basis for strict product liability).
Whereas Method 1 works backward by beginning with total harm-related government expenditures, the second method -- described in Part IV -- begins with the cost of product-related harm and works forward to an estimate of the taxpayer’s burden. Method 2 first determines the annual number of product-related fatalities, injuries, and illnesses. Each category of harm is then multiplied by an average per-incident cost and then adjusted by estimating the percentage of the cost that is borne by taxpayers. The two-pronged approach of this study yields a number of benefits. First, each method begins with relatively stable data on opposite ends of the cost-spending trail. By using two stable anchors rather than one, the causal story is better illuminated. Second, by using two methods, each provides a check on the other. This is true both methodologically and with regard to the end results. Finally, although a single figure is perhaps cleaner, a range is more likely to capture the true taxpayer’s burden.

III. **METHOD 1: RELEVANT GOVERNMENT EXPENDITURES × PERCENT TRACEABLE TO PRODUCT-RELATED HARM**

This section of the paper estimates the level of taxpayer burden for the costs associated with product-related injuries using a top-down methodology. This method first totals expenditures by the public sector programs that bear many of the burdens of product-related injuries and illnesses. It then adjusts this total by estimating the percentage of these expenditures that stem from product-related injuries. Next, it calculates three other categories of expenditures related to product injuries: foregone public sector income; government expenditures to correct the market; and other product-related harm, not captured by the other categories. (This section considers efforts by the government recovery publicly spent monies, which may have been improperly paid and recovered by the government. For reasons discussed in Section III, these recovered funds do not enter into the calculations of this paper.)

Using this method, the annual taxpayer burden from product-related harm is $327.8 billion. The constituent parts of this total are summarized in Table 1, below. The subsections that follow describe the methodology step by step.

<table>
<thead>
<tr>
<th>Taxpayer Burden</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct expenditures to help an injured person</td>
<td>$136.2 billion</td>
</tr>
<tr>
<td>Foregone public sector income</td>
<td>$100.0 billion</td>
</tr>
<tr>
<td>Government expenditures to correct the market</td>
<td>$35.8 billion</td>
</tr>
<tr>
<td>Other product-related costs, not otherwise included</td>
<td>$55.8 billion</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$327.8 billion</strong></td>
</tr>
</tbody>
</table>

A. **Cost by Category of Expenditure**

The most easily identifiable costs associated with fatalities, injuries, and illnesses are medical costs. But these are only about one-fifth of the total costs of accidents. The largest cost is lost
wages and productivity, although administrative expenses are also considerable. 14

According to the CPSC, over $800 billion in annual societal costs are associated with consumer product-related hazards. The $800 billion is a combination of the costs of medically-attended injuries, the costs of fatalities, and property damage. 15 Below is a discussion of a range of costs that involve taxpayer burden. It begins with the most direct costs—medical expenditures.

1. Medical Costs

The public sector pays a significant percentage of the health care costs for at least 90 million people in the United States. This means that for every $100 spent on health care, taxpayers pay between $45 and $60. The studies cited below reflect a range of estimates of the public sector’s share of U.S. health care expenditures:

- In 1999, the Centers for Medicare & Medicaid Services (CMS) found that the government share of total health care spending was 45.2 percent. 16 The Congressional Budget Office (CBO) also supports the CMS’s general figures. 17 According to the CBO, 45.5 percent of every health care dollar in 2005 was public. This would mean $847.3 billion—or $930.8 in 2009 dollars—of local, state, and federal money. 18 Table 2 illustrates the CBO’s breakdown of the source of healthcare dollars.

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14 NAT’L SAFETY COUNCIL, INJURY FACTS, 2010 EDITION at 4 (2010) (calculated from data on p. 4, Itasca, Illinois. Other leading costs include motor-vehicle damage, employers’ uninsured costs, and fire loss, although these are not within the scope of the present study).

15 U.S. CONSUMER PROD. SAFETY COMM’N, 2010 PERFORMANCE BUDGET 2, 88 (2010), available at http://www.cpsc.gov/CPSCPUB/PUBS/REPORTS/2010OperatingPlan.pdf. To estimate medically-attended injuries, CPSC employs an Injury Cost Model (ICM), which uses empirically derived relationships between emergency department injuries reported through the National Electronic Injury Surveillance System (NEISS) and those treated in other settings (e.g. doctor’s offices, clinics). See TED R. MILLER ET AL., U.S. CONSUMER PROD. SAFETY COMM’N, CONSUMER PRODUCT SAFETY COMMISSION’S REVISED INJURY COST MODEL 7 (2000), available at www.cpsc.gov/LIBRARY/FOIA/FOia02/os/costmodept1.PDF. The costs of medically attended injuries are made up of four major components including medical costs, work losses, pain and suffering, and legal costs. The cost of fatalities is estimated by applying a statistical value of life to the number of deaths. Id.


Of this share, approximately 70 percent is federal money and 30 percent is state and local money. This estimate included Medicare, Medicaid, Veterans Affairs, public hospitals, and government public health activities. Not included in this CMS estimate were (1) premiums paid to private insurance companies to cover government employee benefits and (2) government foregone income due to tax subsidies of health insurance premiums. If these two exclusions were to become part of the analysis then the 45 percent share would rise by 10 percent or more. Katharine Levit et al., Health Spending in 1998: Signals of Change, 19 HEALTH AFFAIRS, 124, 131 (2000); Aaron Catlin et. al., National Health Spending in 2005: The Slowdown Continues, 26 HEALTH AFFAIRS 142, 146 (2007), available at http://content.healthaffairs.org/content/26/1/142.full.pdf+html.


18 In 2005, national spending on health care totaled nearly $1.9 trillion, or 14.9 percent of the nation’s GDP. These hundreds of billions of dollars do not include the share of expenditures for the uninsured that eventually are paid by the government.
Table 2: National Spending on Health Care by Source of Funds, 2005

<table>
<thead>
<tr>
<th></th>
<th>Billions of 2005 Dollars</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Private Spending</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private health insurance</td>
<td>694.4</td>
<td>37.3</td>
</tr>
<tr>
<td>Out-of-pocket payments</td>
<td>249.4</td>
<td>13.4</td>
</tr>
<tr>
<td>Other private spending</td>
<td>69.8</td>
<td>3.7</td>
</tr>
<tr>
<td><strong>Public Spending</strong></td>
<td>847.3</td>
<td>45.5</td>
</tr>
<tr>
<td>Medicare</td>
<td>342.0</td>
<td>18.4</td>
</tr>
<tr>
<td>Medicaid*</td>
<td>311.0</td>
<td>16.7</td>
</tr>
<tr>
<td>Other public spending**</td>
<td>194.3</td>
<td>10.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$1,860.9</td>
<td>99.9</td>
</tr>
</tbody>
</table>

* Spending on Medicaid includes federal and state expenditures.
** Includes expenditures by state and local health departments, the Department of Veterans Affairs, the Department of Defense, workers' compensation programs, and the State Children’s Health Insurance Program.

Source: Congressional Budget Office

- According to the Robert Wood Johnson Foundation (RWJ), in 2008, national health spending was estimated to reach $2.4 trillion. The total public share of this amount -- state, federal, and local -- was estimated at $1.1 trillion, or about 46 percent of all national health spending. If tax subsidies that encourage provision of health coverage and health care are added in, the total public share comes close to sixty percent of all U.S. health spending.

Other studies corroborate a higher, 60 percent, taxpayer burden. One study found the government share of expenditures on health care in 1998 to be 60 percent. Paul Fronstin, of the Employee Benefit Research Institute, has argued that the government share of the health care dollar, in 1997 and 1998, was not 45 percent, but rather 56 to 58 percent. According to Harvard researchers, the taxpayer-financed share of health care in the U.S., in 1999, was 59.8 percent, or 25 percent higher than the CMS estimate.

The share of medical expenditures due to accidents and injuries, according to studies reviewed for this report, range from 10.8 percent to 12 percent. In an article appearing in the American Journal of Public Health, direct medical costs for injuries in the U.S. were estimated to be 12 percent of all direct costs (surpassed only by charges associated with diseases of the circulatory

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19 The Congressional Budget Office based its data on spending on health services and supplies, as defined in the National Health Expenditure Accounts, maintained by the Centers for Medicare and Medicaid Services. See National Health Expenditure Data, Ctrs. For Medicare & Medicaid, U.S. Dep’t of Health and Human Servs., available at https://www.cms.gov/NationalHealthExpendData/02_NationalHealthAccountsHistorical.asp#TopOfPage (last modified Jan. 20, 2011) (Click on hyperlink “NHE Web Tables”).
22 See Fox & Fronstin, supra note 21, at 271–73.
system). In 1997, the Department of Health and Human Services (DHHS) estimated that 10.8 percent of all health care spending – in the civilian, non-institutionalized population, was for injury-related conditions. Federal programs paid for significant amounts of these health care costs. Medicare paid 24.8 percent and Medicaid/SCHIP paid 8.7 percent. For the purposes of this paper, the government’s estimate of 10.8 percent -- the lower of the two -- as the percent of total health care spending due to injury-related causes, is used in calculations. Although not all injuries involving an accident are product-related, the vast majority are—thus, using accident percentages as a proxy for product-related injuries is a reasonable assumption.

2. Third Party Obligations beyond Medical

Whenever a person falls victim to product-related harm, there is more for which to pay than medical care. The public sector pays for much of these other costs as well. In fact, the National Safety Council (NSC) calculates that health care costs associated with accidents are only about one-fifth (20.7 percent) of the total cost burden. Using data from the National Health Interview Survey, the NSC estimates of the direct costs of all reported accidents breaks down as seen in Table 3.

<table>
<thead>
<tr>
<th>Category</th>
<th>Cost in 2003 $</th>
<th>Cost in 2009 $</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wage and productivity losses</td>
<td>$354.9</td>
<td>$413.8</td>
<td>50.6</td>
</tr>
<tr>
<td>Medical expenses</td>
<td>145.1</td>
<td>169.2</td>
<td>20.7</td>
</tr>
<tr>
<td>Administrative expenses*</td>
<td>122.4</td>
<td>142.7</td>
<td>17.4</td>
</tr>
<tr>
<td>Motor vehicle damage</td>
<td>41.7</td>
<td>48.6</td>
<td>5.9</td>
</tr>
<tr>
<td>Employers’ uninsured costs</td>
<td>22.3</td>
<td>26.0</td>
<td>3.2</td>
</tr>
<tr>
<td>Fire loss</td>
<td>15.5</td>
<td>18.1</td>
<td>2.2</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$701.9</strong></td>
<td><strong>$818.4</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

* Public and private insurance, police and legal costs

Source: National Safety Council

28 Assumed in this study: the cost distribution of product-related accidents is the same for accidents in general.
In addition to these costs, another group of non-medical costs is costs associated with public “safety net” programs. A range of social programs are designed to keep Americans from falling into poverty. Many of these are relevant to those suffering from product-related harm. Although the list of programs is quite large—particularly were state and local government programs to be considered—this article limits its discussion to federal Unemployment Insurance, Social Security disability benefits, Supplemental Security Income, food stamps, Temporary Assistance for Needy Families (TANF), and housing subsidies.

B. Components of Taxpayer Burden

Taxpayers pay each time an individual is non-trivially injured, becomes ill, or dies due to product-related harm. Taxpayers also support a regulatory infrastructure for safety and health made necessary by potentially harmful products. Taxpayer burden, as calculated in this paper, may be broken down into four main categories:

- **Direct expenditures to help an injured person**, through such programs as Medicare, Medicaid, State Children’s Health Insurance Program (SCHIP), Unemployment Insurance, Social Security Disability, and food stamps. (See Table 5 on Federal Obligations for a full list of the programs used in this article’s calculations.)
- **Foregone public sector income**. Foregone income includes taxes not collected when an individual deducts health care expenditures, when one qualifies for the Earned Income Tax Credit, and lost tax revenue from reduced productivity.
- **Government expenditures to correct the market** through regulatory or other policies. This includes expenditures such as food safety inspections, research on technology for better workplace safety and health, and the costs of running the Consumer Product Safety Commission.
- **Other product-related harm**, not otherwise included; e.g., alcohol, cigarettes, unsafe food, and adverse drug reactions in hospitals (costs beyond medical and lost productivity).

1. **Direct Expenditures to Help an Injured Person**

The expenditures for many federal programs increase when a person is injured, becomes ill, or dies as a result of a product-related incident. The total estimated burden, as estimated below, is $136.2 billion – enough to fund the Occupational Safety and Health Administration, at its current annual budget level, for well over 200 years.

The public safety net is designed to reduce the number of people who fall into poverty and to reduce the severity of the poverty for those who remain poor. As seen in Table 4, safety net programs in the United States include:\(^{29}\)

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Table 4: Federal Safety Net Programs

<table>
<thead>
<tr>
<th>Cash Assistance</th>
<th>Health Care</th>
<th>Housing</th>
<th>Increasing Opportunity</th>
<th>Universal Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>TANF</td>
<td>Medicaid</td>
<td>Public Housing</td>
<td>Workforce Development</td>
<td>Social Security</td>
</tr>
<tr>
<td>SSI</td>
<td>SCHIP</td>
<td>Vouchers</td>
<td>Federal Aid to Education</td>
<td>SSDI</td>
</tr>
<tr>
<td>EITC</td>
<td></td>
<td>Tenant Assistance</td>
<td></td>
<td>Medicare</td>
</tr>
<tr>
<td>Food Stamps</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From the FY2010 federal budget of $3.6 trillion, approximately 20 percent goes to Social Security; another 20 percent goes to Medicare, Medicaid, and SCHIP; and 14 percent goes to other safety net programs.30 These public sector programs will always be large, but their expenditures are inflated by harm associated with products. When a person suffers product-related harm, the repercussions may be significant. For example, a study of work-related musculoskeletal disorders found people who needed to change jobs, were often divorced, forced to move for financial reasons, or lost their home or car or health insurance. Some had to retire early. Many had to take time off. Approximately thirty percent had received some type of economic support other than workers compensation (employer, personal sources, and/or the government).31 With serious injuries, the repercussions can balloon. The disabled and their families are more likely to live in poverty and have twice the unemployment rate of the non-disabled.32 When they do work, their work is more likely to be part-time,33 and their medical expenses, on average, are four times higher than for the non-disabled.34

Product-related harm results in an increased demand for public services for a number of reasons. As illustrated by the story with which this article began, any particular instance of product-related harm might produce costs that exceed the victim’s tort recovery and available insurance, both in immediate dollars and in expenditures over time. A percentage of these excess expenses will be relegated to the public.

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34 See A. Elwan supra note 32, at 25 (citing L. Trupin, D. Rice, & W. Max, NAT’L INST. ON DISABILITY AND REHABILITATION RESEARCH, DISABILITY STATISTICS REPORT No. 5: MEDICAL EXPENDITURES FOR PEOPLE WITH DISABILITIES IN THE UNITED STATES, 1987 (1995)).
Moreover, studies consistently suggest that most injuries potentially deserving of tort recovery do not culminate in legal action. Researchers studying medical injuries at hospitals in New York, for example, found that of an estimated 98,000 medical injuries in New York, only 4000, or 4 percent, actually filed malpractice claims. The estimated costs for all those injured just in New York, in 1989 dollars, was a total of $878 million ($161 million for medical care, $276 million for lost wages, and $441 million in lost household production). In 2009 dollars, this would amount to $1.519 billion.35 Although a percentage of uncompensated injuries are no doubt covered by private insurance, much of the uninsured (or under-insured) costs will fall to the public safety net.

Another, often overlooked, source of publicly-funded, product-related injuries is the workplace. Only nine to 45 percent of injured or ill workers file for workers compensation benefits. This is especially true with regard to occupational illnesses.36 If a person eligible for Workers Compensation does not file, the costs might be paid by private insurance or out-of-pocket. But some of this 55 to 91 percent of injured workers end up with Medicare or Medicaid, at a VA or at a hospital as a beneficiary of uncompensated care.37 Should they lose their employment, their burden might be shared by the Unemployment Insurance system or of Social Security, through SSDI or SSI.

The public budgetary commitment for providing health care to its citizens is enormous. In the Department of Health and Human Services alone, 87 percent of the FY2011 budget is allocated to Medicare, Medicaid, and SCHIP. This does not include allocations for food safety, TANF, or community health centers. And it does not include health care payments through the Veterans Administration, Indian Health Service, or Federal Employee Health Benefits Program. Medicare, Medicaid, Defense Department programs, and SCHIP together, pay for the health care

37 Uncompensated care accounts for an enormous share of the taxpayer burden. The public sector spent $12.8 billion in 2001, or $15.5 billion in 2009 dollars, on uncompensated care, according to Medical Expenditure Panel Survey data cited by Hadley and Hollahan, -- $4.8 billion from the VA, $2.9 billion from other federal sources, $1.6 billion from state and local sources, and $3.5 billion from other public sources. Jack Hadley & John Holahan, How Much Medical Care Do the Uninsured Use, and Who Pays For It, HEALTH AFFAIRS (February 12, 2003), available at http://content.healthaffairs.org/content/early/2003/02/12/hlthaff.w3.66.full.pdf. This was 18.6 percent based on a total of $69 billion for uncompensated care. In 2001, the estimate was $7.1 billion (or $8.6 billion in 2009 dollars) spent at community health centers and other direct care providers to the uninsured. The VA accounted for more than half the total. The next largest source was the Bureau of Primary Health Care. Medicare payments to support hospitals that care for the poor and uninsured are between $6.2 billion and $6.9 billion per year in 2001, or $7.5 billion and $8.4 billion, respectively in 2009 dollars. Medicaid also earmarks funds for these hospitals. In FY2001, the federal government spent $8.9 billion on these hospitals, with states contributing about $6.7 billion more. In 2001, government funds for hospital care of the uninsured amounted to $23.6 billion, or $28.6 billion in 2009 dollars. Some estimates are even higher. Based on Institute of Medicine estimates, in 2001, the public sector financed up to 85 percent of the cost of uncompensated care for the uninsured, from a total of $34 billion to $38 billion in total uncompensated care, or $29 billion to $32 billion. In 2009 dollars, this 85 percent would account for $35 billion to $39 billion in expenditures. See The Health Care Safety Net We Want and Need, ISSUES & ANSWERS, (Council for Affordable Health Insurance), Feb. 2005, at 1, available at http://www.cahi.org/cahi_contents/resources/pdf/n128safetynet.pdf. Most of this cost is absorbed by VAs, Medicare, and Medicaid.
of over 90 million people in the United States.\(^{38}\) (See Appendix I for background discussions of Medicare, Medicaid, Department of Veterans Affairs, Unemployment Insurance, Food Stamps, Temporary Assistance for Needy Families, SSDI and SSI. This material also includes sources used to calculate numbers in the table below.\(^{39}\))

Below, in Table 5, is a list of nine federal departments and agencies (and one across-the-board category) that make payments to consumers injured or sickened by product-related incidents.

**Table 5: Federal Obligations to Individuals and Small Businesses with Respect to Product-Related Injuries, 2009**

<table>
<thead>
<tr>
<th>Agency</th>
<th>Program</th>
<th>Total Program Budget</th>
<th>Criteria for Determining Taxpayer Burden</th>
<th>Taxpayer Burden from Product-Related Injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>Food and Nutrition Services</td>
<td>$82.0 billion</td>
<td>If just 1%-2%* of those receiving benefits need it because injury or illness associated with a product led them to financial deterioration…</td>
<td>$820-1,600 million</td>
</tr>
<tr>
<td>Defense</td>
<td>Military Medical Care</td>
<td>$42.8 billion in medical care</td>
<td>If 10.8%** of care is due to injury or illness associated with a product…</td>
<td>$4,622.4 million</td>
</tr>
<tr>
<td>Education</td>
<td>Title I grants to LEAs</td>
<td>$14.305 billion</td>
<td>If just 1%-2% …</td>
<td>$143.1-$286.2 million</td>
</tr>
<tr>
<td></td>
<td>Special Education state grants</td>
<td>$11.285 billion</td>
<td>If just 1%-2% … ***</td>
<td>$112.9-$225.8 million</td>
</tr>
<tr>
<td>Health and Human Services</td>
<td>Medicare</td>
<td>$430 billion</td>
<td>If 10.8% of care …</td>
<td>$46,440 million</td>
</tr>
<tr>
<td></td>
<td>Medicaid/SCHIP</td>
<td>$450 billion with legislative proposal to provide more to SCHIP</td>
<td>If 10.8% of care …</td>
<td>$48,600 million</td>
</tr>
<tr>
<td></td>
<td>Other mandatory outlays (besides M&amp;M)</td>
<td>$33.893 billion</td>
<td>If 10.8% of care …</td>
<td>$3,660 million</td>
</tr>
<tr>
<td></td>
<td>Health Centers in low income areas</td>
<td>$2 billion</td>
<td>If 10.8% of care …</td>
<td>$216 million</td>
</tr>
<tr>
<td></td>
<td>Indian Health Service</td>
<td>$3.325 billion</td>
<td>If 10.8% of care …</td>
<td>$359.2 million</td>
</tr>
<tr>
<td></td>
<td>TANF</td>
<td>$21.771 billion federal + $14.327 billion state</td>
<td>If just 1%-2%</td>
<td>$218 -$436 million + $143-286 million</td>
</tr>
</tbody>
</table>

\(^{38}\) See The Health Care Safety Net We Want and Need, supra note 37.

Table 5: Federal Obligations to Individuals and Small Businesses with Respect to Product-Related Injuries, 2009 —Continued

<table>
<thead>
<tr>
<th>Agency</th>
<th>Program</th>
<th>Total Program Budget</th>
<th>Criteria for Determining Taxpayer Burden from Product-Related Injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Housing and Urban Development</strong></td>
<td><strong>Homeless Assistance Grants</strong></td>
<td>$1.636 billion</td>
<td>If just 1%-2%…</td>
</tr>
<tr>
<td></td>
<td><strong>Tenant-Based Rental Assistance</strong></td>
<td>$16.039 billion</td>
<td>If just 1%-2%…</td>
</tr>
<tr>
<td></td>
<td><strong>Project-Based Rental Assistance</strong></td>
<td>$7 billion</td>
<td>If just 1%-2% …</td>
</tr>
<tr>
<td></td>
<td><strong>Native American Housing Block Grant</strong></td>
<td>$627 million</td>
<td>If just 1%-2% …</td>
</tr>
<tr>
<td></td>
<td><strong>Public housing</strong></td>
<td>$6.324 billion</td>
<td>If just 1% -2%…</td>
</tr>
<tr>
<td></td>
<td><strong>Housing for persons with disabilities</strong></td>
<td>$160 million</td>
<td>44.1% of disability impairment due to accidents</td>
</tr>
<tr>
<td></td>
<td><strong>Lead hazard reduction</strong></td>
<td>$116 million</td>
<td>--</td>
</tr>
<tr>
<td><strong>Justice</strong></td>
<td><strong>Federal prison system</strong></td>
<td>$5.534 billion</td>
<td>Hardship and poverty can lead to illegal activities and abuse by the victim. If just 1/10 of 1% of those in prison are the result of injury or illness associated with a product….</td>
</tr>
<tr>
<td><strong>Labor##</strong></td>
<td><strong>Unemployment Insurance Administration</strong></td>
<td>$2.636 billion</td>
<td>If just 1%-2% …</td>
</tr>
<tr>
<td></td>
<td><strong>Unemployment Insurance Benefits</strong></td>
<td>$27.352 billion</td>
<td>If just 1%-2% …</td>
</tr>
<tr>
<td><strong>Veterans Affairs</strong></td>
<td><strong>Medical Care</strong></td>
<td>$40.183 billion</td>
<td>If 10.8% of care…</td>
</tr>
<tr>
<td></td>
<td><strong>Medical Infrastructure</strong></td>
<td>Since 2001, $5.5 billion</td>
<td>If 10.8% of care… (divided by 8 years)</td>
</tr>
</tbody>
</table>
### Table 5: Federal Obligations to Individuals and Small Businesses with Respect to Product-Related Injuries, 2009 —Continued

<table>
<thead>
<tr>
<th>Agency</th>
<th>Program</th>
<th>Total Program Budget</th>
<th>Criteria for Determining Taxpayer Burden</th>
<th>Taxpayer Burden from Product-Related Injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Security Administration</td>
<td>SSDI</td>
<td>$109.546 billion</td>
<td>SSDI payments of $109.546 billion multiplied by 44.1% (% of impairment disabilities caused by accidents. See text on SSDI in App. I). and multiplied by the 50% of accidents due to products</td>
<td>$24,155 million</td>
</tr>
<tr>
<td></td>
<td>SSI</td>
<td>$2.06 billion</td>
<td>44.1% of impairment disabilities caused by accidents and 50% due to products</td>
<td>$454.2 million</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>$136.172.9 billion</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* There is no way to know for sure what percent of individuals harmed by products require safety net services. In a weak economy, where many are already struggling to pay for basic needs, this percentage may be quite high, perhaps even 10 percent. But this paper, committed to being very conservative in determining taxpayer burden, estimates that the numbers are only between 1 and 2 percent, and uses the midpoint (1.5 percent).

** Assumes injuries are 10.8 percent of the health care dollar (see footnote 28) and the product-related share of health care expenditures (according to CPSC’s Revised Injury Cost Model, p.1) is 50 percent. (It is 15 percent for fatalities and 50 percent for injuries, with a weighted average of 49.97 percent for all product-related incidents. Fifty percent of 10.8 percent is 5.4 percent. See Table 10 for injury numbers.) There are at least as many illnesses as accidents, and they are at least as costly, so the 5.4 percent is, conservatively, doubled.

*** This includes children affected by toxic exposures in utero; victims, as children, of product-related injuries.

# Housing assistance to 11 million needy individuals.

## Public sector medical costs associated with Workers Compensation are not included in these calculations.

### 2. Foregone Public Sector Income

The federal government foregoes billions of dollars in tax revenue due to product-related injuries. Below is a discussion of tax subsidies and lost revenue opportunities that might result when a person falls victim to an accident or injury associated with a product. Together, they account for an estimated $100.0 billion.

- The estimated personal income tax subsidies for health care expenditures, in 2009 dollars, are $220.0 billion. If injuries and illnesses due to product-related accidents are 10.8 percent of health care expenditures, then the burden to taxpayers is $23.8 billion.
• The subsidies for the Earned Income Tax Credit in 2009 dollars are estimated to be $40.6 billion. If product-related accidents are associated with just 1 to 2 percent of those dollars, then the taxpayer burden due to product-related injuries is $406-$812 million. (An average of $609 million is used in these calculations.)

• Reduced income tax revenue due to the lost productivity from product-related accidents is at least $70.8 billion.

• Deductibility of homeowner expenditures to replace defective drywall is approximately $2.8 billion.

• Deductibility of punitive damage awards paid by companies found guilty of corporate misconduct is at least $2 billion.

a. **Tax Subsidy on Health Care Premiums and Expenditures.** The 2009 personal income tax subsidy for health care expenditures was $220.0 billion. If product-related harm account for 10.8 percent of costs associated with these incidents, then the taxpayer burden is $23.8 billion.

The estimate involves taxpayer costs because employer-paid health insurance benefits are exempt from income and payroll taxes. These include federal and state income taxes and taxes for Social Security and Medicare. Health care costs paid with pretax dollars via “flexible spending accounts” are tax exempt. Individuals can deduct health care costs that exceed 7.5 percent of adjusted gross income.

Based on data from the Medical Expenditure Panel Survey, Seldon and Gray estimated in 2006 that subsidies in that year for all employment-related health care coverage of active workers would reach $208.6 billion, or $220.0 billion in 2009 dollars. The subsidies (which amount to $2,788 per covered worker) break down as seen in Table 6:

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40 This is based on 10.8 percent of the health care dollar that is the result of accidents and 50 percent of those accidents being product-related, resulting in 5.4%. This paper also conservatively estimates an equal amount for illnesses—thus a total of 10.8 percent of every health care dollar being spent on injuries and illnesses due to products. (See also section “e” of Appendix III.)

41 Woolhandler & Himmelstein, supra note 23, at 91.


Another, earlier estimate concluded, with a similar calculation, that the estimated cost to the federal government in lost revenue, due to tax policies for health insurance, was estimated to be $188.5 billion in 2004, or $214 billion in 2009 dollars. When tax subsidies by state governments are included, the cost rises to $209.9 billion, or $238 billion in 2009 dollars. John Sheils & Randall Haught, *The Cost of Tax-Exempt Health Benefits in 2004*, *HEALTH AFFAIRS* (2004), available at http://content.healthaffairs.org/content/suppl/2004/02/25/hlthaff.w4.106v1.DC1.

43 Seldon & Gray, supra note 42, at 1574.
Table 6: Tax Subsidies for Health Care Expenditures, by Source

<table>
<thead>
<tr>
<th>Source</th>
<th>Amount in 2006 Dollars (Billions)</th>
<th>Amount in 2009 Dollars (Billions)</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Income Tax</td>
<td>$111.9</td>
<td>$119.1</td>
<td>53.6</td>
</tr>
<tr>
<td>FICA</td>
<td>73.3</td>
<td>78.0</td>
<td>35.1</td>
</tr>
<tr>
<td>State Income Tax</td>
<td>23.4</td>
<td>24.9</td>
<td>11.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$208.6</strong></td>
<td><strong>220.0</strong></td>
<td><strong>99.9</strong></td>
</tr>
</tbody>
</table>

b. **Earned Income Tax Credit.** If product-related accidents are associated with just 1 percent to 2 percent of those dollars, then the taxpayer burden due to product-related injuries, and related to Earned Income Tax Credit, is $406-$812 million.

When a family member experiences a product-related fatality, injury, or illness, there is frequently loss of income. In such cases, families may qualify for the Earned Income Tax Credit (EITC), thus further costing the taxpayer. For low to moderate income working people, EITC is a refundable credit on one’s federal income tax. If the EITC exceeds the amount of taxes owed, it results in a tax refund. To qualify in 2009, an individual’s income thresholds would range from $7,470-$13,440 and for a family with three children, from $16,420-$43,279. The Tax Policy Center, of the Urban Institute and Brookings Institution, estimated that the real federal spending on this credit was $37 billion in 2005, or $40.6 billion in 2009 dollars. Millions of families who are eligible do not receive the credit, according to a GAO report, which means that the potential taxpayer’s burden could be far greater.

c. **Lost Tax Revenue from Reduced Productivity.** According to NSC estimates, lost productivity accounts for 50.5 percent of the total direct economic burden from an accident—approximately 2.5 times the economic burden of direct medical costs. The public costs of medical care are $949.7 billion dollars a year, and a conservative estimate of the share associated with product-related injuries and illnesses is only 10.8 percent. The public sector medical cost burden from product-related accidents thus becomes $102.6 billion. If lost productivity is 2.5 times that amount, then the productivity loss is $256.5 billion. With the average personal tax rate at 28 percent, this would suggest a tax loss of $70.8 billion. This involves only an accounting for lost personal income tax revenue. That much or more might be lost in corporate income taxes, although this study does not include such losses. In addition, this

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44 Id. at 1571. Not included are an adjustment to avoid double counting of payroll and income taxes and an adjustment to avoid double counting of tax subsidies to government employees.  
45 See Appendix III, d, Methodology, for discussion of the 1%-2% figure.  
49 CONG. BUDGET OFFICE, supra note 17.
paper does not include the economic costs from less pending by households with less income due to product harm.

d.  **Deductibility of Homeowner Expenditures to Replace Defective Drywall.** In late September 2010, the IRS announced that it would allow homeowners to deduct from their taxes expenditures associated with defective Chinese drywall, whose high levels of hydrogen sulfide corrode wiring and appliances and trigger respiratory problems, nosebleeds, and severe headaches in residents.\(^{50}\) Expenditures can total $100,000 or more per household.\(^{51}\) More than 100,000 households were affected.\(^{52}\) This suggests $10 billion in cost to U.S. households from defective Chinese drywall (not including health care costs). With the average household tax rate at 28 percent, this suggests a federal burden of $2.8 billion.

e.  **Deductibility of Punitive Damage Awards Paid By Companies Found Guilty of Corporate Misconduct.** Punitive damage awards are tax deductible if paid by companies found guilty of corporate misconduct which resulted in product-related injury or illness.\(^{53}\) Punitive damages are awarded for “flagrant disregard for public safety.”\(^{54}\) Should BP, for example, be allowed to “win back” through this tax loophole a portion of damages that it will eventually pay? In this way, the government, through foregone tax revenue, subsidizes a corporation that pays a punitive damage award for its culpability in selling a dangerous product. In an article in the *Alabama Law Review*, Kimberley Pace argues that “corporations should not be permitted to deduct punitive damage payments from their income taxes.”\(^{55}\) The cost to the taxpayer is billions of dollars.\(^{56}\) Because there are no firm estimates, however, only the minimum implied here, $2 billion, is included in estimates.

3.  **Government Expenditures to Correct the Market**

If the use of a product results in harm, this harm is an externality—that is, a cost incident to the product not reflected in the product’s price. In an efficient market, all of the costs associated with a product, including externalities, are internalized. Thus, in a perfect market, the costs associated with harm done to a product’s users would be internalized by the manufacturer and hence reflected in the product’s price. Without this process of internalization, the price of the product is artificially low and sales inefficiently high.

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\(^{54}\) *Id.*

\(^{55}\) *Id.* at 825. On the other hand, as the Supreme Court ruled in the 1943 case, Commissioner v. Heininger, “the mere fact that an expenditure bears a remote relation to an illegal act” is not sufficient to make it nondeductible.

\(^{56}\) *Id.*
In terms of taxpayer burden, externalities associated with product-related harm include the cost of health care provided by the government when a person is injured, the cost of safety net programs which a harmed individual might need, the loss of taxes when individuals harmed by products can deduct health care expenditures, the loss of taxes when individuals are out of work due to disability, and the loss of taxes when a company can deduct the punitive damage award it pays as a result of a court judgment with regard to a dangerous product.

The public sector has always had some role in providing a safety net to individuals who cannot provide for the basic necessities of health care, housing, and food. But when others, or the products manufactured by others, cause a person to be in need of SSDI or other public benefits, economists would say that the burden for care should shift from the victims to the parties that cause the harm.

One way that the public sector corrects for market failure is through regulation. Listed below are nine government departments and agencies that spend the taxpayers’ money to protect the lives of U.S. residents. In many instances, those responsible for the conditions that make such protection necessary are easy to identify, but taxpayers are left to pay the bill. Billions of dollars are spent every year to maintain the government agencies that focus on policies to correct the market and help eliminate dangerous food, work, air and water pollutants, railroads, highways, pharmaceuticals, and a range of other products.

Such regulation is an appropriate function of government, but the size of the taxpayer burden is proportionately larger when market behavior leaves society with high levels of death, injury, and illness. The agencies listed below (see Table 7) had a cumulative 2009 budget of $35.8 billion. This does not include a $1.4 billion budget request for 2011 to the Food and Drug Administration to investigate medical product safety or allocations associated with the new food safety law.

<table>
<thead>
<tr>
<th>Agency</th>
<th>Program Included in Budget Calculations</th>
<th>Comments</th>
<th>Taxpayer Burden from Product-Related Injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>Food Safety Inspection Service</td>
<td>Inspection of meat, poultry, &amp; eggs</td>
<td>$952 million</td>
</tr>
<tr>
<td>Chemical Safety and Hazard Investigation Board*</td>
<td>[entire agency]</td>
<td>Investigation of chemical safety incidents</td>
<td>$11 million</td>
</tr>
<tr>
<td>Consumer Product Safety Commission</td>
<td>[entire agency]</td>
<td>To protect the public from unreasonable risks of serious injury or death from consumer products</td>
<td>$105 million</td>
</tr>
<tr>
<td>Energy</td>
<td>Clean up of nuclear weapons complex</td>
<td>To protect public health &amp; safety by cleaning up nuclear research &amp; weapons production sites</td>
<td>$5,500 million</td>
</tr>
<tr>
<td>EPA</td>
<td>[entire agency]</td>
<td>Includes Superfund to clean up the nation’s most contaminated sites ($1.3 billion)</td>
<td>$7,999 million</td>
</tr>
</tbody>
</table>
### Table 7: Federal Expenditures to Regulate Potentially Harmful Products, 2009 – Continued

<table>
<thead>
<tr>
<th>Agency</th>
<th>Program Included in Budget Calculations</th>
<th>Comments</th>
<th>Taxpayer Burden from Product-Related Injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Health &amp; Human Services</strong></td>
<td>FDA</td>
<td>To protect against food contamination… for drug safety</td>
<td>$662 million</td>
</tr>
<tr>
<td></td>
<td>National Institute for Occupational Safety &amp; Health</td>
<td>Research</td>
<td>$416 million</td>
</tr>
<tr>
<td></td>
<td>National Institute of Environmental Health Sciences</td>
<td>Worker Education &amp; Training Program for Hazardous Materials</td>
<td>$44.9 million (includes $6.5 million stimulus supplement)</td>
</tr>
<tr>
<td><strong>Justice</strong></td>
<td>Bureau of Alcohol, Tobacco, Firearms, &amp; Explosives</td>
<td>Regulation related to alcohol, tobacco, firearms, &amp; explosives industries</td>
<td>$1,028 million</td>
</tr>
<tr>
<td><strong>Labor</strong></td>
<td>OSHA</td>
<td>To promote worker safety &amp; health</td>
<td>$502 million</td>
</tr>
<tr>
<td></td>
<td>MSHA</td>
<td>To promote the safety &amp; health of mine workers</td>
<td>$332 million</td>
</tr>
<tr>
<td><strong>National Transportation Safety Board</strong></td>
<td>Accident investigation</td>
<td>To investigate transportation accidents</td>
<td>$91 million</td>
</tr>
<tr>
<td><strong>Transportation</strong></td>
<td>Federal Railroad Administration safety program</td>
<td>To promote railroad safety</td>
<td>$191 million</td>
</tr>
<tr>
<td></td>
<td>Pipeline safety program</td>
<td>To promote pipeline safety</td>
<td>$93 million</td>
</tr>
<tr>
<td></td>
<td>Federal Motor Carrier Safety Administration</td>
<td>To promote truck safety</td>
<td>$541 million</td>
</tr>
<tr>
<td></td>
<td>NHTSA</td>
<td>To promote highway safety</td>
<td>$730 million (with legislative proposal for $122 million more, but not included)</td>
</tr>
<tr>
<td></td>
<td>Federal Aviation Administration</td>
<td>Safety is 67% of the FY09 budget of $16,770 million &amp; environmental stewardship is 3%</td>
<td>$11,739 million</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>DOT budget of $71,819 million is 25.3% for safety **</td>
<td>$4,876 million</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td><strong>$35,813 million</strong></td>
</tr>
</tbody>
</table>

* Chemical Safety Board Budget Justification, FY2009


**FY2009 budget for DOT was $71,819 million. FY 2010 budget is broken out by objectives and is 25.3 percent for safety. [http://www.dot.gov/budget/2010/bb2010.htm, p.1] This suggests a budget for safety of $18,170 million – $4,876 million more than the rows above (for FRA, Pipeline, Motor Carrier, NHTSA, and FAA safety). [($18,170 million) – (191 m. + 93 m. + 541 m. + 730 m. + 11,739 m.) = 4,876 million] Other programs with safety budgets include the Office of the Secretary, the Federal Transit Administration, and the Federal Highway Administration.
4. Other Product-Related Harm, Not Otherwise Included

Four major products leading to death and serious illness are discussed in this section. They escape much of the methodology of Method 1 because identifying product-related harm from illness is even more elusive than identifying injuries. Many scholars and policy makers have made estimates about the burdens associated with product-related illnesses, from the Rand Corporation to the Robert Wood Johnson Foundation to the government itself. Some have focused on the overall economic burden from a specific commodity, and some have focused on the public share of that burden. Below is a brief review of the results of some of these studies—in particular, those related to alcohol, cigarettes, unsafe food, and adverse drug reactions in hospitals. Estimates for asbestos are not included, in part because of the successes of so many tort cases to win settlements for victims, and in some cases to directly reimburse the public sector, thus complicating and already complicated calculation process.

Because the health care costs and lost tax revenue from health care subsidies are accounted for under the direct expenditures section of this first methodology, medical costs have been deleted from the calculations before assessing taxpayer burden. Other costs associated with product-related illnesses, however—28.8 percent of total as estimated by the National Safety Council—are not accounted for in preceding sections. If these other costs are only 10 percent public, the estimated taxpayer burden from the illnesses associated with these four products is $55.8 billion. (See Table 8 below and Appendix II for sources and detail about these cost estimates.)

Table 8: Costs Associated with Other Product-Related Injuries, Not Otherwise Included
Billions of 2009 Dollars

<table>
<thead>
<tr>
<th></th>
<th>Cost Estimates from Outside Studies</th>
<th>Comments*</th>
<th>Tax Payer Burden Adjusted to Exclude Medical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td>$201.7 billion Medical only</td>
<td>Other costs (28.8%) are $280.63 billion, and 10% is public</td>
<td>$28.06 billion</td>
</tr>
<tr>
<td>Cigarettes</td>
<td>$200 billion plus</td>
<td>Beyond medical is $2.6 billion in Social Security Survivors for children of the deceased; 28.8% of $200 billion for other costs, and 10% of that is estimated to be public ($5.76 billion).</td>
<td>$8.36 billion</td>
</tr>
<tr>
<td>Unsafe Food</td>
<td>$152 billion</td>
<td>28.8% other is $43.776 billion, and 10% of that is public.</td>
<td>$4.38 billion</td>
</tr>
<tr>
<td>Adverse Drug Reactions</td>
<td>$107.8 billion Medical only</td>
<td>28.8% other is $149.983 billion, and 10% of that is public</td>
<td>$15.0 billion</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td><strong>$55.8 billion</strong></td>
</tr>
</tbody>
</table>

* In this paper, we assume that the portion of public sector burden for non-medical and non-lost-productivity categories is 10 percent. And this amount is 28.8 percent of total costs. (See “g” in Appendix III for more detail on methodology.)
5. Recovery of Publicly Spent Monies

In order to arrive at the net cost to taxpayers of product injuries, the gross total of Method 1 should be reduced by the amount of expenditures improperly paid and later recovered by government agencies, either from beneficiaries or, in the unusual case, from manufacturers of the products causing injury.

In 1980, Congress enacted the Medicare Secondary Payer Act (MSP), which provides that Medicare will not pay for medical services where payment “has been made, or can reasonably be expected to be made, promptly, under a workmen’s compensation law or plan of the U.S. or under an automobile or liability insurance policy or plan (including a self-insured plan) or under no-fault insurance.” The intent of the law was to lower the expense of Medicare by ensuring that Medicare serves only as a secondary payer, in cases where no primary source is available. With the Medicare Modernization Act of 2003, Congress gave the Secretary of Health and Human Services the power to sue Medicare beneficiaries and tortfeasors for payments made by Medicare that should have been made by a tortfeasor or primary insurer.

Until very recently, Medicare’s recovery efforts have been uneven at best. With mounting worries regarding the solvency of Medicare, however, efforts at recovery have intensified. In 2006, the Centers for Medicare and Medicaid Services (CMS) awarded a single $200 million cost-plus contract to Chickasaw Nation Industries (CNI), a tribally-owned firm based in Oklahoma, to implement the MSP recovery effort. According to a report prepared for Congress by the Congressional Research Service, the CMS’s MSP efforts resulted in gross savings of $6.5 billion in 2007. This total does not account for associated administrative costs, which the CMS estimates were $115.9 million in 2007. Furthermore, the total includes both prepayment and post-payment savings and does not indicate the constituent subtotals. Only post-payment recoveries would reduce the measure of taxpayer burden discussed in this section.

Like Medicare, Medicaid also is intended to serve as a payer of last resort. When Congress enacted Medicaid, the law provided that states must plan to recover funds from third parties who were responsible for injuries to Medicaid recipients. Because Medicaid is run through state
agencies, a federal statute requires participating states to seek reimbursement of payments from potentially liable third parties. Pursuant to federal mandate, a number of states have passed statutes enabling state attorneys general to seek Medicaid recoveries. Beginning in the 1990’s, states seized on this ability in dramatic fashion to go after cigarette manufacturers. More than 40 states filed suits, on behalf of their Medicaid programs, to recover health care expenditures from smoking-related diseases. It began in 1994 when Mississippi filed a landmark suit, with others following. States were acting on the assumption that the public should not pay the medical expenses from a patient’s smoking habit. Florida in 1994 amended its Medicaid Third-Party Liability Act, changing state tort law, focusing on the state’s ability to sue third-party defendants responsible for state Medicaid expenditures. In 1998, this coordinated effort pressured the major tobacco companies to negotiate a settlement to reimburse Medicare expenses in 46 states. As these are state-run efforts, getting a national total recovery figure is difficult and probably impossible, as many states no doubt do not track their success.

Third party recovery is also an issue in the Departments of Defense and Veterans Affairs. The GAO has studied the need to increase the third party collections in each of these Departments. Collections issues are focused on administrative weaknesses such as inadequate patient intake procedures, insufficient documentation by physicians, shortage of qualified billing coders, and insufficient automation. The focus is third party insurance recovery, with a clear objective of reducing the burden of taxpayer financing. No discussion of recovery from court awards was found.

In sum, the government’s efforts to recoup erroneous payments made pursuant to its various safety net programs have been inconsistent and incomplete, although they are perhaps becoming less so. Because an overall figure for annual recoveries remains elusive, Method 1 does not deduct recoveries from the total taxpayer burden. Judging from the only existing (if yet mercurial) numbers gleaned from CMS reporting, the total recovery figure is likely to be, at most, one percent of the total taxpayer burden.

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67 See Sherrill, supra note 64.
68 See Sarafa, supra note 66.
C. **Summary of Taxpayer Burdens from Product-Related Injuries, According to Methodology 1**

Combining the numbers presented in the preceding sections, the total annual taxpayer burden associated with product-related harm is $327.8 billion. This is summarized in Table 9 below (also presented as Table 1):

<table>
<thead>
<tr>
<th>Taxpayer Burden</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct expenditures to help an injured person</td>
<td>$136.2 billion</td>
</tr>
<tr>
<td>Foregone public sector income</td>
<td>$100.0 billion</td>
</tr>
<tr>
<td>Government expenditures to correct the market</td>
<td>$35.8 billion</td>
</tr>
<tr>
<td>Other product-related harm, not otherwise included</td>
<td>$55.8 billion</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$327.8 billion</strong></td>
</tr>
</tbody>
</table>

The taxpayer burden from the four categories above is $327.8 billion. Changed assumptions about the share of accidents that are product-related or the percentage of people who may need public sector safety net programs due to the economic hardship of an injury or illness – would raise the estimate significantly.

**IV. METHOD 2: HARM × COST × TAXPAYER’S SHARE**

Method 1 began by calculating total government expenditures on programs potentially related to product injuries. It then sought to estimate the percentage of those expenditures traceable to product injuries. It might thus be characterized as a top-down methodology. Method 2 works in the opposite direction. Part A of Method 2 begins by determining the annual number of product-related fatalities, injuries, and illnesses. Part B then arrives at an average per-incident cost for each category. Part C multiplies each category of harm by the average per-incident cost and then adjusts the product by an estimated percentage of cost borne by the government. The result of Method 2 is a much higher figure than that produced by Method 1—Method 2 estimates a taxpayer burden of $1.089 trillion annually.

**A. Number of Fatalities, Injuries, and Illnesses Related to Products**

Capturing each injury, illness, and death associated with a product is an extraordinarily difficult task. Absent governmental requirements to do so, those with knowledge of such occurrences have little impetus to record the events or to report collective statistics about them. Moreover, particularly in the context of illnesses and deaths associated with harmful substances, the injured person may be unaware of the causal connection between product and injury.
Fortunately, a number of governmental and private organizations attempt to monitor injuries related to the bulk of existing products. In some cases, the data collected by these organizations present a fairly confirmable picture. The number of commercial airplane deaths and injuries reported by the National Transportation Safety Board, for instance, likely captures almost all such events.\textsuperscript{72} In other cases, the data constitute a representative sample from which a national picture can be extrapolated. The injury statistics reported by the Consumer Product Safety Commission, for example, are drawn from reports from a sample of hospitals, from which national statistics are then derived.\textsuperscript{73} In still other instances, national estimates represent merely a “best possible estimate” from the known incidence of illness related to a particular product— for example, the number of annual tobacco-related lung cancer deaths might be drawn from the number of smokers, modified by pack-per-day averages, combined with the incidence of lung cancer in those who smoke. In light of the various data gathering and statistical methods utilized in counting injuries, deaths, and illnesses, available data produce only an estimate -- albeit typically a relatively stable one -- of such events.

With these caveats, it is doubtless the case that each year millions of adverse health events are related to products -- from automobiles to asbestos, from prescription drugs and medical devices to toxic airborne hazards. Although many such events remain obscure, some are well known. In the last decade, more than 100,000 U.S. households suffered hydrogen sulfide gas emissions from imported Chinese dry wall, leading to health problems for residents and corrosion of fixtures in homes.\textsuperscript{74} In the largest withdrawal of a prescription drug in U.S. history, Vioxx was pulled from the market in 2004\textsuperscript{75} after causing as many as 140,000 heart attacks.\textsuperscript{76} In 2010, more than seven million Toyota vehicles were recalled with faulty accelerators, saving Americans from potentially life-threatening “runaway” vehicles.\textsuperscript{77} And 612,000 Ford Windstars were recalled in the U.S. and Canada for potentially corroded and cracked axles.\textsuperscript{78} This section catalogs both known and lesser known product-related injuries in an attempt to frame the taxpayer’s burden posed by them.

1. The Number of Product Liability Claims in the Courts

One place to begin the search for product-related injuries is with the courts. According to a comprehensive survey of state court claims by the Court Statistics Project, there were approximately 678,318 tort claims in 2005 in the 50 states, the District of Columbia, and Puerto

\textsuperscript{72} See infra notes 182-87 and accompanying text.
\textsuperscript{73} See infra notes 88-92 and accompanying text.
\textsuperscript{74} See supra note 52 and accompanying text.
\textsuperscript{76} Jeanne Lenzer, FDA is Incapable of Protecting U.S. Against Another Vioxx, 329 BRITISH MED. J. 1253 (2004).
Product liability cases constituted approximately 3.5 percent to 4.2 percent of these claims, or between 24,207 and 29,048 claims. 80 The total number of tort claims has decreased over the past decade—by 21 percent from 1996 to 2005, 81 and by another nine percent between 2006 and 2007. 82 It is unclear whether product liability claims have tracked this general downward trend.

According to a report by the Bureau of Justice Statistics, approximately 3.5 percent of tort cases went to trial in 2005 -- the remainder were either dismissed or settled out of court. 83 Although tort claims constituted approximately 60 percent of civil trials, product liability claims made up only about 1.3 percent of civil trials. 84 Perhaps corresponding to the general decline in tort claims, the number of product liability trials decreased by 65.8 percent from 1992 to 2005, although product liability trials increased by 42.2 percent between 2001-2005. 85 The median damages award in product liability trials was $567,000. 86

These statistics provide an idea of the relative scale of product liability claims in the courts. Unfortunately, the statistics do not provide a complete picture of injuries associated with products. Even in light of evidence, that each year there are between 24,000-29,000 claims alleging injury from defective products, those numbers represent only a fraction of injuries caused by product defects. Many such injuries result in settlement before a complaint is ever filed. With respect to others, the injured party does not even seek legal intervention, leaving the resulting damages to be paid out of pocket, or by insurance, or private or government aid.

Moreover, as discussed above, this study is not interested merely in injuries caused by defective products, but in all product-related injuries. Thus, injuries that result in legal action constitute only a fraction of the data relevant to this study.

2. Injury Data

Table 10 below presents a comprehensive summary of the annual product-related injury and fatality data available extant. The first entry, “CPSC-Regulated Products,” is the most comprehensive category in terms of the number of products represented. It lists fatalities and injuries associated with the 15,000 products regulated by the Consumer Product Safety

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80 WORK OF STATE COURTS, 2006, supra note 79, at 33.
81 Id. at 13.
82 Id. at 1.
83 Id. at 9.
84 Id. at 1–2.
85 Id. at 5.
86 Id. at 5.
Commission. The remaining categories represent injuries associated with products not regulated by the CPSC. The data presented in these categories are collected by a mix of government agencies and private organizations using a variety of investigative and statistical methods. A more detailed description of each entry and the sources used to compile the data follow the table. Finally, there is a short list of other products, not included in Table 10, for which we have not made quantitative estimates for lack of data. These include injuries and fatalities associated with public-use fixtures (fire hydrants, telephone poles, sidewalks, etc), water-borne contaminants, trains, hang gliders, tattoo needles and ink, cosmetics, and tanning booths.

**Table 10: Estimates of Annual Product-Related Fatalities, Injuries & Illnesses**

<table>
<thead>
<tr>
<th>Product</th>
<th>Fatalities</th>
<th>Injuries &amp; Illnesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPSC-Regulated Products</td>
<td>28,200</td>
<td>33,600,000</td>
</tr>
<tr>
<td>Pesticides/Fungicides/Rodenticides</td>
<td>57</td>
<td>90,029 reported exposures, 4,236 hospitalizations</td>
</tr>
<tr>
<td>Workplace Product-Related Fatalities &amp; Injuries</td>
<td>2,180</td>
<td>1,000,294</td>
</tr>
<tr>
<td>Firearms</td>
<td>30,386</td>
<td>62,086</td>
</tr>
<tr>
<td>Food*</td>
<td>5,194</td>
<td>76,000,000</td>
</tr>
<tr>
<td>Prescription and Over-the-Counter Drugs</td>
<td>106,000</td>
<td>8,110,000</td>
</tr>
<tr>
<td>Medical Devices</td>
<td>418</td>
<td>453,965</td>
</tr>
<tr>
<td>Tobacco—smoking</td>
<td>443,000</td>
<td>8,860,000</td>
</tr>
<tr>
<td>Alcohol</td>
<td>23,199</td>
<td>N.A.**</td>
</tr>
<tr>
<td>Asbestos</td>
<td>10,098</td>
<td>21,000</td>
</tr>
<tr>
<td>Airborne Products</td>
<td>97,789</td>
<td>N.A.</td>
</tr>
<tr>
<td>Boats</td>
<td>701</td>
<td>3,493</td>
</tr>
<tr>
<td>Aviation</td>
<td>606</td>
<td>866</td>
</tr>
<tr>
<td>Automobiles</td>
<td>33,808</td>
<td>2,217,000</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>781,636</strong></td>
<td><strong>130,422,969</strong></td>
</tr>
</tbody>
</table>

* Because the number of food illnesses is so high, but the number of hospitalizations is less than one-half of one percent of illnesses, a different methodology is used to calculate the cost of these illnesses. (See Appendix III.)

** N.A. denotes “Not Available”

** a. Products Regulated by the Consumer Product Safety Commission. The most reliable and comprehensive data on injuries associated with products are collected by the Consumer Product Safety Commission (CPSC), a federal agency responsible for monitoring the effects of over 15,000 products. These products are not regulated by the CPSC. NEISS CODING MANUAL, supra note 9, at 63, 133. Nor is data on related injuries collected by any other source that we can identify.

The CPSC’s jurisdiction does not, however, cover products under the jurisdiction of other agencies. Thus, injuries associated with automobiles and motorcycles, airplanes, tobacco, firearms, drugs (except in the case of accidental poisonings of children under 5), medical devices, food, cosmetics, and air or water pollution, are not included in the CPSC’s injury and fatality estimates. Nor does the CPSC data encompass local government equipment or fixtures (e.g., fire hydrants, telephone poles, sidewalks), injuries from parts of products where the source product is unknown (e.g., pieces of glass or metal), or – significantly – product-related injuries that occurred in the workplace.

Through its National Electronic Injury Surveillance System (NEISS), the CPSC collects a nationally representative sample of product-related injuries from data reported by roughly 100 hospital emergency rooms. This information is supplemented by incident reports from the CPSC’s hotline and Internet reporting system, a collection of thousands of news clips, and reports from doctors, lawyers, fire departments, and others. Annually, the NEISS reports over 360,000 product-related cases.

Although the NEISS data are the most complete collection extant, it leaves out potentially significant classes of injuries. Because it draws heavily from emergency room visits, it leaves out injuries not serious enough to warrant a trip to the emergency room, injuries for which the injured sought non-emergency-room care, and those for which the injured sought no medical care at all. It also leaves out many latent illnesses that do not result in emergency visits and yet are among the most expensive forms of harm. In addition, a health care provider’s paper work might not identify an injury as being product-related. For these reasons, the CPSC data provide a conservative estimate of the total number of injuries associated with its monitored products.

The CPSC also collects mortality data gathered from approximately 8,000 death certificates collected annually, as well as from 4,600 additional reports from medical examiners and coroners throughout the country. These data are also under-inclusive in one significant respect: the CPSC only purchases death certificates when there is strong evidence that the death was product-related. It would not be surprising to find that death certificates, like other medical records, under-report product-related injuries for a number of reasons.

According to CPSC’s estimates, there are on average 28,200 deaths and over 33.6 million injuries each year associated with the consumer products under the agency’s jurisdiction.

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90 CONSUMER PROD. SAFETY COMM’N, supra note 9. Interestingly, the coding manual does contain codes for products not regulated by the CPSC. This is because, through agreements with other agencies, the CPSC does collect information regarding many such products. The resulting figures are hidden from public searches of NEISS; however, the figures are excluded from CPSC’s estimates of fatalities and injuries. Our thanks to Thomas Schroeder, Director of Statistics, CPSC, for this very helpful explanation.

91 Id. at 3–4.

b. **Agricultural and Horticultural Chemicals.** In 1997, a study estimated the number of deaths and injuries associated with agricultural and horticultural chemicals.\(^{93}\) The underlying data spanned the six years from 1985 to 1990 and were collected from several sources: national mortality data (NMD) collected by the Centers for Disease Control (CDC), National Hospital Discharge Survey data (NHDS), also collected by the CDC, and the American Association of Poison Control Centers Toxic Exposure Surveillance System (AAPCC TESS).\(^{94}\) Although this study is somewhat dated, it is the most comprehensive study of existing poison data.

The AAPCC TESS data are collected from poison control centers across the country. Over the six studied years, poison centers received 338,170 reports of exposures to fungicides, herbicides, pesticides/insecticides, and rodenticides.\(^{95}\) During this time, the number of poison center encounters increased, expanding coverage of the U.S. population from 47.6 to 76.8 percent.\(^{96}\) Extrapolating the exposure count to include the entire U.S. population, the total number of exposures is estimated to be 540,171, or 90,029 per year.\(^{97}\) Although many of these exposures doubtless manifested in some form of physical injury, the AAPCC TESS data do not include injuries. Furthermore, because many exposures do not result in calls to poison control centers, these data are likely under-inclusive.

Another source for fatality and injury data is the CDC. According to the CDC’s National Mortality Data, there were 57 fatalities per year associated with agricultural and horticultural chemicals from 1985-1990.\(^{98}\) Sixty-four percent of these deaths were suicides, 28 percent were unintentional, and 8 percent were undetermined. The NHDS data indicate that there were also 4,236 exposure-related hospitalizations annually, 78 percent of which were reported as unintentional.\(^{99}\) Unfortunately, the NHDS data are imprecise because they are derived from a representative sample of United States hospitals and are extrapolated from a sample of only 138 cases over the 6-year period.\(^{100}\) Furthermore, because these data only reflect injuries that resulted in hospitalization, they do not capture injuries for which the injured person received outpatient care or did not seek care at all.

It should be noted that the injuries cited in this study only include those injuries from specific and acute exposures. They do not include any potential effect that more generalized exposure to such chemicals (through residue on food, for example) might have on the population, and these


\(^{94}\) Id. at 233.

\(^{95}\) Id. at 235.

\(^{96}\) Id.

\(^{97}\) Id.

\(^{98}\) Id. at 234. Finally, it is possible that there is some overlap between these data and the workplace fatality and injury data described in the following section. The workplace injury data, reported by employers, include fatalities and injuries that are the result of “exposure to harmful substances or environments” and “chemicals.” It is entirely possible that an employee, exposed to an agricultural or horticultural chemical while at work, might report the exposure to his or her employer, call a poison control center, and then go to a hospital. In such case, the exposure might be counted more than once. Unfortunately, controlling for this eventuality is not possible using only the public data. Also, there is a high likelihood of underreporting of exposure illnesses due to these chemical products.

\(^{99}\) Id.

\(^{100}\) Id.
exposures probably account for larger numbers than specific and acute exposures. Current literature is inconclusive as to whether such exposure leads to significant adverse health events.  

**c. Workplace Product-Related Fatalities and Injuries.** The U.S. Bureau of Labor Statistics, (BLS) in the Department of Labor, keeps data on workplace fatalities and injuries. These data come from the BLS annual Survey of Occupational Injuries and Illnesses (SOII), a collection of data drawn from Occupational Safety and Health Administration (OSHA) logs of workplace injuries and illnesses maintained by employers. The data are nationalized using statistical sampling techniques. According to BLS, there was a mean of 5,070 annual fatalities from 2007-2009. The BLS categorizes workplace fatalities in the following groups: (1) exposure to harmful substances or environments; (2) falls; (3) assaults and violent acts; (4) contact with objects and equipment; (5) transportation incidents; and (6) fires and explosions. These categories are not well suited to sorting product-related from non-product related deaths. That said, most injuries in categories 1, 2, 4, and 6 seem likely to have involved products in some way. Limiting annual fatalities to these categories, annual product-related workplace fatalities constitute 43 percent of the total, or 2,180 fatalities.

From 2006-2008, the BLS reported a mean of 1,140,170 workplace injuries among private industry. In 2008, the BLS began to report parallel data regarding state and local government employees, which in 2008 encompassed 277,680 injuries. Accounting for the percentage of these injuries due to product-related incidents, this article uses a figure of 1,000,294 injuries.


105 *Id.* at 4.

106 Category 5 (transportation incidents) is excluded because vehicular accidents are already captured in the NHTSA data described in subsection n infra.

107 *Number of Fatal Work Injuries*, supra note 104, at 4.


109 The BLS categorized the causes of these injuries in two ways. The first mirrors the categories used in reporting fatalities, a categorization which the BLS labels “event or exposure leading to injury or illness.” See Press Release, Bureau of Labor Stats., U.S. Dep’t of Labor, Nonfatal Occupational Injuries and Illnesses Requiring Days Away from Work, 2008 at 15 (Nov. 24, 2009) [hereinafter 2008 Data], available at http://stats.bls.gov/iif/osshwc/osha/case/osrn0033.pdf. According to this breakdown, and selecting the same categories as above, product-related injuries constituted 80.9 percent of the total, or 1,147,041 injuries. *Id.* But the BLS also categorizes work-related injuries by the “source of injury or illness,” a method which includes the following groups:
These figures are almost certainly under-inclusive because they represent only injuries for which employees missed work. In 2007, for example, the median number of days away from work among BLS-listed injuries was seven days, and twenty-six percent of all injuries resulted in 31 or more missed days. This indicates that the injuries represented in the data were of at least moderate severity. Although some of these injuries might be the result of malingering, there are doubtless many more injuries that produce some cost to the victim, employer, and taxpayer, but which do not result in days away from work.

The data are also under-inclusive to the extent that they exclude “the self-employed; farms with fewer than 11 employees; private households; Federal government agencies; and (through 2007) national estimates for employees in State and local government agencies.” Although there are certainly many injuries from industrial or farm machinery to such employees, these data are captured neither by the BLS nor by the CPSC, which expressly does not regulate “Industrial/Commercial/Farm” equipment.

Finally, there has been some criticism of the BLS data, citing missing cases judging from a comparison of BLS to state workers compensation agency data. Nevertheless, the BLS data are widely recognized as the most comprehensive and accurate data extant.

d. Firearms. WISQARS is a searchable database, run by the Centers for Disease Control, which presents data on annual fatalities and certain types of injuries. The fatalities division of WISQARS derives its data from death certificates reported via the National Vital Statistics System. According to this database, there was a mean of 30,386 annual fatalities associated with firearms during the years 2004-06.

The most current and comprehensive data for nonfatal injuries associated with firearms may be found on the website for the Inter-University Consortium for Political and Social Research
(ICPSR). The study, entitled the “Firearm Injury Surveillance Study,” is a result of the concerted efforts of United States Department of Health and Human Services, the Centers for Disease Control and Prevention, and the National Center for Injury Prevention and Control. The vehicle used to collect the data is a special form of the NEISS, which draws from a larger sample of hospitals and reports injuries associated with products not regulated by the CSPC and therefore not reported to NEISS -- including firearms. The study’s sample is then weighted to represent a national total. According to the ICPSR study, there was an average of 62,086 annual injuries caused by firearms from 2005-2007.

e. Food. A frequently cited study of food-related illness and fatality was conducted by CDC researchers in 1999. The study drew data from a number of sources, adjusted the numbers to account for postulated under-reporting, and weighted the totals to reflect a national sample. The study estimated that each year in the United States food borne diseases cause approximately 76 million illnesses, of which 323,914 require hospitalization and 5,194 result in death. The study does have limitations. As the authors point out, although it is a fact that the underlying databases under-report food-related illness, hospitalization, and death, the rate of under-reporting remains unknown—thus, the study’s multipliers, used as a means to compensate for under-reporting, are educated guesses. This is also true of the author’s estimations of the “frequency of food borne transmission for individual pathogens” and of the “frequency of acute gastroenteritis in the general population,” from which estimates of illness caused by unknown pathogens were inferred.

A 2010 study, from Georgetown University, studying the millions who get sick, hundreds of thousands who are hospitalized, and thousands who die, estimated that food-borne illness cost the economy $152 billion in medical bills and other economic losses. We mention this cost


118 Id.

119 Although the CSPC’s coding manual includes coding numbers for firearm injuries, the instructions explicitly include firearms as a “do not report” category. See NEISS CODING MANUAL, supra note 9, at 3.

120 As a corollary, injuries from BB guns and the like are included in the CPSC figures and are excluded from the ICPSR figures.


122 The sources of data include the Foodborne Diseases Active Surveillance Network (FoodNet), the National Notifiable Disease Surveillance System, the Public Health Laboratory Information System, the Gulf Coast States Vibrio Surveillance System, the Foodborne Disease Outbreak Surveillance System, the National Ambulatory Medical Care Survey, the National Hospital Ambulatory Medical Care Survey, the National Hospital Discharge Survey, the National Vital Statistics System, and a number of other published studies. FoodNet is a collaborative effort by the Centers for Disease Control and Prevention, the U.S. Department of Agriculture, the U.S. Food and Drug Administration, and several state health departments. Id. at 607–08.

123 Id. at 609–10.

124 Id. at 614.

125 Id. at 615–16.

126 Id. at 616.

study, at this point in the paper, because it is a much more conservative estimate than what would be extrapolated from the CDC study, and so will be used later in calculations. (See Methodology in Appendix III.)

**f. Prescription and Over-the-Counter Drugs.** One comprehensive and reliable study of Adverse Drug Reactions (ADRs) was a meta-analysis published in 1998 (the “Lazarou study”). This study relied on data from four online databases and 39 other studies to correlate and then nationalize information from 1966-96 on two populations: (1) patients admitted to hospitals due to an ADR and (2) patients who experienced an ADR while in a hospital. The focus of this study was on medical drugs (both prescription and over-the-counter) and excluded injuries caused by intentional and accidental overdose (or underdose), drug abuse, and Adverse Drug Events (ADEs) -- a term of art referring to errors in drug administration by health care providers. The study found that 2,110,000 people suffered nonfatal, but “serious,” ADRs in the United States in 1994. Nonfatal but serious ADRs are those that require or prolong hospitalization or are permanently disabling. The study also estimated that ADRs resulted in 106,000 deaths in 1994, a number which placed medical drugs between the fourth and sixth leading cause of death that year. These numbers had remained stable over the 30 years covered by the study.

The accuracy of the Lazarou study, as applied to 2010, might be limited in several respects. First, its data set is relatively old. The dramatic increase in Americans’ reliance on drug therapy over the past decade might mean that Lazarou’s numbers underestimate present ADRs. Indeed, reporting from the Food and Drug Administration’s Adverse Event Reporting System (AERS) lends some credence to this proposition. According to AERS, adverse drug reactions and events have steadily increased over the past decade. (Unfortunately, AERS is not a reliable source for comprehensive data on drug injuries and fatalities. It relies on voluntary self-reporting of ADRs by health care professionals and consumers, and it does not systematically weed out overlapping reports.)

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129 Id. at 1200.
130 Id.
131 Id. at 1202.
132 Id. at 1201. The study actually defines “serious” to include fatalities, but also lists fatalities separately. Because this article separates the categories, we have subtracted the fatalities from the Lazarou study’s “serious” ADRs in reporting the numbers here.
133 Id. at 1202.
134 Id. at 1203.
A second limitation to the Lazarou study is that it only reports ADRs affecting patients already hospitalized for a different condition. Many of those who suffer ADRs do so outside the narrow context of Lazarou study. Lazarou’s results do not include, for example, serious ADRs that themselves require hospitalization, or those require only outpatient treatment or are not serious enough to warrant care by a medical professional at all. Although such injuries are not captured by Lazarou’s data, they no doubt result in costs to the taxpayer. Third, as noted above, the Lazarou study excludes injuries caused by overdose, drug abuse, and adverse events due to errors in drug administration or noncompliance. In light of the broad definition of “dangerous product” utilized by this article, injuries due to such causes ought to be included despite the fact that they involve human error.

Due to this last limitation, Lazarou’s estimates must be supplemented by ADE-specific data. The Institute of Medicine recently conducted a meta-analysis of “preventable ADEs” and estimated that at least 1.5 million injuries result annually from medication errors. Unfortunately, the IOM estimate does not distinguish between fatalities and other injuries. Although the IOM’s study is fairly comprehensive, the 1.5 million figure is limited to injuries occurring in hospitals, long-term care facilities, and outpatient Medicare patients. This excludes large tracts of potential victims, of which non-Medicare outpatients is the largest group. The figure is also limited in that it constitutes only “preventable” ADEs. The study concludes that approximately one in four ADEs is preventable—this would mean that the total number of ADEs is closer to 6 million. Furthermore, the study itself states that 1.5 million is itself likely an underestimate of preventable ADEs, and the study identifies what it characterizes as “enormous gaps in the knowledge base with regard to medication errors.” One such limitation is the fact that most ADRs and ADEs (some have postulated up to 90 percent) go unreported or undetected—there is much about the causal connection between drugs and health outcomes that is either unknown to science or is difficult to ascertain in any individual case. Thus, although the numbers of deaths and injuries cited in this section are large, they likely underestimate adverse drug outcomes.

Totaling the 2,110,000 ADRs from the Lazarou study and the 6,000,000 ADEs extrapolated from the IOM meta-analysis, this study estimates a total of 8,110,000 drug-related injuries.

Medical Devices. A 2004 article, analyzing NEISS data from July 1999 to June 2000, estimated that medical devices are associated with 453,965 injuries serious enough to warrant treatment by a hospital emergency room. Thirteen percent of all injuries (or 59,015 injuries)
required hospitalization.\textsuperscript{144} Medical devices were also associated with 418 deaths during the twelve months studied.\textsuperscript{145}

As with any study utilizing NEISS data, the medical devices study is limited by the accuracy of the reporting hospitals and by the fact that the data only reflect injuries that were treated in the emergency room, rather than pursuant to regular doctor visits. Nor do the data include injuries for which professional treatment was not sought at all.

h. \textit{Tobacco.} According to the CDC, smoking and exposure to second-hand tobacco smoke kill approximately 443,000 people in the United States annually.\textsuperscript{146} Twenty times this number, or 8,860,000 people, suffers from serious smoking-related illness.\textsuperscript{147} The CDC’s figures are based on data from its Smoking-Attributable Mortality, Morbidity, and Economic Costs (SAMMEC) system, which in turn draws on data from the National Health Interview Survey and death certificate data from the National Center for Health Statistics.\textsuperscript{148} The death and illness figures represent averages of data collected from 2000-2004, which are apparently the most recent years for which source data are available.\textsuperscript{149} Smoking rates among adults have stayed fairly stable since 2004;\textsuperscript{150} thus, the mortality and illness numbers likely remain roughly accurate.

In addition, more than 7.7 million Americans used smokeless tobacco.\textsuperscript{151} Although smokeless tobacco use is associated with an increase in mortality rates related to a number of diseases,\textsuperscript{152} comprehensive statistics are unavailable with regard to precisely how many people become ill or die each year as a result of smokeless tobacco use. Some statistics are available, however. For example, studies have reported that smokeless tobacco users are four times more likely than non-users to fall victim to oral cancer.\textsuperscript{153} Approximately 30,000 people suffer from oral cancer each year, and only half of them survive after five years.\textsuperscript{154} In addition, smokeless tobacco contributes to hypertension, heart disease, and ulcers.\textsuperscript{155} How many people become ill as a result of smokeless tobacco use, however, remains unknown. Thus the cost from smokeless tobacco use will remain, until further study, a significant underestimation.

\begin{flushright}
\textsuperscript{144} Id. at 246. This percentage is taken from total injuries, including those that resulted in death.
\textsuperscript{145} Id. at 251.
\textsuperscript{147} Id.
\textsuperscript{148} \textit{Id.}
\textsuperscript{149} \textit{Id.}
\textsuperscript{151} S. Jane Henley et al., \textit{Two Large Prospective Studies of Mortality Among Men who use Snuff or Chewing Tobacco (United States)}, 16 CANCER CAUSES AND CONTROL 347, 347 (2005).
\textsuperscript{152} \textit{Id.} at 347, 355.
\textsuperscript{154} \textit{Id.}
\textsuperscript{155} \textit{Id.}
\end{flushright}
i. Alcohol. According to the CDC’s National Vital Statistics Reports (NVSR), a mean of 22,302 people died annually from alcohol-related illness during the years 2005-2007.\(^{156}\) The number has been steadily increasing over the past decade, with an increase from 21,634 in 2005 to 23,199 in 2007.\(^{157}\) Thus, the number might be greater in 2010. These totals do not include the many behavior-related deaths to which alcohol was a contributing factor.\(^{158}\) The NVSR data are drawn from state death certificates from 50 states and the District of Columbia.\(^{159}\) The CDC estimates that the NVSR captures approximately 99 percent of all deaths nationwide.\(^{160}\)

The number and seriousness of alcohol-related nonfatal illnesses is unknown. Statistics do tell us that over 14 million Americans suffer from alcohol abuse or alcoholism. Nearly one-fourth of all people admitted to a hospital have alcohol problems or are undiagnosed alcoholics being treated for a drinking-related injury or illness.\(^{161}\) And over 50,000 cases of alcohol poisoning are reported each year.\(^{162}\) It is also known that 4,000-12,000 babies are born annually with fetal alcohol syndrome,\(^{163}\) a condition that is associated with significant physical and mental disabilities. Finally, it has been estimated that the health care costs incurred by untreated alcoholics are 100 percent higher than those of nonalcoholics.\(^{164}\) But in the end, these statistics do not give us a firm number of nonfatal illnesses associated with alcohol, and so are not included in the burden calculations of this report. (Because we lack a database on medically-treated alcohol-related illnesses, we have not included these illnesses in our calculations – causing a clear underestimate of our burden numbers.)

j. Asbestos. Asbestos injures and kills those who inhale it by means of four primary diseases--mesothelioma, lung cancer, asbestosis (a form of pneumoconiosis), and several gastrointestinal cancers. Pleural disease (disease of the lining of the lung) is also common, although less commonly deadly. According to a study conducted by the Environmental Working Group (EWG), a private advocacy group, asbestos killed 9,907 people in 2001 and will kill approximately 10,000 annually for at least another decade.\(^{165}\) The data, on which the EWG study was based, come from the National Institute for Occupational Safety and Health (NIOSH), the National Center for Health Statistics (NCHS), and the Occupational Safety and Health Administration (OSHA).\(^{166}\) Some scientists believe that this is likely an underestimate, however,


\(^{157}\) Id.

\(^{158}\) Id. at 11. In addition to a large percentage of accident-based deaths and injuries connected to alcohol, the U.S. Department of Justice reports that alcohol is related to 183,000 rapes and assaults, 197,000 robberies, 661,000 aggravated assaults, and 1.7 million simple assaults annually. NCADD Fact Sheet: Alcoholism and Alcohol-Related Problems, NAT’L COUNCIL ON ALCOHOLISM AND DRUG DEPENDENCE [hereinafter NCADD Fact Sheet], available at http://www.ncadd.org/facts/problems.html (citing U.S. DEP’T OF JUSTICE, ALCOHOL AND CRIME: AN ANALYSIS OF NATIONAL DATA ON THE PREVALENCE OF ALCOHOL INVOLVEMENT IN CRIME, (1998)).

\(^{159}\) Ctrs. For Disease Prevention and Control, NVSR Report, supra note 156, at 2.

\(^{160}\) Id.

\(^{161}\) NCADD Fact Sheet, supra note 158.


\(^{163}\) Id.

\(^{164}\) Id.


\(^{166}\) Id. at nn. 1–4.
because mesothelioma and asbestosis often go undetected or are misdiagnosed—thus, the asbestos-related death certificate data reported to NIOSH are likely under-reported.\textsuperscript{167}

The NIOSH data on which the EWG study was based have since been updated. According to the most recent data, in 2002-2004 there were an average of 2,618 employee deaths from mesothelioma and 1,471 deaths from asbestosis. This represents an increase of approximately 200 fatalities since 2001.\textsuperscript{168} NIOSH acknowledges that the NCHS database likely under-reports asbestos-related deaths.\textsuperscript{169} Nevertheless, even assuming these numbers to be accurate and assuming no increase in asbestos-related lung cancer and gastro-intestinal cancer deaths, this would bring 2004 fatalities above 10,000 (10,098), as predicted by the EWG.

In 2004, there were over 21,000 hospital discharges of asbestos-diagnosed patients.\textsuperscript{170} Because these statistics reflect hospitalized patients only, and because they exclude federal hospitals, which are likely to treat a lot of veterans with asbestos disease—especially those from the Navy, these are clear underestimates.

\textbf{k. Airborne Product-Related Illness.} A number of products and by-products are inhalable and have known negative health effects. The products about which the most information is available are formaldehyde, acetaldehyde, butadiene, benzene, silica, and diacetyl. According to estimates calculated by Mark Jacobson, Stanford engineering professor, exposure to the listed chemicals results in 789 deaths annually.\textsuperscript{171} A 2002 study also projected that prolonged inhalation of particulate matter results in roughly 97,000 deaths each year.\textsuperscript{172} Of course, these mortality estimates are just that—they are merely educated guesses based on average exposure levels and purely experimental incidence data. On the other hand, the figures are likely under-inclusive in that they do not capture all of the various airborne pollutants for which science has only inconclusive information or no information at all.

For similar reasons, figures for injuries caused by airborne projects also remain elusive. The best information available is collected by NIOSH, which reports that there was an average of 15,233

\textsuperscript{167} \textit{Id.} One limitation of the EWG study, for purposes of this article, is that the study likely includes asbestos-related deaths suffered by asbestos miners. According to the definition of “product” adopted by this article (and the law of product liability), injuries suffered by employees who inhaled asbestos while mining the natural resource should be excluded—at the time of mining, the asbestos was not yet a product. According to NIOSH data, however, the vast majority of employees injured by asbestos are not miners, but manufacturers, installers, and employees who work in buildings in which asbestos had been installed. Thus, despite this potential over-inclusion, the EWG numbers appear to be sufficiently accurate for purposes of this study. \textit{See, e.g., DIVISION OF RESPIRATORY DISEASE STUDIES, DEP’T OF HEALTH AND HUMAN SERVS., WORK-RELATED LUNG DISEASE SURVEILLANCE REPORT 2007 at 178–79 (2008), available at http://www2.cdc.gov/drds/WorldReportData/pdf/2008-143/pdfs/2008-143a-i.pdf [hereinafter Work-Related Lung Disease Report].}

\textsuperscript{168} There were 2,509 deaths from mesothelioma in 2001 and 1398 from asbestosis. \textit{THE ENVTL. WORKING GROUP, supra} note 165, at 1.

\textsuperscript{169} \textit{Id.} at xxviii.


annual cases of worker respiratory conditions caused by toxic agents reported by private sector employers over the course of 1999-2001.\textsuperscript{173} Of these, an average of 2,221 resulted in days away from work.\textsuperscript{174} These figures (already included among the workplace injuries cited in Section IV.B.4, above) provide some idea that airborne substances do, in fact, cause nonfatal injuries. The difficulty in tracing the causal path, however, makes numbers of non-worker illness very difficult to capture.

1. \textit{Boats.} The United States Coast Guard keeps statistics on annual recreational boating deaths and injuries.\textsuperscript{175} Data used to compile these statistics come from four sources: (1) boating accident report data forwarded to the Coast Guard by states with casualty reporting systems; (2) reports of Coast Guard investigations of fatal boating accidents; (3) accident reports filed by boat operators; and (4) reports received from news media sources.\textsuperscript{176} These data are under-inclusive to the extent that federal regulations do not require the reporting of injuries treatable by first aid.\textsuperscript{177} In addition, because the data rely largely on self-reporting by boat-owners or injured parties, rather than by hospitals or law enforcement, the data likely do not capture all deaths and injuries.

From 2006-2008, a mean of 701 people died and 3,493 were injured in boating accidents,\textsuperscript{178} although those numbers have been as high as 821 and 4,612 since 1996.\textsuperscript{179} Most accidents involved user error in some way, but as an example, 24 deaths and 117 injuries in 2008 were formally attributed to machinery failure.\textsuperscript{180}

\textit{m. Aviation.} The National Transportation Safety Board keeps annual data on the number of fatalities and injuries associated with aviation. Its data are divided into three groups: injuries associated with regular, multi-passenger flights (Part 121 flights); smaller commercial flights, both scheduled and on-demand (Part 135 flights); and noncommercial flights (general aviation).\textsuperscript{181} From 2005-2009, Part 121 flights resulted in a five-year mean of 26 fatalities;\textsuperscript{182} Part 135, 33 fatalities,\textsuperscript{183} and general aviation, 547 fatalities,\textsuperscript{184} for a total of 606 annual fatalities.\textsuperscript{185}

\begin{itemize}
\item Work-Related Lung Disease Report, \textit{supra} note 167, at 267.
\item \textit{Id.} at 291-92.
\item \textit{Id.} at 8.
\item Federal reporting regulations do not require reporting of injuries that only require first aid. \textit{See id.} at 9.
\item \textit{Id.} at 50.
\item \textit{Id.}
\item \textit{Id.} at 7.
\end{itemize}
Injuries are recorded according to whether they were “serious” or “minor.” During 2003, 2004, and 2005, there were a mean of 22 serious and 47 minor injuries on Part 121 flights, 16 serious and 24 minor on Part 135 flights, and 287 serious and 470 minor on general aviation flights—for a total of 325 serious and 541 minor annual injuries, for a total of 866 injuries.

n. Automobiles & Motorcycles. Information regarding fatalities and injuries resulting from car accidents is collected by the National Highway Traffic Safety Administration’s National Center for Statistics and Analysis (NCSA). The data cited in the present study were collected by means of the NHTSA’s Fatality Analysis Reporting System (FARS) and the National Automotive Sampling System General Estimates System (GES). FARS contains data on all fatal traffic accidents in the 50 States, the District of Columbia, and Puerto Rico. The NHTSA contracts with state employees who extract information from the following sources: police accident reports, vehicle registration files, driver licensing files, State Highway Department data, vital statistics, death certificates, coroner and medical examiner reports, hospital medical records, and emergency medical service reports. Information in the GES database comes from a nationally representative sample of states and is generated from police accident reports.

In 2009, 33,808 people died in motor vehicle traffic accidents, including vehicle occupants (of cars, light trucks and large trucks), motorcycle riders, pedestrians, and pedal cyclists. This figure represents a 9.7 percent decline from the 37,423 deaths reported in 2008 and the lowest number of deaths since 1950 (which had 33,186). The number of fatalities increased through the nineties and early two thousands, peaking with 43,443 in 2005. Fatalities have since decreased with each year.

The number of injuries from traffic accidents has steadily decreased from a high of 3,332,000 in 1996. In 2009, an estimated 2.217 million people were injured, a decline from 2.346 million in 2008.

187 Although this article generally utilizes a three-year mean, whenever possible, because aviation fatalities vary widely from year to year, a longer mean is more representative.
188 An injury is defined as serious if it: “(1) requires hospitalization for more than 48 hours; (2) results in a fracture of any bone; (3) causes severe hemorrhages, nerve, muscle, or tendon damage; (4) involves any internal organ; or (5) involves second- or third-degree burns, or any burns affecting more than 5% of the body surface.” NAT’L TRANSP. SAFETY BOARD, U.S. AIR CARRIER CALENDAR YEAR 2003 at 55 (2006), available at http://libraryonline.erau.edu/online-full-text/ntsb/aircraft-accident-data/ARC07-01.pdf.
189 These figures were drawn from the National Transportation Safety Board’s Annual Review of Aircraft Accident Data for both commercial and general aviation. NTSB Annual Review of Aircraft Accident Data, EMBRY-RIDDLE AERONAUTICAL UNIV., available at http://library.erau.edu/worldwide/find/online-full-text/ntsb/aircraft-accident-data.htm (follow hyperlinks to data for years 2003, 2004 and 2005) (last visited Jan. 27, 2011).
192 TRENDS IN TRAFFIC INJURIES, supra note 188, at 9–10.
193 Id. at 16.
194 HIGHLIGHTS OF VEHICLE ACCIDENTS, supra note 189, at 1. The NHTSA codes injury data according to severity in the following categories: “killed,” “disabling injury,” “evident injury,” “possible injury,” and “no apparent
3. The Chronic Problem of Underreporting

As detailed throughout this section, the estimated numbers of fatalities, injuries, and illnesses associated with product-related harm are likely to be low. They may be significantly low. There are many studies about the chronic problems of underreporting. There is documented underreporting of incidents by health providers, the injured, employers, and government agencies. Survey instruments are limited in scope, and there are problems with the recording of cause of death certificates, medical examiner reports, hospital discharge records, national surveys, and workers compensation. There are chronic problems with misclassification of the cause of an incident. Even with regard to work-based fatalities, for which one would think there would be good records, one former head of OSHA, has said that approximately 40 percent of occupational fatalities go unreported. Although many regulatory impact analyses make corrections for assumed underreporting, in order to err on the side of being conservative, this study makes no such corrections.

B. Average Per-Incident Cost of Product-Related Fatalities, Injuries, and Illnesses

Having estimated the annual number of fatalities, injuries and illnesses, we now turn to the element of cost. Specifically, this section works toward an average per-incident cost for product-related fatalities, injuries, and illnesses. The peer-reviewed literature and government agency documents present a range of methods for estimating average costs. The section reviews this literature and selects from among the more conservative existing estimates. The per incident averages are then used in Part C as building blocks in the process of establishing the “slice” of the full cost that becomes the taxpayer’s burden.

1. Cost of a Fatality

While distasteful, it is often necessary to assess the statistical value of a human life. Although the value of one’s life is impossible to measure ex ante (how much money would you take to give up, or give to keep, your life?), the value of life is typically measured by the economic consequences of a lost life to those still living. Economists use several different methods for estimating this cost, and estimates have a wide range. This study adopts an average of $5 million

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193 For one literature review, see RUTH RUTTENBERG & A. LAMBA, REVIEW OF THE LITERATURE ON UNDERREPORTING/ISSUES IN OCCUPATIONAL INJURY AND INJURY AND ILLNESS RECORDKEEPING, FOR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (1999) (on file with the author).

per fatality as a relatively conservative estimate and the one used by the Consumer Product Safety Commission. 195

The CPSC estimate appears to be a conservative one among existing measures. A review of the literature done at the Wake Forest University Law School196 cited the 2004 work of Joseph Aldy and W. Kip Viscusi,197 who estimated the value of statistical life at more than $5 million to $6 million ($5.68 million to $6.81 million in 2009 dollars) for a person 30 to 40 years old. Another Viscusi study,198 using 1997 data, found the value for blue collar workers at $4.7 million to $8.5 million ($6.28 million to $11.36 million in 2009 dollars), depending on gender and occupation. A 1999 study by Ludwig and Cook199 found the statistical value of life to be $4.05 million to $6.25 million, or $5.22 million to $8.05 million in 2009 dollars. The Office of Management and Budget, in its 2010 Report to Congress on the Benefits and Costs of Federal Regulations, actually recommends $6.3 million (in 2008 dollars).

Using the $5 million value adopted by the CPSC, and its estimated 28,200 fatalities from products for which CPSC collects data, the cost of loss of life from product-related injuries would be $141 billion.

2. Cost of an Injury

This paper focuses on three separate cost estimates (after review of many), to provide a low, medium, and high estimate for the average cost of an injury. The low estimate comes from the CPSC 2000 Injury Cost Model, which is derived from data from the National Electronic Injury Surveillance System. The middle range estimate is drawn from the work of University of California-Davis health economist J. Paul Leigh. The high estimate (which is by no means the highest in the literature) comes from the work of OSHA’s Safety Pays system, which provides a calculator for employers that estimates the full cost of injuries.

Models of the costs of injury vary not only in the total cost estimate, but also in the types of costs included. This study adopts one of the most conservative cost estimate models, the one created by the CPSC. The CPSC 2000 Injury Cost Model includes four major parts: medical costs, lost wages, lost quality of life and the cost of pain and suffering (drawn from jury awards and settlements), and the costs of product liability insurance administration and litigation.200

Another metric by which injury cost models differ is the schema used to characterize the severity of injury. The CPSC model estimates that the “lifetime medical costs per survivor of consumer-

200 See Miller et. al., supra note 15, at 7.
project injury” are, in 2009 dollars: $41,646 dollars for a hospital-admitted injury, $1,161 for an injury requiring emergency department treatment, and $893 for an injury treated by an outpatient doctor or clinic.\(^{201}\) CPSC data also estimate the number of injuries in each of these three categories, as summarized in Table 11:

### Table 11: Estimated Costs Associated with Medically-Treated Consumer Product Injuries

<table>
<thead>
<tr>
<th>Category</th>
<th>Percent of Total Number of Injuries</th>
<th>Cost per Individual</th>
<th>Percent That Category is of Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital Admission</td>
<td>1.9</td>
<td>$29,584 ($41,646)</td>
<td>45.1%</td>
</tr>
<tr>
<td>Emergency Room Treatment</td>
<td>38.1</td>
<td>$825 ($1,161)</td>
<td>24.8%</td>
</tr>
<tr>
<td>Doctor’s Office or Clinic Treatment</td>
<td>59.9</td>
<td>$634 ($893)</td>
<td>30.0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>99.9</td>
<td>--</td>
<td>99.9%</td>
</tr>
</tbody>
</table>

Source: NEISS data appearing in CPSC’s Injury Cost Model.

These CPSC numbers are conservative because the overall Consumer Price Index (CPI) is used to bring the costs to 2009 value, rather than the health care CPI. As reflected in both CPIs, inflation is much higher in the health care sector than in the economy generally.\(^{202}\) (See Methodology in Appendix III for more explanation of this point.)

The weighted average for cost per injury in 2009 dollars, based on Table 11, is $1,782. This cost per incident is used as a lower estimate for calculations in Method 2. It is useful to compare the CPSC averages to other estimates as evidence that the CPSC numbers are conservative. Leigh et. al. estimated the costs associated with occupational injury and illness, not specific to product-related incidents.\(^{203}\) Assessing medical costs and insurance administration expenses as well as lost earnings, lost home production, and lost fringe benefits, they found that in 2009 dollars the average cost of an injury was $17,788 and the average cost of an illness was $43,005, for an average cost per incident of $18,506.\(^{204}\) These cost estimates are, in themselves, conservative because they do not include pain and suffering. A third estimate is supplied by the Occupational Safety and Health Administration (OSHA), which maintains a calculator on the full cost of

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\(^{201}\) Id. at 3–5.

\(^{202}\) The Consumer Price Index inflation calculator of the Bureau of Labor Statistics was used to convert dollar values of other years to 2009. This is an index for all items. Had we used the index for medical care for some portions of the cost estimation, the taxpayer burden would have been much higher. From 2000 to 2009, the U.S. city all items CPI (1982-84=100) rose from 172.2 to 214.5, or 42.3 percent. The medical care CPI, on the other hand, rose 114.8 percent in that same time period, from 260.8 to 375.6 -- 2.7 times more from 2000-2009 than the regular CPI (measuring inflation for all consumer goods and services).


\(^{204}\) In the original 2002 dollars, these numbers were $10,979, $28,184, and $12,102, respectively.
accidents, for use by employers.\footnote{See OSHA’s Safety Pays Program, OCCUPATIONAL SAFETY & HEALTH ADMIN., available at http://www.osha.gov/dcp/smallbusiness/safetypays/background.html (last updated Apr. 6, 2010).} Although also not specific to product-related injuries only, the OSHA estimates suggest that the Injury Cost Model of the CPSC is extremely conservative. The OSHA Safety Pays model calculates direct plus indirect injury-related costs\footnote{OSHA’s injury and illness cost estimates were derived from National Council on Compensation Insurance, Inc data. The information is based on unit statistical reports submitted for policy year 2004. NCCI has supplied its current copyrighted data about average cost per workers’ compensation insurance claim by nature of injury in NCCI states to OSHA for their use in conjunction with their Website tool, "Safety Pays". The indirect cost estimates are taken from the Business Roundtable publication, Improving Construction Safety Performance, and are based on a study conducted by the Stanford University Department of Civil Engineering. Indirect costs include: wages paid to injured workers for absences not covered by workers’ compensation; wage costs related to time lost though work stoppage; administrative time spent by supervisors following accidents; employee training and replacement costs; lost productivity related to new employee learning curves and accommodation of injured employees; and replacement costs of damaged material, machinery and property. This paper did calculations based on a low 3 percent profit margin for a business. OSHA’s injury and illness loss cost estimates were derived from National Council on Compensation Insurance, Inc (NCCI) data. The loss injury data information is based on unit statistical reports submitted for policy year 2004. NCCI has supplied their current copyrighted data about average cost per workers’ compensation insurance claim by nature of injury in NCCI states to OSHA for their use in conjunction with their Website tool, "Safety Pays". The indirect cost estimates are taken from the Business Roundtable publication, Improving Construction Safety Performance, and are based on a study conducted by the Stanford University Department of Civil Engineering. Indirect costs include: wages paid to injured workers for absences not covered by workers’ compensation; wage costs related to time lost though work stoppage; administrative time spent by supervisors following accidents; employee training and replacement costs; lost productivity related to new employee learning curves and accommodation of injured employees; and replacement costs of damaged material, machinery and property. See OSHA’s Safety Pays Program, supra note 205.} of between $30,000 and $110,000 per incident, depending on the type of injury. OSHA goes on to calculate the level of sales replacement that a business would need to recoup the cost of the injury or illness. The lowest OSHA estimate, $30,000, is used as an upper limit in the per-incident cost estimates for this paper.\footnote{It is worth noting that from an employer’s standpoint, the full costs of workplace accidents include another dimension -- the additional sales required to cover the cost of an event. According to the Professional Employer Organization, a $495 medical bill for a cut to the hand, paid for by workers compensation, in a company with a profit margin of 12 percent, would have total direct and indirect costs of $2,722 and total gross sales required to cover the injury of $22,683 – about 45 times the direct medical cost of the incident. Some of the uninsured costs include legal fees, emergency response cost (if not billed to the victim), time and material to repair damaged equipment and property, lost production, reduced employee morale, reduced company competitiveness, time spent by managers in accident investigation, and administrative work associated with the incident. Robert Breakiron, The Real Cost of Accidents, PROF’L EMP’R ORG. (Jul. 2008), available at http://www.nationalpeo.com/real_cost_of_accidents_article.php.}

3. Cost of an Illness

The average cost of illness is usually larger than that of injuries, as most require longer recovery time. Nonetheless, for the purposes of this paper, to err on the conservative side, the estimated cost of injuries is used as a “proxy” for illnesses as well, with one exception. For the category of non-hospitalized food-related illness, described in Part IV.A.2 above, we employ a lower per-incident cost measure—that of $400 per incident. A departure from the CPSC cost average seems justified here because a vast majority of the 76 million annual non-hospitalized food-related illnesses are likely short-term illnesses requiring little or no medical attention and few
correlative costs other than a day or two of lost wages.\textsuperscript{208} Despite this study’s use of injury costs as a proxy for illness costs, the following paragraphs illustrate why this decision represents an extremely conservative approach. As referenced above, Leigh, in his calculations, found the average cost of illnesses 2.5 times higher than the average cost of injuries.

The cost of illness can be staggering. Colon cancer and breast cancer, as two examples of diseases that EPA says might be related to exposure to toxic substances,\textsuperscript{209} can require medical costs alone of $100,000 to $300,000.\textsuperscript{210} Data indicate that in 2009 late-stage colon cancer, with 124 weeks of treatment, including two surgeries, three types of chemotherapy, imaging, prescription drugs, and hospice care was likely to cost $285,946. Breast cancer, with 87 weeks of treatment, including lumpectomy, drugs, lab and imaging tests, chemotherapy and radiation therapy, mental health counseling, and prosthesis, was estimated to cost $104,535. Even non-life-threatening conditions often carry large price tags. A typical case of carpal tunnel syndrome, for example, according to OSHA costs over $50,000.\textsuperscript{211}

As another example, a study by the Centers for Disease Control and Prevention, of the cost of illnesses associated with Shiga toxin-producing Escherichia coli 0157 -- an infection caused, in many cases, by contaminated food -- found 73,000 illnesses a year, leading to more than 2000 hospitalizations and 60 deaths. The annual cost of illness was found to be $405 million in 2003 dollars ($619 million in 2009 dollars), with $30 million for medical care ($46 million in 2009 dollars), $5 million for lost productivity ($8 million in 2009 dollars), and $370 million for premature deaths ($566 million in 2009 dollars).\textsuperscript{212}

The Environmental Protection Agency (EPA) Cost of Illness handbook lists hundreds of chemicals associated with cancers, respiratory diseases, and developmental delays in babies – literally from acetone to ziram.\textsuperscript{213} Cancers that EPA associates with dangerous chemicals include cancers of the bladder, breast, colon, kidney, lung, skin and stomach. Respiratory diseases include asthma and acute illnesses. Developmental problems that EPA associates with exposure to environmental chemicals include cardiac abnormalities, cerebral palsy, cleft palate, Down syndrome, high blood lead levels, limb reduction, low birth weight, and spina bifida. According to EPA, almost every illness sub-group costs billions of dollars a year in economic impact. In light of these albeit qualitative illness costs, using the $8,609 per-injury cost as a proxy is likely a very conservative approach.

\textsuperscript{208} Although other categories of injury or illness might also have average costs qualitatively different from the per-injury average we use in this study, we feel justified in departing from the average in the case of food-related illness because the sheer number of cases would skew the overall findings.
\textsuperscript{210} The Real Cost of Illness can be Staggering..., Consumer Reports (May 2009), available at http://www.consumerreports.org/health/insurance/health-insurance/the-wrong-coverage-can-be-devastating/health-insurance-cost-of-fine-print.htm.
\textsuperscript{211} OSHA’s Safety Pays Program, supra note 205.
\textsuperscript{213} See Cost of Illness Handbook, supra note 209.
C. Calculating the Taxpayer’s Burden

The next step in calculating the annual taxpayer’s burden pursuant to this method is to combine the total count of fatalities and injuries from Part IV.A with the average per-fatality and per-injury cost from Part IV.B to get the total annual cost of product-related harm. Table 12 summarizes these calculations. (The costs of fatalities are based on economists’ estimates of the statistical value of life, and are not necessarily a reflection of real expenditures as a result of a fatality.)

The final step in the analysis is to adjust this total figure according to the percentage of the total cost of product-related harm that is borne by the government. As previously discussed, the precise percentage is not known. In this paper, we assume that approximately 26.3 percent of every dollar of fatality, injury, or illness cost associated with product-related harm is public. This is based on an assumed 45.2 percent of medical costs being public, a percent of lost dollars of productivity being lost to the tax base (28 percent being the average personal income tax rate and 38 percent, the average corporate rate according to OECD), and a low 10 percent of the remaining costs being public (includes disability and death benefits, administrative costs for insurance, police, courts). (See Methodology in Appendix III for a fuller discussion of this calculation.) The full cost of fatalities, injuries, and illnesses, based on cost per episode, ranges from $1,089 billion to $2,057 billion.

If the taxpayer share of the costs associated with product-related accidents is 26.3 percent of total cost, then the ranges for taxpayer burden are summarized in Table 12:

Table 12: Estimated Cost of Fatalities, Injuries, and Illnesses Associated with Product-Related Harm
Method 2: Based on Average Cost per Incident

<table>
<thead>
<tr>
<th>Number of Incidents</th>
<th>CPSC Covered Products Only</th>
<th>CPSC Plus 13 Other Categories of Dangerous Products</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CPSC, $5 million</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low Estimate, NEISS, $1,782</td>
<td>$60 billion</td>
</tr>
<tr>
<td></td>
<td>Intermediate Estimate, Leigh, $18,506</td>
<td>$622 billion</td>
</tr>
<tr>
<td></td>
<td>High Estimate, OSHA Safety Pays (its lowest estimate), $30,000</td>
<td>$1,008 billion</td>
</tr>
<tr>
<td>Fatality Cost</td>
<td>$141 billion</td>
<td>$3,908 billion</td>
</tr>
<tr>
<td>Injury Cost Estimates</td>
<td>$201 billion</td>
<td>$602 billion</td>
</tr>
<tr>
<td></td>
<td>$2,414 billion</td>
<td>$7,821 billion</td>
</tr>
<tr>
<td></td>
<td>$3,913 billion</td>
<td>$7,821 billion</td>
</tr>
<tr>
<td></td>
<td>$7,821 billion</td>
<td>$7,821 billion</td>
</tr>
</tbody>
</table>

* CPSC estimates the cost of a statistical life at $5 million
* Public sector share of the burden is 26.3 percent. (See Appendix III for fuller explanation of this estimate.)
With calculations based on an average NEISS cost per incident, the taxpayer burden from product-related deaths and injuries, in 2009 dollars, is $1,089 billion.

V. CONCLUSIONS

Each time a person is non-trivially harmed by a failed medical device, by contaminated food, or by a toy with lead-based paint, it is a human tragedy. The focus of this article has been that in many cases of product harm, the damage does not rest solely with the person harmed, or even with the person’s family and friends. Rather, the consequences are often far-reaching. Even if the person is insured or can recover from the manufacturer in a court of law—and even more dramatically, when he or she cannot afford these luxuries—the consequences often fall to the government, and hence the taxpayer. The government absorbs such losses directly in the form of Medicare or Medicaid payments, disability benefits, housing subsidies, unemployment insurance, food stamps, VA care, and a host of other safety-net programs. The taxpayer’s burden does not end with these direct forms of aid, however. Lost productivity, as a result of harmed individuals missing work or not being as productive, negatively affects personal and corporate income taxes. In addition, the government spends billions of dollars a year in regulatory activity aimed at guarding against potentially harmful products.

As it stands, the government does not collect evidence regarding the link between public expenditures and product-related harm. Without these data, discovering the precise size and scope of expenditures simply is not possible. This article offers an estimate of the total public cost of product-related injuries, based on the admittedly flawed available data. Because the data are incomplete at best, the authors set out on this investigative journey from opposite ends of the evidence trail, hoping to bookend the elusive actual figures with an estimated range. From one direction, the article began with overall figures of potentially product-related government spending, then assumed conservative estimates of the percentage of such spending likely attending to product-related harm. A second direction began with total numbers of product-related injuries, arrived at an average per-injury cost, and then chose a conservative estimate of the percentage of the total cost borne by the taxpayer.

These twin methodologies led to an estimated range of the taxpayer’s annual product-related burden of $327.8-1,089 billion. This range is quite broad and calls for some explanation. There are a number of reasons that the lower figure might significantly underestimate the cost to the taxpayer. The first method does not, for example, consider health care for public employees. It also underestimates product-related workplace illnesses, such as cancer and heart or lung disease, the causal origins of which are difficult to trace. Most of the burden on state and local governments is not included. Lost productivity is reflected only in personal income taxes, not in corporate taxes. Importantly, the 1-2% assumption of the share of expenditures traceable to product-related injuries is conservative, perhaps conservative in the extreme. In light of the number of annual product-related fatalities (781,636) and injuries (130,422,969) estimated in Method 2, the percentage of product-related government expenditures might be significantly higher than assumed in Method 1. Because the precise percentage is a virtual unknown quantity, the authors used a percentage that almost certainly understates the true number.

Furthermore, the $1,089 billion figure produced by Method 2 lends credence to the comparatively modest $327.8 billion figure of Method 1. This is particularly true in light of the
fact that Method 2’s estimate is almost certainly conservative as well. As documented throughout the descriptions of the harm caused by particular products found in Part IV.A above, nearly every product category draws from data that under-represent the number of fatalities and injuries. Indeed, the harm associated with several categories of products (smokeless tobacco, airborne byproducts, and alcohol-related illness) is left out altogether from Method 2 due to a lack of data. Furthermore, the per-injury cost estimate used in Method 2 is the most conservative of the models extant in the literature. Thus, although the total cost assessment of Method 2 is an astoundingly large figure, indications are that it might also underrepresent the taxpayer’s burden.

The question posed by this article is a challenging one to answer in light of the available data. Although the range presented here does not provide a precise figure, it does support an important conclusion—that the taxpayer’s burden traceable to product-related injuries is enormous. The public cost is so large, in fact, that any discussion of the proper scope of product liability and regulation must take it into account. Currently, much of the debate over tort reform and product regulation focuses on the cost of government interference and the downstream effects of such interference on manufacturers and commerce. But such a discussion is incomplete without considering the potential cost of the alternative—that is, the cost of having less liability and less regulation. Assuming that liability and regulation in fact reduce product-related harm, the removal of such protections might well balloon the already enormous public cost of these fatalities, injuries, and illnesses.

In legal and economic terms, the relevance of this study’s conclusions should be apparent. The primary jurisprudential basis for product-related strict liability is the widely-accepted economic theory regarding externalities. If the use of a product results in harm, this harm is an externality—a cost incident to the product that is not reflected in the product’s price. In an efficient market, all of the costs associated with a product, including externalities, are internalized. Thus, in a perfect market, the costs associated with harm done to a product’s users would be internalized by the manufacturer and hence reflected in the product’s price. Without this process of internalization, the price of the product is artificially low and sales inefficiently high, an effect which only increases product-related harm. The estimates provided by this article point to an externality largely ignored in the relevant policy debates to date. Because the price of relevant products does not reflect this externality, their price is inefficiently high. Moreover, it is the taxpayers who bear the brunt of this externality. Particularly in light of current efforts to reduce the deficit, perhaps the manufacturers and the purchasers of their products, rather than the taxpayer, ought to pay the enormous price of product-related harm.
APPENDIX I

BACKGROUND DISCUSSION OF RELEVANT PUBLIC SECTOR PROGRAMS

This appendix provides background information for the section on taxpayer burden that addresses “Direct Expenditures to Help an Injured Person.” The cost estimates associated with each public sector program reviewed, and the sources for those estimates, are discussed below.

a. **Medicare.** The Medicare budget for 2009 was over $430 billion and rapidly increasing, supporting people age 65 or older, under age 65 with certain disabilities and people of any age with End-Stage Renal Disease. Approximately 48 million individuals are covered by Medicare, Medicare pays approximately 65 percent of the health care costs of the population 65 and over.

b. **Medicaid/SCHIP.** Approximately 56 million people receive health care through Medicaid. Federal and state expenditures combined are approximately $450 billion a year (and estimates by the Office of the Actuary at the Center for Medicare and Medicaid Services, suggest that by the year 2020, combined federal and state annual outlays will approach $900 billion.) The primary federal/state health care program for low-income residents, Medicaid had a federal outlay of over $250 billion in 2009. The SCHIP Program for children had a 2009 budget of over $7.5 billion, with a projected increase of almost 40 percent by 2011, to nearly $10.5 billion.

Medicaid is the main public program for providing health insurance coverage to poor and low-income Americans. Traditionally, the population served by Medicaid has also tended to be in poorer health than higher income segments of the population. Nearly 30 percent of all children in the United States, in 2007, received their health care through Medicaid.

In fiscal 2001, Medicaid expenditures averaged 20 percent of state spending. Medicaid is the primary payer for nursing home care – with only 38 percent of nursing home care privately funded. One study estimated that by 2015 Medicaid would be paying for...

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217 KASHIHARA & CARPER, supra note 26, at 2. 272
218 Id. at 59.
219 Id. at 62.
220 Id.
223 KASHIHARA & CARPER., supra note 26, at 2.
225 Id.
nearly half of all nursing home spending. Through Medicaid, the federal government is the largest payer of long-term care services in the country. (In 2004, twenty-three states spent more on Medicaid (when federal subsidies are included) than education.

In addition, both Medicaid and Medicare pay for a large share of emergency room visits every year. More than four in ten emergency room visits in hospitals are billed to public insurance. In 2006, this accounted for approximately 50 million emergency room visits paid for by taxpayers through Medicare and Medicaid. The taxpayer burden was greater though because (1) more than 21 million visits were by uninsured people, and much of this burden ends up being absorbed by taxpayers, (2) not included are payments by workers compensation and the military’s Tricare plan, and (3) patients covered by the State Children’s Health Insurance Program (SCHIP) are only sometimes included under Medicaid, but may also be categorized under private insurance or other insurance, depending on the structure of the state SCHIP program. In addition, Medicare-covered patients were more than three times as likely to be admitted from the emergency room as those covered by private insurance.

c. **Department of Veterans Affairs.** The total health care budget of the Department of Veterans Affairs, in 2009, was $40.183 billion. Of the 23.4 million veterans in the United States, 8.5 million, or 36 percent, received some VA benefits or services in 2008. More than five million of this group (61 percent) used Veterans Administration health care at over 800 locations nationwide. VA is also the largest source of public funding for uncompensated care.

In addition, the Department of Veterans Affairs pays billions of dollars in disability and death benefits for injury victims. In FY2009 over $44 billion was paid out, but because much of this was for war-related disability, none of these disability payments are included in calculations. For the same reasons, it excludes any death and disability payment (totaling $5.1 billion annually).

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228 Council for Affordable Health Insurance, supra note 37.
233 Hadley & Holahan, supra note 37.
234 White House, Office of Management and Budget, supra note 231.
d. **Unemployment Insurance.** When individuals become ill or are injured from a dangerous product, they may lose their jobs and become eligible for unemployment insurance. The national average weekly benefit amount for unemployment insurance (UI) in 2009 was $308.19, and the average duration of benefit receipt was 18.8 weeks. This average total benefit amount of $5,793.97 does not include program administration costs.

The budget for the Unemployment Insurance Administration was $2.636 billion. Unemployment insurance benefits in 2009 were $27.352 billion.

A study in the *Journal of Occupational and Environmental Medicine* found that for illnesses only nine percent to 45 percent filed for benefits. The implications of this: more demand for services through public sector programs as people rely on existing medical insurance. The implications of this are substantial, as estimates are that new cases of occupational disease range from 125,000 to 350,000 a year and their economic cost probably exceeds $60 billion per year.

In a Connecticut study of those with work-related musculoskeletal disorders, only about 10 percent of cases had filed for workers compensation, and only 21 percent of those who had medical visits or procedures had filed for workers compensation.

e. **Food Stamps.** Qualifying for Food Stamps may occur when one becomes the victim of a product-related incident, and suffers reduced income as well as an injury or illness. In 2009, total expenditures for all food consumed in the United States were $1.18 trillion. Total USDA spending on Food and Nutrition Services was approximately $82 billion for fiscal year 2009. (Supplemental Nutrition Assistance (SNAP) spending alone accounted for $53.64 billion in fiscal year 2009, or about one-half of one percent of total food expenditures in the country. In FY2008, the average monthly SNAP benefits were about $101 per person, or $227 per household.) This does not include program administration costs.

f. **Temporary Assistance for Needy Families.** When people are hurt and ill, they sometimes become dependent on public assistance. The total number of individuals receiving TANF benefits for FY2009 was 4,041,292. In FY2009, a total of

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236 See Biddle, *supra* note 36.


238 *Morse, supra* note 31.


$21,770,566,576 in federal funds was spent on TANF, and total expenditures by the states were $14,326,852,839. The average per person spending on TANF in FY2009 (including benefits and administrative costs) was $8,932.

g. Social Security Disability Insurance and Supplemental Security Income. Social Security Disability Insurance (SSDI), funded through a payroll tax, provides income to those who are unable to work because of a disability. Supplemental Security Income (SSI) provides stipends, from the general funds of the U.S. budget, to low-income persons who are over 65, blind, or disabled. SSI began in 1974 and replaced federal-state adult assistance programs. It serves approximately 7.8 million people. The monthly federal payment standard for 2010 is $674 for an individual and $1,011 for a couple. Applicants for SSDI often apply for SSI, if they qualify, and vice versa. The 2009 budget was $2.06 billion.

The fiscal year 2009 budget for OASDI was $650.338 billion (which includes old age and survivor benefits as well as disability). An individual harmed in a product-related incident may qualify for Social Security Disability. The average monthly Social Security benefit for disabled workers under 65 is $1,066 per month. Estimated disability payments for FY2009 were $109.546 billion. According to the National Institute on Disability and Rehabilitation Research, accidents were the cause of 44.1 percent of impairment disabilities. This suggests that $48.31 billion of the 2009 SSDI payments were due to injuries from accidents. If the percent of disabling injuries that were product-related was 50 percent the taxpayer burden for SSDI would be $24.155 billion.

APPENDIX II

BACKGROUND DISCUSSION ON TAXPAYER SUBSIDY FOR
ALCOHOL CONSUMPTION, CIGARETTES, UNSAFE FOOD, AND ADVERSE DRUG REACTIONS

a. Alcohol Consumption. The RAND Corporation has studied the taxpayer subsidy for the health care costs imposed by consuming alcohol products. The study authors found, for example, those who drink, do not pay their way and that current excise taxes on alcohol only cover about half the costs that their drinking imposes on others.

The Robert Wood Johnson Foundation in 2001 studied the burdens associated with alcohol and found the annual cost to be $166.5 billion, or $201.7 billion in 2009 dollars.

b. Cigarettes. Statistics developed in 2010 by the Campaign for Tobacco-Free Kids found that the total expenditure for health damage from smoking exceed $200 billion. Annual public and private health care expenditures associated with smoking were $96 billion, with $67.9 billion or 70.7 percent paid by Medicare ($27.4 billion), Medicaid ($30.9 billion -- $17.6 billion federal and $13.3 billion state), and other federal government programs, such as through the Veterans Administration ($9.6 billion). These estimates do not include another $5 billion in health care expenditures solely from secondhand smoke exposure, another $97 billion a year in lost productivity from work lives shortened by smoking-caused deaths, an undetermined amount in lost productivity from smoking-caused disability, or $2.6 billion in Social Security Survivors Insurance for more than 300,000 children who lost at least one parent from a smoking-caused death. The estimated total taxpayer burden annually was $70.7 billion in spending, or $619 per U.S household. (Lost tax revenue from premature death and disability retirement is not included.) The Campaign study found that while the average retail price for a pack of cigarettes was $5.29, the smoking-caused health costs and productivity losses per pack sold in the U.S. was $10.47.

A report in 2001 by the Robert Wood Johnson Foundation, found the annual economic cost of smoking to be $138 billion, or $167 billion in 2009 dollars. The medical costs associated with smoking are in the tens of billions of dollars a year. A 1991 study, cited by Ausness, found the costs at $50 billion, or $79 billion in 2009 dollars. Another study, suggests that in 1997 dollars, the full cost to government alone might be $50

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253 Id.

billion,\textsuperscript{255} or $66.8 billion in 2009 dollars. Some of these other costs include benefits for an unemployed and ill worker or costs associated with fire loss. Smoking is the leading cause of lung, larynx, mouth, and throat cancer, as well as a number of other cancers, coronary heart disease, chronic obstructive lung disease, and a number of additional maladies. Much of the public sector burden falls on Medicaid, with many states seeking loss-shifting claims in the courts.

c. \textbf{Unsafe Food Supply.} Every year, millions of Americans are sickened from consuming contaminated food, hundreds of thousands are hospitalized, and thousands die as a result of a flawed food safety system. In the time period July 2010 to September 2010, alone, there were 85 food recalls, ranging from lettuce to sprouts to the largest egg recall in history.\textsuperscript{256} And besides the needless disease and death, there were millions of dollars of extra burden to taxpayers from the medical bills of the victims.

A 2010 study by the Produce Safety Project at Georgetown University found that acute illnesses, due to contaminated food, cost the U.S. approximately $152 billion in health expenditures and other economic losses.\textsuperscript{257}

The Economic Research Service of the Department of Agriculture estimates that in 2009, salmonella affected 1.4 million individuals in the United States, resulting in a cost of $2.649 billion.\textsuperscript{258} E.Coli affected another 73,500 people, at a cost of over $478 million.\textsuperscript{259}

In addition to taxpayer burden from the health care costs of victims, the government also spends money to enforce food safety standards (a cost that should be borne by food producers and manufacturers, if one wants to maximize the economic efficiency of the market). In the 2009 federal budget, $1.4 billion was allocated, through the Food and Drug Administration, to strengthen food safety efforts and implement recommendations of the President’s Food Safety Working Group. These efforts are for prevention, surveillance, and enforcement.\textsuperscript{260}

d. \textbf{Adverse Drug Reactions.} There are not a lot of data on the frequency of adverse drug reactions, but the incidence is clearly high. A study published by the \textit{Journal of the American Medical Association}, found an estimated 106,000 deaths and 2,216,000 serious adverse drug reactions for hospitalized patients in 1994.\textsuperscript{261} These estimates would make adverse drug reactions the fourth leading cause of death in the United States (even above accidents). It is difficult to link a symptom to a specific drug and the Food and Drug


\textsuperscript{256}E-mail from American Public Health Association, Government Relations to its membership, (Sept. 17, 2010) (on file with author).

\textsuperscript{257}See Schaffer, supra note 127.


\textsuperscript{259}ECON. RESEARCH SERV., U.S. DEP’T OF AGRIC., supra note 212.

\textsuperscript{260}U.S. DEP’T OF HEALTH AND HUMAN SERVS., supra note 39, at 3.

\textsuperscript{261}Lazarou, Pomeranz, & Corey, \textit{supra} note 128.
Administration relies on voluntary reporting of these reactions, so the numbers are likely to be underestimates. Estimates cited in a Government Accountability Office (GAO) report range from 0.44 to 30 per 100 hospital/nursing admissions. The GAO report, reviewing 16 cost estimating studies, found that the burden of adverse drug reactions, for third party payers associated with the management of drug-related mortality and morbidity only, to be as high as $76.6 billion in 1995, or $107.8 billion in 2009 dollars. This estimate did not include lost wages or productivity or any indirect costs.262

262 U.S. GEN. ACCOUNTING OFFICE, GAO/HEHS-00-21, supra note 136.
APPENDIX III

METHODOLOGY

This paper’s exploration of the taxpayer’s burden from product-related harm, casts a wide net for source material and data. Well over one hundred sources were consulted. The findings of government, academic, and other sources are the base for calculations. Comparison of sources allowed the authors to chose conservative estimates as the basis for calculations. This appendix explains how the numbers were calculated.

The Development of Key Numbers Used in Calculation

Data are drawn from many sources, all documented. To build the overall calculations, some key numbers were developed, based on assumptions (also explained in the text).

a. The average cost of an injury or illness

The lowest of three major costs estimates is used in this study, based on data from the National Electronic Injury Surveillance System (NEISS) of the Consumer Product Safety Commission, and its Injury Cost Model. The weighted average of accidents was determined, in 2009 dollars, from three categories of severity: hospital admission, emergency room treatment, and doctor’s office or clinic visit. (See Table 11 in the text.) This weighted average is $1,782.

b. The percent of injury and illness costs that are medical

The National Safety Council, using data from the National Health Interview Survey, calculates that health care costs associated with accidents are only about one-fifth (20.7 percent) of the total cost burden.263

c. The percent of medical expenditures that is due to injuries

The Department of Health and Human Services estimated that 10.8 percent of all health care spending – in the civilian, non-institutionalized population, was for injury-related conditions.264 (An article, referenced in the text, from the Journal of the American Public Health Association, puts the percent at 12, but we chose the more conservative of the two estimates.)

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263 NAT’L SAFETY COUNCIL, supra note 14 .
264 Krauss, supra note 25.
d. The percent of those receiving safety net program benefits because of injury or illness associated with a product led them to financial deterioration

There is no way to know for sure what percent of individuals harmed by products, fall to a level of need requiring safety net services. In a weak economy where many are already struggling to pay for basic needs, this percent may be quite high, maybe even 10 percent. But this paper, committed to being very conservative in determining burden, estimates that the numbers are only between 1 percent and 2 percent.

e. The percent cost of care that is due to an injury or illness associated with a product

We assume that accidents are 10.8 percent of the health care dollar (see c above). The product-related share of health care expenditures, according to CPSC’s Revised Injury Cost Model on page 1, is 50 percent. (It is 15 percent for fatalities and 50 percent for injuries, with a weighted average of 49.97 percent for all product-related incidents. Fifty percent of 10.8 percent is 5.4 percent, the number we use as the percent cost of care that is due to an injury. There are at least as many product-related illnesses as product-related injuries and they are at least as expensive, so we ascribe an additional 5.4 percent to the cost of illnesses, for a total of 10.8 percent.

f. The percent of impairment disabilities caused by accidents

According to the National Institute on Disability and Rehabilitation Research, accidents were the cause of 44.1 percent of impairment disabilities.265

g. The percent of injury and illness costs that are borne by the public sector taxpayer

In this paper, we assume that 26.3 percent of every dollar of fatality, injury, or illness cost associated with product-related harm is public. The medical costs are estimated at 45.2 percent public and are 20.7 percent of injury costs. (See Table 3.) Lost productivity is assumed to be 28 percent public (the average personal income tax rate, according to the OECD) and they are 50.6 percent of cost. (There is no cost assessment for lost corporate taxes from lower productivity. The average corporate tax rate is 38%. Including these lost taxes would have made the public sector costs higher.) All other costs are assumed to be just 10 percent public and make up, according to the National Safety Council, 28.7 percent of total costs. (There is no good proxy to estimate the public share for these costs -- which include disability and death benefits, administrative costs for insurance, police, courts. Therefore, a low 10 percent was used.) [(0.452 x 0.207) + (0.28 x 0.506) + (0.1 x 0.287) = -0.263 or 26 percent]

265 LaPlante & Carlson, supra note 249.
Underlying Assumptions

- Accidents in general and product-related accidents have similar costs and similar cost structures

- **Underreporting and Uncertainty.** Underreporting is assumed.
  - There is virtually no way to straightforwardly obtain data about the number of deaths and disabling injuries and illnesses due to product-related incidents, or the full range of their costs.
  - There is no requirement that death certificates or medical records identify products that may be associated with the problems faced by a patient.

For some specific examples it may be possible to make estimates – as in the highly publicized cases of Ford Explorer rollovers, accidents involving all terrain vehicles, or the effects of the drug Baycol. (See Shapiro, Ruttenberg, Leigh, 2009.) The Consumer Product Safety Commission keeps some data, but the underreporting makes this data system clearly inaccurate. The legal system and cases filed against manufacturers or medical practitioners is another possible source, but since most injured parties do not take legal action and those that do mostly settle before a full legal process and judgment are delivered, this too is a highly underreported data source. A system for classifying diseases exists in the World Health Organization, the International Classification of Diseases (ICD-10). This system is mostly organ and disease specific, but there is one category, “Injury, poisoning and certain other consequences of external causes,” that has subcategories that include specific hazardous chemicals like benzene, cadmium, and beryllium. An international system that had categories for dangerous product classification could clearly aid in research into the economic and social impact of dangerous products on victims, taxpayers, and the economy in general.

- All data are in 2009 dollars. To be conservative, the Consumer Price Index inflation calculator of the Bureau of Labor Statistics, based on a balanced market basket of goods and services, was used to convert dollar values of other years to 2009. This is an index for all items. Had we used the index for medical care for some portions of the cost estimation, the taxpayer burden would have been much higher. From 2000 to 2009, the U.S. city all items CPI (1982-84=100) rose from 172.2 to 214.5, or 42.3 percent. The medical care CPI, on the other hand, rose 114.8 percent in that same time period, from 260.8 to 375.6. The medical CPI rose 2.7 times more from 2000-2009 than the regular CPI (measuring inflation for all consumer goods and services).

What was Not Included in Calculations

This paper presents a comprehensive view of fatalities and injuries associated with products under the purview of the Consumer Product Safety Commission. It also reviews a number of other categories of dangerous products not included in calculations – from cigarettes and firearms to environmental and workplace hazards. There are many other categories of products that are not assessed. These include:
• **Coal dust in the mines**: Payments, through a federal Black Lung Disability Trust Fund (funded through an excise tax on coal operators), to coal miners with black lung disease are more than a billion dollars per year. Administration of the Black Lung Disability Trust Fund costs the Department of Labor over $32 million per year. While coal dust is not a product as defined in this paper, much of the blame for this disease is products and processes that ignore the dangers of coal dust, leading to death and illness, and significant taxpayer expense. The Black Lung Program alone, between 1969 and 2004, received over 960,000 claims and paid benefits, since the 1970’s through a trust fund, of over $41 billion. Billions have been borrowed from the U.S. Treasury due to the high level of illness and claims.

• **Vaccine Injury Compensation Program**: Authorized in 1986, this program provides compensation for vaccine-related injury or death. It is funded through a trust fund based on excise taxes on vaccines. The federal government spends $11 million to administer it, and $1.446 billion had been paid out through FY2004.

• **Occupational illness of energy employees**: The federal Energy Employees Occupational Illness Program, has provided at least $1 billion of compensation, directly from the federal budget. Created in 2000, this program provides payments to nuclear weapons plant workers injured from exposure to radiation or toxic substances. Because the primary focus of this program is radiation, which is technically not a product, it is not included in calculations for this paper.

• **Radiation Exposure Compensation Program**: Created in 1990, this program provides partial restitution to on-site participants, uranium miners, and populations exposed to radiation as a result of nuclear testing. Through September 30, 2004, the program had provided $787 million in compensation, with an annual federal administrative budget of $3 million. Again, because the primary focus of this program is radiation, which is technically not a product, it is not included in calculations for this paper.

• **Expenditures due to man-made disasters associated with dangerous products**: The Federal Emergency Management Agency (FEMA), with an annual budget of $5.729 billion in 2008 ($1.4 billion in disaster relief) spends part of its funds as a result of disasters from dangerous products – the malfunctioning rig in the Deepwater British Petroleum disaster of 2010 being an example. Likewise, part of the Small Business Administration’s aid to disaster victims -- $15 billion dollars in direct loans to individuals and businesses since 2001 or $1.875 per year – is the result of dangerous products.

• **Federal program to investigate medical product safety**: The government is increasingly involved with issues of medical product safety. A budget request for 2011 to the Food and Drug Administration to investigate medical product safety is not included in calculations for this paper.

• **Health Care for Federal Employees**: Federal employee health care covered 2,686,543 civilian employees in 2009. This does not include military, public health service corps, nurses, and others.

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266 U.S. DEP’T OF LABOR, EMP’T STANDARDS ADMIN, supra note 13.
267 See Lasowski, supra note 13, at 1.
268 Id. at 6–7.
269 Id.
270 Id.
federal legislative employees, federal judicial employees, or state or local government employees. The total budget for this care was well over $8 billion, not including postal employees. Because most of the costs associated with illnesses, injuries, and fatalities are covered by private health insurance bought by the federal sector, none of these costs are included in the calculations of this paper.

- **Most illnesses due to product-related harm are not included.** There is very little accounting for cancer-related harm, or for heart or lung failure due to products.

- **Most state and local government burdens are not included.**