



Hazard Screening Report

Camping: equipment, heating, lighting, and cooking

(1232, 1247, 1255, 1285, 1688-1690, 3218, 3229, 3230, 3233,
3248-3250, 3252, 4060, 4069, 5029, 5037)

This report and all others in this series are general overviews, which use data taken directly from the CPSC data files for the purpose of comparison among the products. No recoding or adjusting of the data is performed. For this reason, estimates of injuries provided in this report will differ from estimates presented in other documents produced by Epidemiology staff working in specific program areas. The figures presented here are not intended to compare to other reports outside this series of hazard screening reports. The views expressed in this report are those of CPSC staff, have not been reviewed or approved by, and may not necessarily reflect the views of, the Commission.

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The Hazard Screening Project

As an aid in setting priorities, Consumer Product Safety Commission (CPSC) staff is preparing this series of Hazard Screening Reports. Each report covers a group of related products, such as nursery equipment, house wares, etc.

These reports follow a common format that allows readers to compare the risk for different types of products within a given category. Significantly, CPSC staff has also developed a measurement tool that allows comparisons of risks from products in different categories. This feature, called “Maximum Addressable Cost Estimates,” is explained more fully below. CPSC managers plan to use this information to set priorities for efficient use of resources.

Each Hazard Screening Report contains information on the estimated number of injuries and deaths associated with the type of products covered in that report. A graph shows the frequency of emergency-room treated injuries over time. This is followed by a pie chart showing the distribution of injuries by the source of the hazard, such as mechanical, fire, electrical, chemical and other. CPSC staff also estimates the total “cost” to society of each type of product. This includes the cost of injuries, deaths and property damage associated with the products.

To facilitate comparisons of risk between different types of products, CPSC staff has developed Maximum Addressable Cost Estimates. These build on the concept of “addressable” cost. Simply put, the “addressable” cost is the portion of the total cost that could possibly be reduced by some action that CPSC could take. Many of consumer injuries are not addressable. For example, if a boy trips over a rake in the driveway, any injury he suffers could be associated with the category of Yard and Garden Equipment. But it is very unlikely that such injuries could be prevented by changing the design of rakes. By eliminating these unaddressable costs from consideration, we are able to focus on what’s left -- the costs that we might be able to do something about. The name “Maximum Addressable Cost Estimates” is intended to emphasize that these estimates are upper limits of the cost that might be successfully addressed. It should also be stressed that the term does not necessarily mean that there is any existing method or technology for reducing the costs. For a more detailed explanation of this subject, please refer to the individual Hazard Screening Reports.

CPSC staff plans to complete 20 reports in 2005. As each report is completed there will be an active link to it on the CPSC website. All reports are in Portable Document Format (PDF). The 20 reports that will comprise the complete set are:

- Home Workshop Apparatus, Tools and Attachments
- Yard and Garden Equipment
- Toys
- Nursery Products
- Children’s Outdoor Activities and Equipment
- Major Team Sports
- Injuries to Persons 65 and Older

House wares and Kitchen Appliances
Recreational Cooking and Camping Products
Home Communication, Entertainment and Hobby Products
General Household Appliances
Home Furnishings and Fixtures & Home Alarm,
Escape and Protection Devices
Sports (minus major team sports)
Personal Use Items
Heating, Cooling and Ventilating Equipment
Packaging and Containers for Household Products
Miscellaneous Products
Home Structures and Construction Materials
Home and Family Maintenance Products – Household Chemicals
Drugs

These reports will be useful to individuals and organizations who are seeking reliable information about estimated deaths, injuries, and costs associated with consumer products and to CPSC's staff and Commissioners, who need objective data to identify candidates for future activities to reduce deaths and injuries.

Caveat

This report addresses the question of addressability of injuries by attempting to identify those injuries which are incidental and not addressable by mandatory or voluntary standards or by other action which the CPSC could take. Those injuries which remain are referred to as maximum addressable.

To know the actual addressability of the hazards associated with a product usually requires a detailed study of the problem, and the product. This level of study is not feasible for this type of overview report. What we do instead is try to eliminate those injuries and deaths which involve the product only marginally or incidentally. Maximum addressable costs are then generated by the Injury Cost Model using the remaining injuries.

The maximum addressable cost estimate does not necessarily represent the injury and death costs that the CPSC might actually be able to prevent each year through some type of action. It represents only a target population from which any successful prevention will have to come.

Therefore, while the report states that the maximum addressable percentage of the costs is about 36.0%, it would be incorrect to say that 36.0% of the injuries or 36.0% of the costs are addressable.

For example: If the consumer was injured from an explosion of a gas grill, and the reason why the explosion occurred is not stated, we would count that injury in the maximum addressable category. It may not be addressable; we just don't have enough information to rule it out.

Maximum addressable injury estimates include every case that we could not clearly rule out as incidental. They do not represent the number or percent of injuries that could actually be prevented.

In addition, addressability definitions are based on review by Epidemiology staff using information available at the time each report is prepared. These determinations should be considered general estimates for agency planning purposes, not definitive staff evaluations of whether a specific type of hazard might be prevented. The fact that a given hazard associated with a product was not considered addressable in one of these reports should not be construed as indicating that the hazard should never be reconsidered or addressed.

Introduction

This report provides overall injury and death figures associated with Camping: equipment, heating, lighting, and cooking. The first information presented is a summary of the injury, death and cost data for the entire class of products. A trend graphic (figure 1) is presented which shows the frequency of estimated emergency room-treated injuries since 1997. This is followed by a chart (figure 2) showing the distribution of the injuries for this class of products by energy source of the hazard, i.e., mechanical, fire, electrical, chemical, or other. There is also a summary table, which shows the injuries, deaths, and costs associated with each product group. This overview is one of a series of hazard screening reports. Each report provides information in a similar format to allow product and hazard comparison, both within and among the reports. The views expressed in this report are those of CPSC staff, have not been reviewed or approved by, and may not necessarily reflect the views of, the Commission.

Camping: equipment, heating, lighting, and cooking

Individual Product Categories

Charcoal and Multi-Purpose Lighters (includes: Electric charcoal lighters, Fuel charcoal lighters, Charcoal lighters, not specified, Fuel multi-purpose lighters, Electric multi-purpose lighters, Multi-purpose lighters, not specified)

Grills (includes: Charcoal or wood burning grills, Electric grills, Kerosene grills or stoves, Other grills or stoves, Gas or LP grills or stoves, Grills, not specified)

Other Camping Equipment (includes: Portable food or beverage containers, Sleeping bags, Cots, Camping equipment, Hammocks)

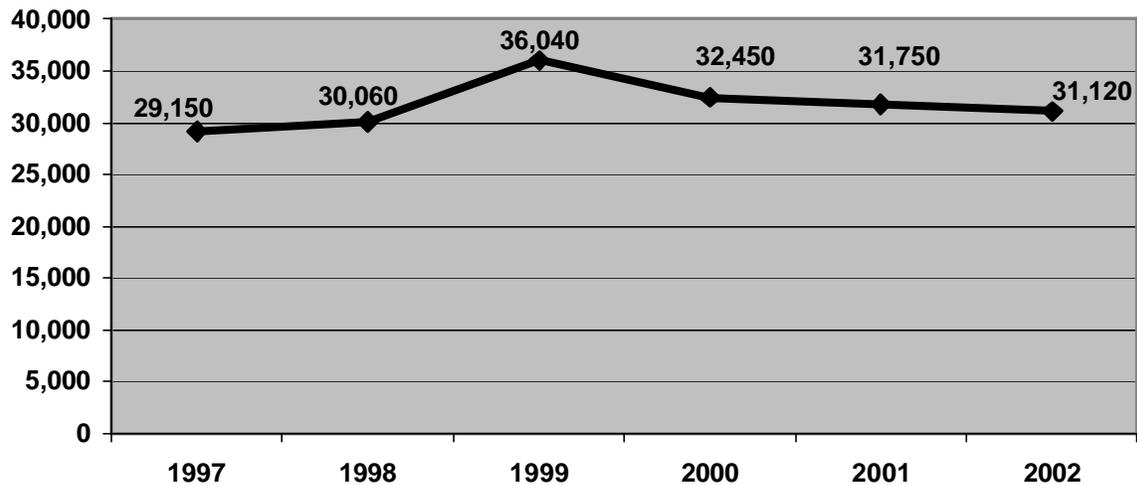
Fuel-Burning Heating and Lighting Equipment¹ (includes: Alcohol-fueled heaters, Fuel-burning lighting equipment)

¹ Propane and petroleum gas powered camping heaters are intentionally not included in this report. While they would fit logically within the scope of this report, because of the way incidents involving these products were coded prior to 2003, they are, for the most part, included in the Heating, Cooling, and Ventilation hazard screening report. Prior to 2003, these incidents were coded under Gas or LP heaters, not otherwise specified and in a few other product codes. To identify only the gas or LP powered camping heaters to evaluate the injury trend would take a level of study that is not feasible for this type of overview report. Some of the propane or petroleum gas powered camping heaters were coded under product codes listed with this report. These cases are discussed with this report.

Overview: Camping: equipment, heating, lighting, and cooking
 (1232, 1247, 1255, 1285, 1688-1690, 3218, 3229, 3230, 3233, 3248-3250, 3252, 4060, 4069, 5029, 5037)

ER Treated Injuries 2002	31,120	Percent of Households	not applicable
Medically Treated Injuries 2002	75,780	Number of Products in Use	not applicable
Percent of ER Treated Hospitalized	4.4%	Estimated Useful Life	not applicable
Deaths 2000	79	Estimated Retail Price Range	not applicable
Number of Incident Reports 2002	297	Death Costs (Millions)	\$395
Cost of Medically Treated Injuries (Millions in 2001 dollars)	\$1,941.3	Total Known Costs (Millions) ²	\$2,351.3

Figure 1: Six year trend in emergency room treated injuries associated with camping: equipment, heating, lighting, and cooking, 1997 - 2002

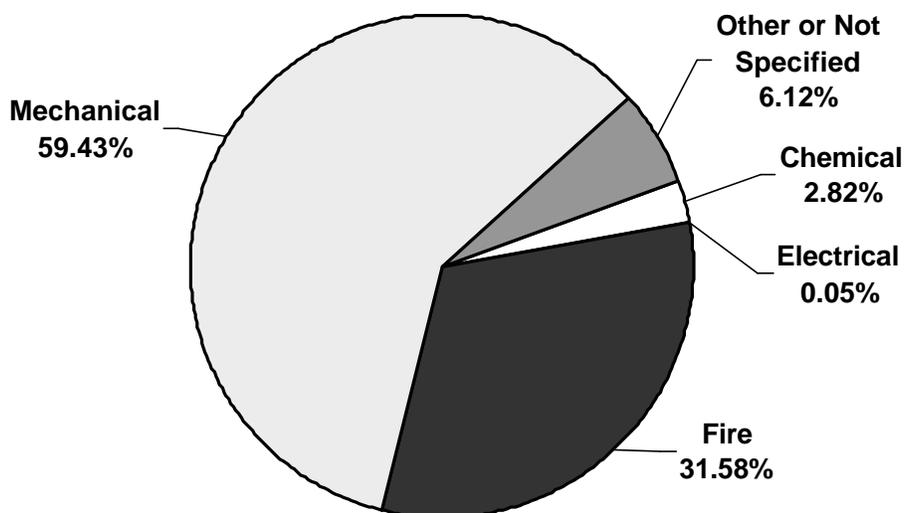


Source: National Electronic Injury Surveillance System (NEISS), 1997 – 2002

From 1997 to 2002, the estimated number of emergency room-treated injuries increased by 1,970. This is not a statistically significant change (p=.4656).

² This total represents an index rather than an actual single year estimate of costs, because injury costs are based on 2002 and death costs are based on 2000. These are the most recent years for which each of these cost items was available.

Figure 2. Distribution of Emergency Room-Treated Injuries by Energy Source of the Hazard for Camping: equipment, heating, lighting, and cooking, 2002



Source: National Electronic Injury Surveillance System (NEISS), 2002

Deaths

For 2000, CPSC has reports of 79 deaths associated with these products. Sixty-one of the deaths were included in the maximum addressable category (see page 7 for description of this category). Twenty-seven of these deaths resulted from carbon monoxide poisoning and of those, eighteen involved a grill, six involved a propane heater, one involved a charcoal stove, one involved a kerosene heater, and in the remaining death, the source of the carbon monoxide is unspecified. Fifteen deaths involved a fire that spread from the grill or fuel-burning heating or lighting equipment. Six deaths involved a child under five years old playing with a lighter that ignited a fire. Seven deaths involved the victim's clothing catching fire from a grill or an oil lamp. The remaining six deaths included in the maximum addressable category involved some type of explosion or gas leak. The 18 deaths that were not included in the maximum addressable category had only incidental product involvement. See Table 2 for the number of deaths in each product category included in the maximum addressable category.

Overview

The increase of 1,970 injuries over the 6-year period, 1997 – 2002, was not a statistically significant increase ($p=.4656$).

Table 1 on page 9 provides a summary of all the product groups examined for this report. This table provides information on the number of emergency room-treated injuries, the number of medically-treated injuries, the percentage of the emergency room-treated injuries that resulted in admission to the hospital, the number of incident reports received, the number of deaths reported, and, where available, the number of products of each type in use, the estimated useful product life for each category, the costs associated with deaths and medically-treated injuries, and the total of these two cost estimates.

Addressability

While it is useful to know the number of injuries, deaths, and related costs associated with a product, it is also important to have an estimate of how much of the associated societal cost might actually be addressed through some action. Many of the injuries treated in emergency rooms that were related to camping: equipment, heating, lighting, and cooking may not be addressable because the injury had only incidental product involvement. To know the actual addressability of the hazards associated with a product usually requires detailed study of the problem, and the product. This level of study is not feasible for this type of overview report. What we have done is to identify that portion of the injury and death costs that is not addressable through case by case review. Maximum addressable costs were then generated by the Injury Cost Model using the remaining injuries.

The maximum addressable cost estimate does not necessarily represent the injury and death costs that the CPSC might actually be able to prevent each year through some type of action. It represents only a target population from which any successful prevention will have to come.

The reason for doing this kind of review is to identify situations such as the following example and allow us to focus on the areas where CPSC action could have some effect.

For instance, the category of other camping equipment ranks second on total costs but third in maximum addressable costs. Most of the injuries associated with this class of products had only incidental product involvement. Many resulted from the victim falling out of a hammock or straining his or her back lifting a cooler. There is very little action CPSC could take to reduce these types of injuries, so they are not included in the maximum addressable category.

The staff reviewed the narratives included in National Electronic Injury Surveillance System (NEISS) injury reports, and reviewed the death reports.³ Because the NEISS narratives are brief and often do not provide much detail, cases were categorized as “not addressable” only if it was clear that the injury was incidental or not related to the product. If, for example, a

³ See Methodology Section for a description of these databases.

child was burned on a grill but the part of the grill was not specified, this was not enough information to conclude that the case wasn't addressable. If the child had touched the cooking surface, it might not be addressable but if the child touched the handle of the grill, it might be addressable. Such cases would be in the maximum addressable category. The death reports often had more information, allowing for better determination of addressability.

To control for the possibility that there may be a difference between costs associated with addressable injuries and costs associated with non-addressable injuries, the Injury Cost Model (ICM) was used to obtain cost estimates for all medically-treated injuries and the medically-treated injuries in the maximum addressable category. Deaths were also reviewed and determined to be in either the not-addressable or maximum addressable category, and were valued at \$5 million dollars each. This value of \$5 million dollars for each death is consistent with current economic literature which usually expresses the value as ranging from \$3 million to \$7 million. For ease of tabulation, we have used the midpoint of this range. The maximum addressable cost estimate for medically-treated injuries is added to the maximum addressable cost estimate for the deaths to obtain the total maximum addressable cost estimate. Table 2 shows the percentage of medically attended injuries included in the maximum addressable category for each product group. It also shows how many of the deaths reported were included in the maximum addressable category.

Overall, after applying this process of review of the data to the entire category of Camping: equipment, heating, lighting, and cooking, we find that the total maximum addressable injury and death cost⁵ is \$845.5 million dollars, out of a total cost associated with these products of \$2,351.3 million dollars, which is about 36.0% maximum addressable. Note that the percentage of addressable injuries is different than the percentage of addressable costs. The cost estimates are derived from a number of variables associated with each injury⁴, so two cases may have the same weight but different cost estimates. Thus, the cost estimates do not have a one-to-one relationship with the injury estimates.

Figure 3 shows the index⁵ of estimated injury and death costs for each of the product categories, except for Charcoal and Multi-Purpose Lighters, and the estimated maximum addressability of those costs. Charcoal and Multi-Purpose Lighters are not included in this figure because the sample size of the emergency room-treated injuries was too small to determine the proportion of maximum addressable injuries and costs.

⁴ See Methodology Section for more description of how the cost estimates are computed.

⁵ This total represents an index rather than an actual single year estimate of costs, because injury costs are based on 2002 and the death costs are based on 2000. At the time this report was prepared, these were the most recent years for which that data was complete.

Table 1: Product Summary Table – Injury, Death, and Cost Estimates

Product	Codes	ER Injuries 2002	All Medically Treated Injuries 2002	Hosp.% 2002	Incident reports 2002	DTHS 2000	# of Products in Use (millions)	Estimated Useful Product Life (Years)	Death Costs (millions)	Estimated Retail Price Range (\$)	Med. Trtd. Injury Costs ⁶ (millions \$)	Total Known Costs (millions)
Charcoal and Multi-Purpose Lighters	1232, 1247, 1285, 1688 - 1690	150	290	**	25	8	70	1 to 7	\$40	\$2 to \$35	\$11.4	\$51.4
Grills	3218, 3229, 3230, 3233, 3248, 3249	17,020	38,190	6.5%	225	44	136	7	\$220	\$5 to \$10,000	\$1,091.0	\$1,311.0
Other Camping Equipment	3250, 3252, 4069, 5029, 5037	12,920	35,200	4.0%	31	18	n/a	n/a	\$90	n/a	\$787.8	\$877.8
Fuel-Burning Heating and Lighting Equipment	1255, 4060	1,050	2,110	**	19	12	N/A	N/A	\$60	N/A	\$51.1	\$111.1
Total ⁷		31,120	75,780	4.4%	297	79			\$395		\$1,941.3	\$2,351.3

** Sample size is too small to report percentage.

N/A – Not available, n/a- not applicable, there is no actual product to estimate number in use or product life

Descriptions of how these estimates were derived can be found in the Methodology Section.

⁶ Costs expressed in 2001 dollars.

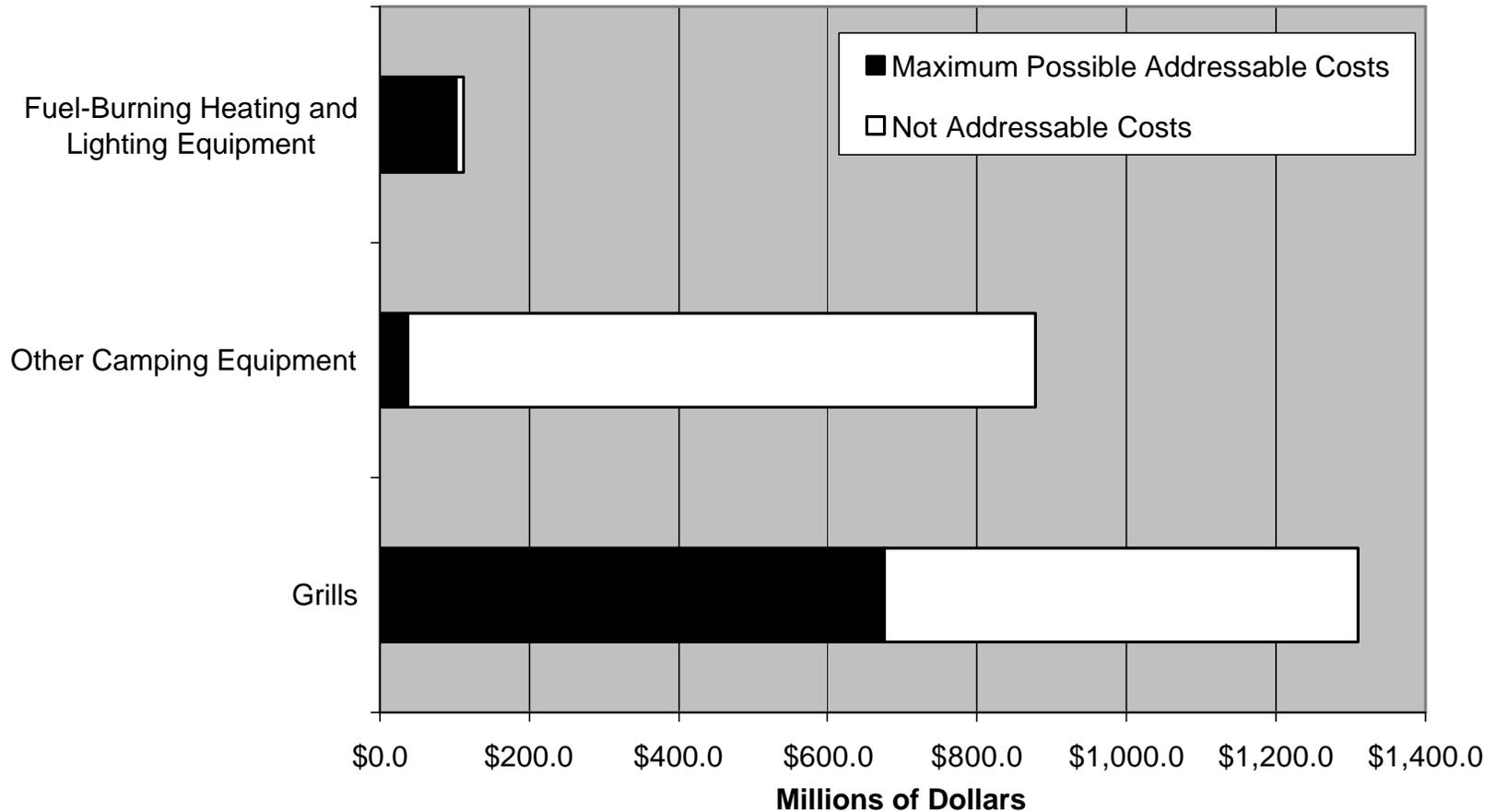
⁷ Some cases appear in more than one category. Thus, numbers may not add to totals.

Table 3 lists the product groups ranked in descending order by the Total Injury and Death Costs Index. This table also shows the total maximum addressable cost for each product group. For those product groups where there was an estimate of number of products in use, the maximum addressable cost per unit was calculated by dividing the maximum addressable cost estimate by the number of products in use. Rankings of the product groups on total costs, maximum addressable costs, and maximum addressable cost per unit are also provided.

Products and hazards identified for which some new activity may be appropriate are noted below:

Grills: For many of the injuries that resulted from coming into contact with the grill, the part of the grill is not stated. Only those injuries to children under 10 were included in the maximum addressable category. Emerging Hazards staff will assign a number of NEISS cases of contact burn injuries sustained by children under 10 years old to determine with what part of the grill the child came into contact. Based on the results of this inquiry, staff will be able to determine whether to recommend to the project team that a larger, NEISS based, special study be conducted as part of a project to address the hazard.

Figure 3. Estimated Cost Index, in Millions of Dollars, Camping: equipment, heating, lighting, and cooking, by Total Costs



Source: National Electronic Injury Surveillance System (NEISS), 2002, Death Certificate database (DCRT), 2000

NOTE: This estimate of maximum addressability does not necessarily represent the number of injuries or deaths or costs that the CPSC might actually be able to prevent each year through some type of action. It represents only a target population from which any successful prevention will have to come.

The data presented in this graphic are also contained in Table 3 under the headings “Total injury and death costs” and “Total maximum addressable costs”

Table 2: Product Hazard Addressability

Product	Codes	Percentage of injuries included in Maximum Addressable	Maximum Number of Addressable Deaths/ Total Deaths Reported
Charcoal and Multi-Purpose Lighters	1232, 1247, 1285, 1688 - 1690	**	6/8
Grills	3218, 3229, 3230, 3233, 3248, 3249	41.4%	36/44 ⁸
Other Camping Equipment	3250, 3252, 4069, 5029, 5037	5.0%	7/18
Fuel-Burning Heating and Lighting Equipment	1255, 4060	75.4%	12/12
Total		27.3%	61/79

** Sample size too small to provide an estimate.

The percentages presented in this table are the percents of injuries, not costs, included in the maximum addressable category. These percentages cannot be directly compared to maximum addressable costs because the costs, while derived from the same cases, take into account a number of variables, not just case weight. For more information on how these cost estimates are derived, refer to the methodology section at the end of this report.

In the two pages that follow, the maximum addressable definitions for each product category are presented. When staff read the injury/death narratives to determine addressability, hazard patterns also were coded. The hazard patterns determined to be un-addressable were removed and those that remained make up the maximum addressable definitions.

⁸ While all of these deaths were coded as grill related, there is little detail concerning the product involved. Therefore, some of these deaths may not have involved a grill, but another product similar to a grill. For example, in three of the maximum addressable deaths, the product involved was described as a stove (two of these product codes also include stove related injuries). Because this term may be used to describe anything from a portable camping stove to a range in a kitchen, these three deaths may belong in a different product category. Since that level of detail is not present, these deaths were included in this product category.

Maximum Addressability Definitions Used for Each Class of Products - Injuries

Grills: carbon monoxide poisoning, accidentally ignited clothing, child under 10 burned from contact with the grill (part of grill not specified), explosion, gas leak, lid fell on user, sharp edge, grill tipped over

Other Camping Equipment: carbon monoxide poisoning, broken part, explosion, sleeping bag fire

Fuel-Burning Heating and Lighting Equipment: burn, explosion, fire, child accessed fuel

Charcoal or Multi-purpose Lighters: the sample size of the NEISS estimate for 2002 of is too small to determine addressability.

Maximum Addressability Definitions Used for Each Class of Products – Deaths

Charcoal or Multi-Purpose Lighters: child under 5 playing with lighter started a fire

Grills: carbon monoxide poisoning, accidentally ignited clothing, explosion, fire spread from grill, gas leak

Other Camping Equipment: carbon monoxide poisoning (unspecified source, unspecified heater)

Fuel-Burning Heating and Lighting Equipment: carbon monoxide poisoning, accidentally ignited clothing, explosion, fire spread from heating or lighting equipment

Table 3 - Calculation of Indices Using Cost Estimates from Injury Cost Model⁹, Death Certificates File, and Estimates of Number of Products in Use.

Title	Medically Attended Injury Costs (Millions)	Total Death Costs (Millions)	Total Injury and Death Costs (Millions)	Total Maximum Addressable Costs (Millions)	Rank on Total Costs	Rank on Maximum Addressable Costs	Products in Use (Millions)	Maximum Addressable Costs per Unit	Rank on Maximum Addressable Costs per Unit
Grills	\$1,091.0	\$220	\$1,311.0	\$675.8	1	1	136	\$0.28	2
Other Camping Equipment	\$787.8	\$90	\$877.8	\$37.6	2	3	not available	not available	not applicable
Fuel-Burning Heating and Lighting Equipment	\$51.1	\$60	\$111.1	\$102.1	3	2	not available	not available	not applicable
Charcoal and Multi-Purpose Lighters	\$11.4	\$40	\$51.4	**	4	4	70	\$9.66	1
Total	\$1,941.3	\$380	\$2,351.3	\$845.5					

** Sample size too small to provide an estimate.

These “total injury and death costs” estimates and “total maximum addressable costs” estimates are indices, not actual estimates of cost and expected injury cost reduction. This is because injury cost estimates and addressability estimates are based on 2002 emergency room-treated injury reports, and death cost estimates are based on deaths reported which occurred in 2000. Estimates of number of products in use are also imprecise estimates. These cost figures were developed, using the data available, to provide indices for the purpose of comparison. They do not represent an actual estimate of the costs associated with any of the product groups for a specific year.

⁹ Costs expressed in 2001 dollars

Methodology

NEISS

The Commission operates the National Electronic Injury Surveillance System (NEISS), a probability sample of 98 U.S. hospitals with 24-hour emergency rooms (ERs) with more than six beds. These hospitals provide CPSC with data on all consumer product-related injury victims seeking treatment in the hospitals' ERs. Injury and victim characteristics, along with a short description of the incident, are coded at the hospital and sent electronically to CPSC.

Because NEISS is a probability sample, each case collected represents a number of cases (the case's *weight*) of the total estimate of injuries in the U.S. The weight that a case from a particular hospital carries is associated with the number of hospitals in the U.S. of a similar size. NEISS hospitals are stratified by size based on the number of annual emergency-room visits. NEISS comprises small, medium, large and very large hospitals, and includes a special stratum for children's hospitals.¹⁰

CPSC's Death Certificate Database

CPSC purchases death certificates from all 50 states, New York City, the District of Columbia and some territories. Only those certificates in certain E-codes (based on the World Health Organization's International Classification of Diseases ICD-10 system) are purchased. These are then examined for product involvement before being entered into CPSC's death certificate database. This is not a statistical sample and therefore cannot be used to estimate the number of deaths in the U.S. associated with each product. The number of deaths for each product is at least a minimum count. To obtain a count of fatalities associated with each product category, the death certificate data was combined with the deaths found in the IPII database (discussed below). The cases were then reviewed to eliminate duplicates and determine addressability.

Death certificate collection from the states takes time. Data for 2001 and 2002 were not complete when this report was prepared.

CPSC's Injury or Potential Injury Incident File (IPII)

IPII is a CPSC database containing reports of injuries or potential injuries made to the Commission. These reports come from news clips, consumer complaints received by mail or through CPSC's telephone hotline or web site, Medical Examiners and Coroners Alert Program (MECAP) reports, letters from lawyers, and similar sources. While the IPII database does not constitute a statistical sample, it can provide CPSC staff with guidance or direction in investigating potential hazards. Since cases in this database may come from a variety of sources, some cases may be listed multiple times. To obtain a more accurate count of the number of reported incidents associated with each product, they were reviewed to eliminate duplicates.

¹⁰ Kessler, Eileen and Schroeder, Tom. The NEISS Sample (Design and Implementation). U.S. Consumer Product Safety Commission. October 1999.

CPSC's Injury Cost Model

The Injury Cost Model (ICM) is a computerized analytical tool designed to measure the direct and indirect costs associated with consumer product-related injuries. In addition to providing a descriptive measure of injury hazards in monetary terms, the ICM is also used to estimate the benefits of regulatory actions designed to reduce consumer product injuries and to assist the Commission in planning, budgeting, and evaluating projects.

The ICM is structured to measure the four basic categories of injury costs: medical costs, work losses, pain and suffering, and product liability and legal costs. Medical costs include doctor and hospital-related costs as well as costs for diagnostic procedures, prescription drugs, equipment, supplies, emergency transportation, follow-up care, and administrative costs. Both the initial treatment costs and the costs of long term care are included in the medically-treated injury costs.

Work-related losses represent the value of lost productivity, the time spent away from normal work activities as the result of an injury. Work-related losses include both the short-term losses resulting from being absent from work and the long-term losses resulting from permanent partial or total disability and their impact on lifetime earnings. They also include the value of work lost as a result of caring for injured children, the value of housework lost due to an injury, and the loss to the employer resulting from the disruption of the workplace.

Pain and suffering represents the intangible costs of injury, and is based on jury verdicts for consumer product-related injuries. Product liability and legal costs represent the resources expended in product liability litigation. These costs include the costs of administering the product liability insurance system (including the plaintiff's legal costs and the costs of defending the insured manufacturer or seller), the costs of claims investigation and payment, and general underwriting and administrative expenses; however, medical, work loss, and pain and suffering compensation paid to injury victims and their families is excluded, thus avoiding double counting.

The ICM estimates the costs of injuries reported through the NEISS, a national probability sample of hospital emergency departments. The injury cost estimates depend on a number of factors, and vary by the age and sex of the injured person, the type of injury suffered, the body part affected, and whether or not the victim was hospitalized, held for observation, transferred, or treated and released. The ICM also uses empirically derived relationships between emergency department injuries and those treated in other settings (e.g., doctor's offices, clinics) to estimate the number of injuries treated outside hospital emergency departments and the costs of those injuries.

A number of databases are used to calculate the four cost categories. National discharge data and discharge data from six states are used to estimate the costs of hospitalized injuries. Data from the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS) (which includes medical records from almost two million retirees and civilian dependents of military personnel) and several National Center for Health Statistics surveys dealing with costs of treatment in different medical settings are used to calculate medical costs for injuries where the victim is treated and released from the emergency department or treated in a clinic or doctor's office. Other major data sources include the Annual Survey of Occupational Illnesses and Injuries and the Detailed Claims Information (DCI) database for work loss estimates; and the Jury Verdicts Research data for pain and suffering estimates. Product liability and legal costs are derived analytically from insurance industry information and several studies of product liability.

To determine the maximum addressable cost estimate, the injury narratives were read to determine which would not be addressable¹¹. Maximum addressable costs were then generated by the ICM using the remaining injuries.

¹¹ See page 7, the discussion on addressability for more information on this process.