Hazard Screening Report

Miscellaneous Products

(925, 927, 1240, 1293, 1701, 1711-1712, 1714-1715, 1718-1720, 1726, 1729-1736, 1738-1742, 1934, 4004-4005, 4047, 4058, 4065-4068)

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 reflect the views of, the Commissioners.

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The Hazard Screening Project

As an aid in setting priorities, CPSC staff is preparing this series of Hazard Screening Reports. Each report covers a group of related products, such as nursery equipment, housewares, 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. Lots 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 in the list below. 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
Housewares 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 death, 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!

The 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 U.S. Consumer Product Safety Commission (CPSC) could take. Those injuries that 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. The remaining injuries are then run through CPSC's Injury Cost Model, to produce an estimate of *maximum* addressable costs.

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.

For example: If a person falls getting out of a portable amusement ride, but we have no information about whether the subject tripped over his or her shoelaces, or was tripped up by the ride's design or movement, we would count that injury as 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. <u>They do not represent the number or percent of injuries that could actually be prevented.</u>

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 <u>definitive</u> 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 <u>not</u> be construed as indicating that that hazard should never be reconsidered or addressed.

Introduction

This report provides overall injury and death figures associated with the category of Miscellaneous Products. The first information presented is a summary of the injury, death and cost data for the entire class of products. There is a discussion of the change in estimates 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 comparisons, both within and among the reports.

Miscellaneous Products

Individual Product Categories

Hot Water

Vending Machines

Pet Supplies

Amusement Attractions[1]

Miscellaneous Assorted Unrelated Products[2]

Electric Decorations

Aquariums

Non-Electric Decorations

Clocks and Scales

Matches

[1] CPSC has jurisdiction over mobile, or portable, amusement rides. CPSC does not have jurisdiction over fixed site rides commonly found in amusement parks, theme parks, or similar locations.

[2] Includes paintbrushes, rollers, tape, flares, lunch boxes, party favors, lockers, tombstones, music boxes, coin operated car washes, conveyor belts, signs, ashtrays, tarps, nonelectric heating or cooling comfort packs, mirrors, filters (excluding swimming pool and aquarium filters), books, magazines, scrapbooks, bars (excluding gymnastic and weightlifting equipment), non-electric clocks, and non-electric scales (excluding baby scales).

Overview: Miscellaneous Products
(Hot water, Vending machines, Pet supplies, Amusement attractions, Miscellaneous assorted unrelated products, Electric decorations, Aquariums, Non-Electric decorations, Clocks and scales, and Matches)

(925, 927, 1240, 1293, 1701, 1711-1712, 1714-1715, 1718-1720, 1726, 1729-1736, 1738-1742, 1934, 4004-4005, 4047, 4058, 4065-4068)

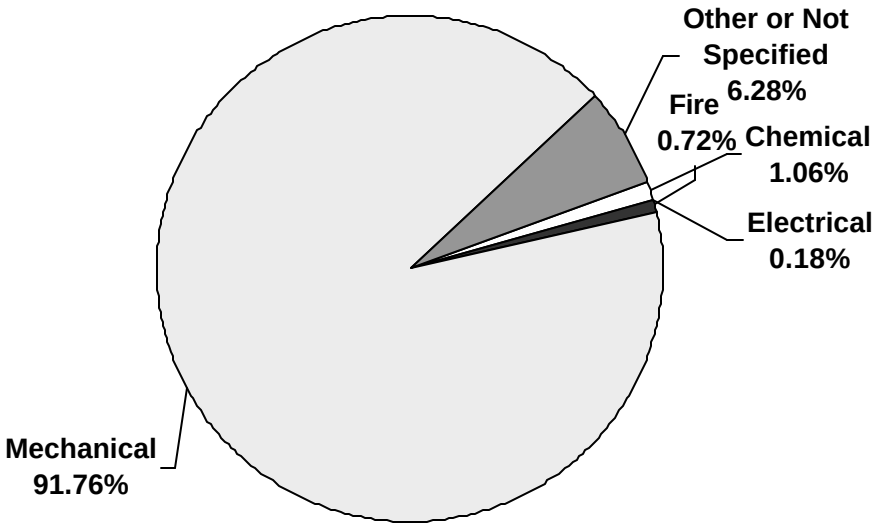
ER Treated Injuries 2003	173,300	Percent of Households	n/a
Percent of ER Treated Hospitalized	4.17%	Number of Products in Use	n/a
Number of Incident Reports 2003	583	Estimated Retail Price Range	n/a
Medically Treated Injuries 2003	423,460	Cost of Medically Treated Injuries (Millions)	$8,780.9
Deaths 2000	115	Death Costs (Millions)	$580
Total Known Costs (Millions)[3]			$9,360.9

Injuries

The 1997 estimate of emergency room-treated injuries associated with Miscellaneous Products is 115,560, giving a seven year estimated change of 57,740. Most of this difference is due to new product codes added in 2000, and increased reporting of other product codes for the NEISS All Injury Program which started the same year. No statistical test was applied to the difference in estimates, as the changes in the product codes would make the results meaningless even if the difference were statistically significant.

[3] This total represents an index rather than an actual single year estimate of costs, because injury costs are based on 2003 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 Miscellaneous Products, 2003



Source: National Electronic Injury Surveillance System (NEISS), 2003

Deaths

For 2000, CPSC has reports of 115 deaths associated with these products. Ninety-three of the deaths were included in the maximum addressable category (see page 15 for description of this category). Sixty-one of the deaths counted as addressable resulted from burns in bath tubs or hot tubs. Seventeen of the deaths resulted from children playing with matches. Other addressable deaths included eight from product related fires, one from a mechanical failure, three from getting caught in moving machinery, one from being hit by an amusement ride, and two from other potentially addressable burns. See Table 2 for the number of deaths in each product category included in the maximum addressable category.

Overview

There was an increase of 57,740 injuries over the 7-year period, 1997 – 2003. This was not tested for statistical significance given the diversity of products in this report.

Table 1 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, the number of products of each type in use, 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 social cost might actually be addressed through some action. Many of the injuries treated in emergency rooms that were related to miscellaneous products 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 through case by case review that portion of the injury and death costs that is not addressable. Maximum addressable costs were then generated by CPSC's Injury Cost Model[2] 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 non-electric decorations ranks fourth on total costs but seventh in maximum addressable costs (see Table 3). Most of the injuries associated with this class of products had only incidental product involvement. Examples included falls while putting decorations up or away, cuts while carving pumpkins, or back strains from lifting boxes of decorations. 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.[4] 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 child was burned by hot water but the source of the water was not specified, this was not enough

[4] See Methodology Section for a description of these databases.

information to conclude that the case wasn't addressable. If the child had knocked over a pot of boiling water, the case might not be addressable; but if the child was burned by bath water, the case 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 addressable injuries were run through the Injury Cost Model. This provides both maximum addressable cost estimates for emergency room-treated injuries and medically attended injuries. 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 attended 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 miscellaneous products, we find that the total maximum addressable injury and death cost is $2.1 billion dollars, out of a total cost associated with these products of $9.4 billion dollars, which is about 22.2%[5] maximum addressable. Note that the percentage of maximum addressable injuries is different than the percentage of maximum addressable costs. The cost estimates are derived from a number of variables associated with each injury[6], 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 index[7] of estimated injury and death costs for each of the product categories and the estimated maximum addressability of those costs.

[5] Based on the more precise totals provided in Table 3.
[6] See Methodology Section for more description of how the cost estimates are computed.
[7] This total represents an index rather than an actual single year estimate of costs, because injury costs are based on 2003 and the death costs are based on 2000. These are the most recent years for which each of these cost items was available.

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

Product	Codes	ER Injuries 2003	All Medically Treated Injuries 2003	Hosp.% 2003	Incident reports 2003	DTHS 2000	# of Products in Use (millions)	Death Costs (millions)	Med. Trtd. Injury Costs (millions $)	Total Known Costs (millions)
Hot Water	1934	36,950	77,200	7.3%	61	67	n/a	$335	$3,040.2	$3,375.2
Vending Machines (excluding car washing machines	1733	3,790	10,550	**	6	0	10-20	$0	$237.7	$237.7
Pets Supplies (excluding food and medicines)	1715	27,950	74,370	4.2%	47	5	N/A	$25	$1,305.4	$1,330.4
Amusement Attractions	1293	16,430	45,680	2.0%	66	4	*	$20	$850.0	$870.0
Miscellaneous Assorted Unrelated Products	925, 927, 1718-1720, 1726, 1732, 1734, 1735, 1738-1742, 4004, 4005, 4047, 4058, 4067, 4068	65,240	157,790	2.4%	123	8	N/A	$40	$2,347.5	$2,387.5
Electric Decorations	1711, 1736	4,350	13,140	10.9%	70	6	N/A	$30	$297.7	$327.7
Aquariums	1240	8,440	19,250	2.2%	19	2	15	$10	$264.1	$274.1
Non-Electric Decorations	1701, 1712, 1714, 1729	9,020	22,970	5.3%	48	0	N/A	$0	$379.6	$379.6
Clocks or Scales	4065, 4066	450	1,110	**	4	0	N/A	$0	$21.8	$21.8
Matches	1728, 1730, 1731	790	1790	**	126	31	N/A	$155	$44.2	$199.2
Total		174,050[8]	424,460	4.2%	583	115		$845	$8,780.9	$9,625.9

* The number of products in use is not known, but there were 500 million visits to carnivals.
** Sample size 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.

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

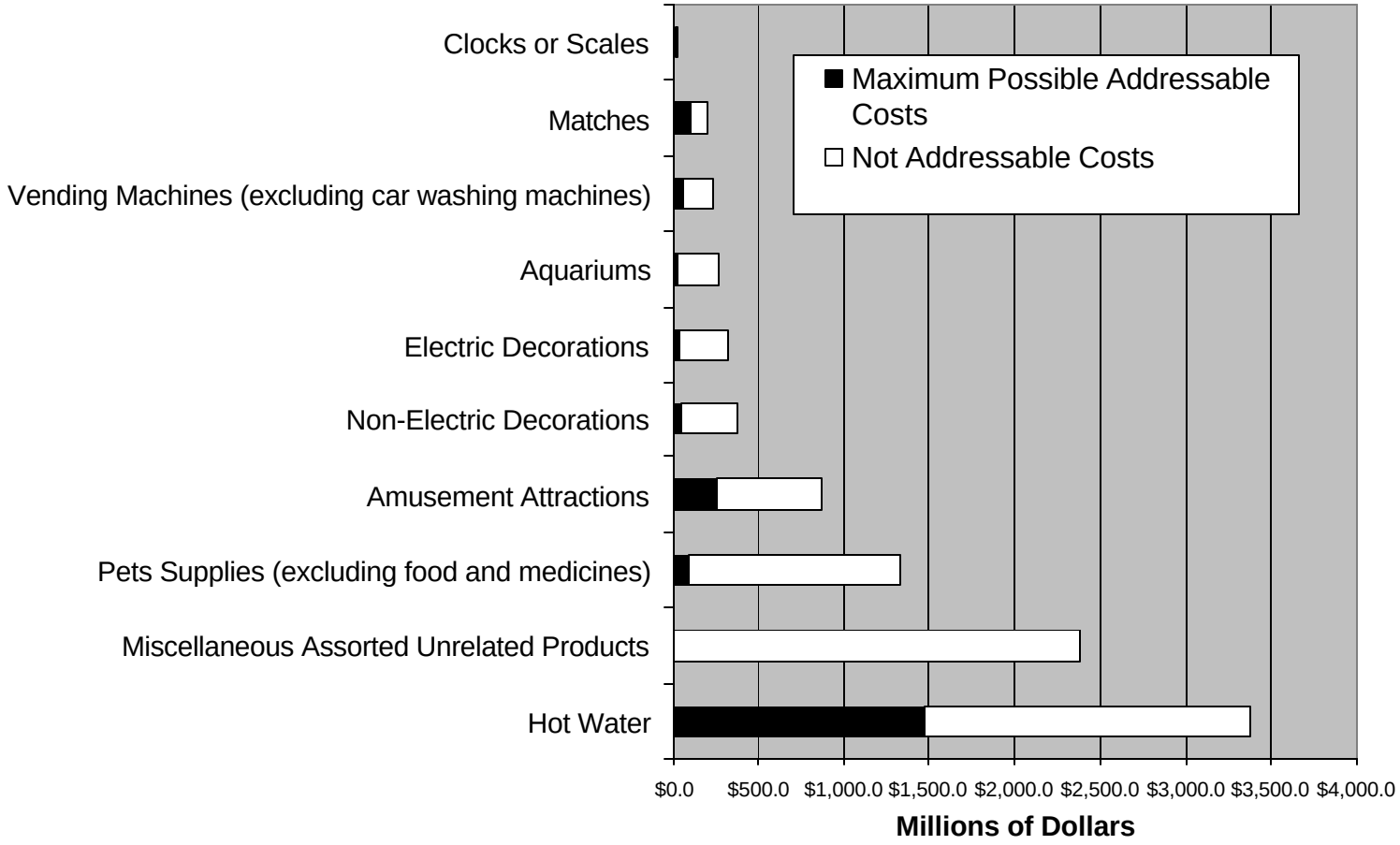
Table 3 lists the product groups ranked in descending order by the Total Injury and Death Costs Index. This table also shows the total maximum addressable cost for each product group. For those product groups where there was an estimate of number of products in use, the maximum addressable cost per unit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

There are three products which have hazard patterns for which a new study or hazard reduction activity may be appropriate:

- **Hot water burns from tubs and faucets:** Hot water has the largest costs for the report, in terms of total known costs, maximum addressable costs, and death costs. The main addressable hazard pattern is burns in bath tubs, including other burns from hot water coming out of faucets. Voluntary standards for water heaters have requirements intended to address this, but since they came into effect there has been no significant decrease in the overall estimates for hot water injuries. This does not mean the burns related to water from water heaters have not been reduced, since they are only part of hot water injuries. Staff recommends further study of the data to determine whether or not the burns related to water from water heaters have declined.
- **Bouncing amusements:** The next largest maximum addressable costs in this category come from amusement rides[9], where at least two thirds of the maximum addressable injuries involve inflatable bouncing amusements. While these would seem similar to trampolines, which have been closely followed by the CPSC staff, there does appear to be a difference in the hazard patterns. While the hazards of interest for trampolines involve hitting the surrounding structure or falling off the trampoline, the hazards for bouncing amusements seem to occur within the bouncing area. Staff recommends investigation of some of these injuries to determine if the hazards warrant further action.
- **Matches:** Matches have a large amount of their costs in the maximum addressable category. The vast majority of the costs (over 90%) involve children under five years of age playing with matches. Staff is not sure if these incidents are truly addressable, but is concerned about the number of deaths.

[9] CPSC has jurisdiction over mobile, or portable, amusement rides. CPSC does not have jurisdiction over fixed site rides commonly found in amusement parks, theme parks, or similar locations.

Figure 3. Estimated Cost Index, in Millions of Dollars, Miscellaneous Products



Source: National Electronic Injury Surveillance System (NEISS), 2003, 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[10]	Maximum Number of Addressable Deaths/ Total Deaths Reported[11]
Hot Water	1934	27.6%	63/67
Vending Machines (excluding car washing machines	1733	26.9%	0/0
Pets Supplies (excluding food and medicines)	1715	10.1%	1/5
Amusement Attractions	1293	31.3%	3/4
Miscellaneous Assorted Unrelated Products	925, 927, 1718-1720, 1726, 1732, 1734, 1735, 1738-1742, 4004, 4005, 4047, 4058, 4067, 4068	n/a[12]	2/8
Electric Decorations	1711, 1736	3.8%	6/6
Aquariums	1240	6.7%	1/2
Non-Electric Decorations	1701, 1712, 1714, 1729	18.0%	0/0
Clocks or Scales	4065, 4066	63.0%	0/0
Matches	1728, 1730, 1731	21.8%	17/31
Total		**19.6%**	**93/116**

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 deriving from the same cases, take into account a

[10] These percentages are based on more precise estimates than those given in Part B, and therefore may not match up exactly.
[11] Some cases appear in more than one category. Thus, numbers may not add up to the total.
[12] The products in this product group were too disparate and had too many incidental involvements with injury to provide a meaningful analysis of addressability.

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. While reading the injury/death narratives to determine addressability, hazard patterns were also coded. The hazard patterns determined to be un-addressable were identified and those that remained make up the maximum addressable definitions.

Maximum Addressability Definitions Used for Each Class of Products - Injuries

Hot Water: burn due to malfunctioning product; burn in tub, shower, or sink; other non-spill burn.

Vending Machines: caught in machinery, electric shock, machine fell over, repetitive motion injury, sharp edge.

Pet Supplies: sharp edge, retractable leash snap back.

Amusement Attractions: falls in a bouncing amusement, caught in part of a bouncing amusement, caught in machinery, electric shock, fall leaving an amusement, hit by ride, mechanical failure, sharp edge.

Electric Decorations: foreign body, hot surface, sharp edge, shock.

Aquariums: product failure, aquarium fell over.

Non-Electric Decorations: product fall, sharp edge.

Clocks or Scales: product fall, electrical shock or burn.

Matches: box ignition, broken match, children under five playing with matches.

The products in the miscellaneous assorted unrelated products category are too disparate and too frequently incidental to the injury for a meaningful analysis of addressability.

Maximum Addressability Definitions Used for Each Class of Products – Deaths

Hot Water: burn in tub, other non-spill burn.

Pet Supplies: product related fire, strangulation.

Amusement Attractions: caught in machinery, hit by ride, mechanical failure.

Miscellaneous Assorted Unrelated Products: caught in machinery.

Electric Decorations: product related fire.

Aquariums: product related fire.

Matches: children under five playing with matches.

Table 3 - Calculation of Indices using cost estimates from Injury Cost Model and Death Certificates File.[13]

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
Hot Water	$3,040.2	$335	$3,375.2	$ 1,473.4	1	1
Pets Supplies (excluding food and medicines)	$1,305.4	$25	$1,330.4	$ 83.5	2	4
Amusement Attractions	$850.0	$20	$870.0	$ 265.8	3	2
Non-Electric Decorations	$379.6	$0	$379.6	$ 45.1	4	7
Electric Decorations	$297.7	$30	$327.7	$ 35.2	5	6
Aquariums	$264.1	$10	$274.1	$ 16.8	6	8
Vending Machines (excluding car washing machines	$237.7	$0	$237.7	$ 59.4	7	5
Matches	$44.2	$155	$199.2	$ 99.8	8	3
Clocks or Scales	$21.8	$0	$21.8	$ 12.5	9	9
Miscellaneous Assorted Unrelated Products	$2,347.5	$40	$2,387.5	$ -		
Total	$8,780.9	$845	$9,360.9	$ 2,078.4		

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 2003 emergency room-treated injury reports, and death cost estimates are based on deaths reported which occurred in 2000. 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.

[13] Product usage data is not provided in this table. Staff felt that the wide variety of products in this report, and the unavailability of it for many categories, would make its inclusion and use in ranking products misleading.

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.[14]

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.

[14] 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 Department of Defense (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 addressable[15]. Maximum addressable costs were then generated by the Injury Cost Model using the remaining injuries.

[15] See page 7, the discussion on addressability for more information on this process.