



## Hazard Screening Report - Toys

(Product codes 1301, 1306, 1309-1310, 1314, 1317-1319, 1322, 1325-1328, 1330, 1332, 1334-1335, 1338, 1342, 1345-1347, 1349, 1352-1354, 1356, 1362, 1376, 1383, 1389-1390, 1392-1393, 1398-1399, 5001, 5004-5007, 5010, 5013, 5015)

This report and all others in this series are general overviews, which use data taken directly from the data systems for the purpose of comparison among the products. No recoding or adjusting of the data are performed. For this reason, estimates of injuries provided in this report may appear to be inconsistent with other documents produced by Epidemiology staff working in specific program areas.

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THIS ANALYSIS WAS PREPARED BY THE CPSC STAFF, HAS NOT BEEN REVIEWED OR APPROVED BY, AND MAY NOT NECESSARILY REFLECT THE VIEWS OF THE COMMISSION.

# 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.

## CAUTION!

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 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. The remaining injuries are then run through the 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.**

Therefore, while the report states that the maximum addressable percentage of the costs is about 54%, it would be incorrect to say that 54% of the injuries or 54% of the costs are addressable.

For example: A toy-related injury sustained by an adult would not be sufficient reason to consider the injury as non-addressable. In other words, the age of the victim in relation to the toy would not necessarily preclude the injury from being considered addressable.

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.

## **Introduction**

This report provides an overview of injuries and deaths associated with toys. 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 emergency room treated injuries since 1997. This is followed by a pie chart (figure 2) showing the distribution of the injuries by energy source of the hazard, i.e., mechanical, fire, electrical, chemical, and 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.

For the purposes of this report, scooters, backpacks, water toys and squeaker toys were not included with the product category group for toys (scooters and backpacks are included in the report on “Outdoor Activities and Equipment” and squeaker toys are included in the “Nursery Products” report).

# **Toys**

## **Individual Product Categories**

### **Electric or Chemical Toys**

(includes: metal/plastic-molding sets, electric toy ovens, electric toy irons, woodburning kits, chemistry sets or science kits)

### **Fabric Items**

(includes: children's play tents, tunnels or other enclosures, costumes or masks)

### **Fueled Toys**

(includes: gasoline or fuel powered models, rocketry sets, engine fuels for models)

### **Miscellaneous Toys**

(includes: balloons (toy), molding compounds, crayons or chalk)

### **Pogo Sticks and Stilts**

### **Riding Toys**

(includes: tricycles, nonwheeled riding toys-unpowered, wagons, powered riding toys, wheeled riding toys-unpowered, riding toys-not specified)

### **General Toys**

(includes: kites or kite string, flying toys, unpowered models or parts, inflatable toys, blocks, stacking toys or pull toys, toy bows or arrows, building sets, clacker balls, slingshots or sling propelled toys, marbles, other toy weapons, toy guns-not specified, toy sports equipment, toys guns with projectiles, other toy weapons (projectile), toys not elsewhere classified, other toy guns, toy weapons, not specified, toy make-up kits or cosmetics, toy caps, cap toys or cap guns)

### **Trains and Cars**

(includes: electric trains or accessories, electric toy racing cars)

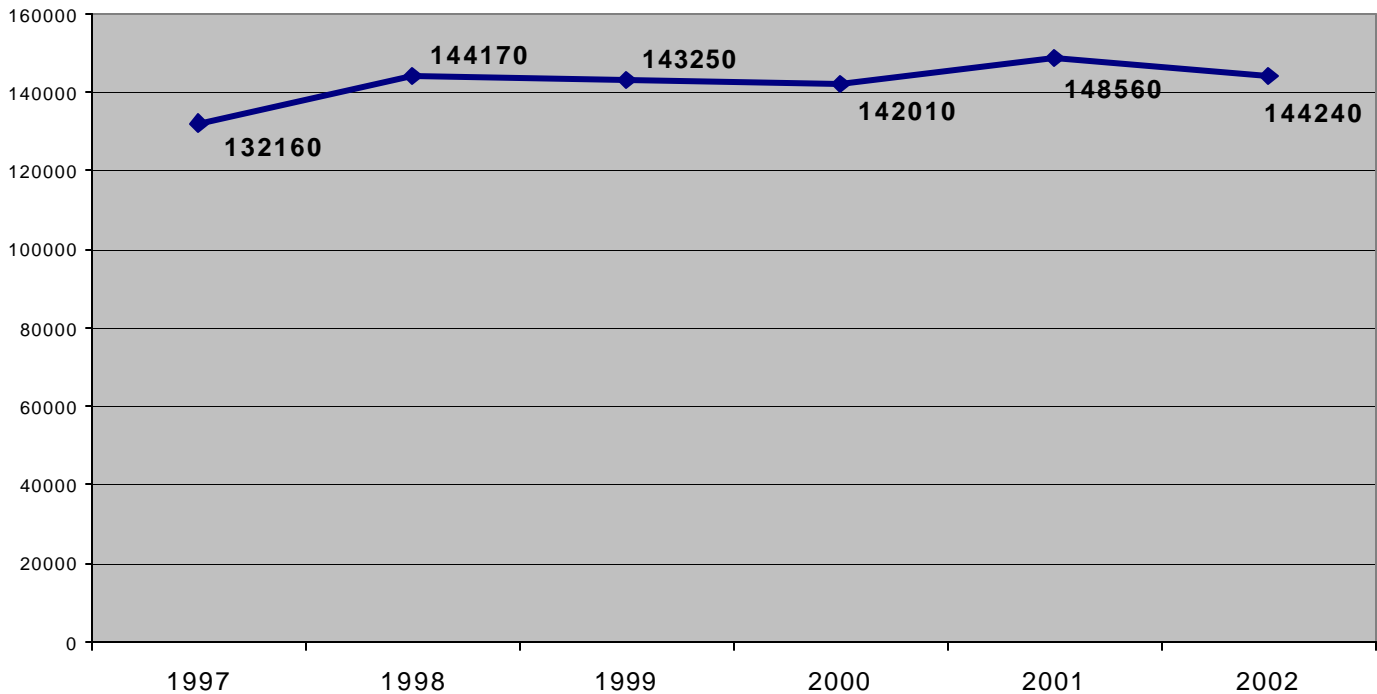
### **Toy Boxes or Chests**

**All Toys**

**1301, 1306, 1309-1310, 1314, 1317-1319, 1322, 1325-1328, 1330, 1332, 1334-1335, 1338, 1342, 1345-1346, 1347, 1349, 1352-1354, 1356, 1362, 1376, 1383, 1389-1390, 1392-1393, 1398-1399, 5001, 5004-5007, 5010, 5013, 5015**

ER Treated Injuries 2002	144,240	Percent of Households	Not Available
Medically Treated Injuries 2002	329,300	Number of Products in Use	Not Applicable
Percent of ER Treated Hospitalized	1.2%	Estimated Useful Life	Not Applicable
Deaths 2000	36	Estimated Retail Price Range	Not Applicable
Fires 1999	600 <sup>1</sup>	Fire Property Loss 1999 (Millions)	\$7.7
Number of Incident Reports 2002	1,555	Death Costs (Millions)	\$180
Cost of Medically Treated Injuries (Millions)	4,886.9	Total Known Costs (Millions)	\$5,074.6 <sup>2</sup>

**Figure 1: Estimated Number of Emergency Room-Treated Injuries Associated with All Toys, by Year, 1997 - 2002**

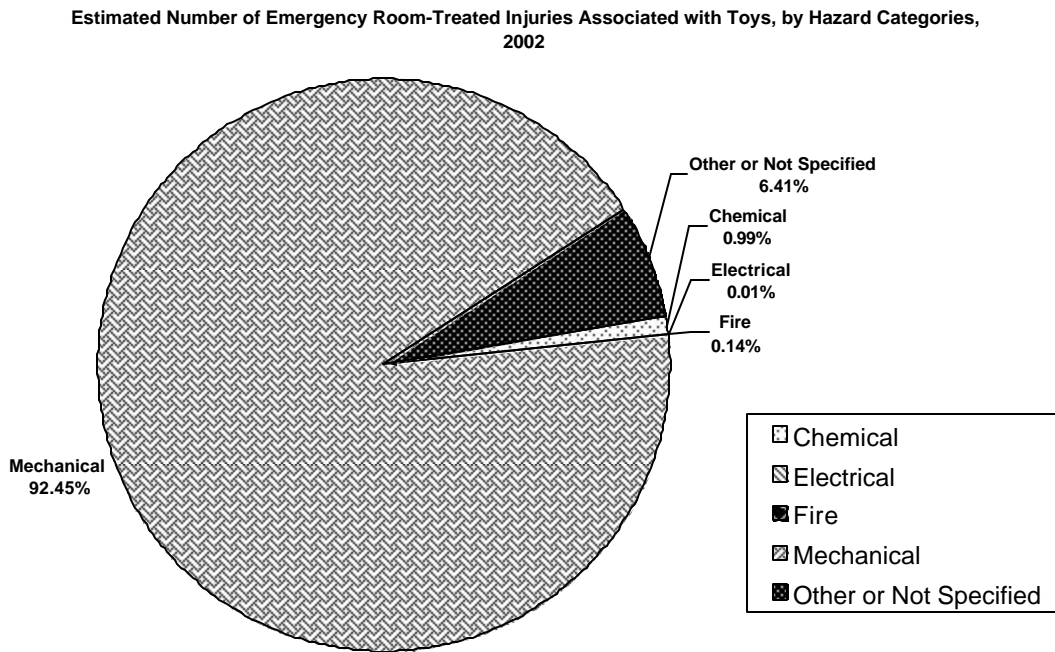


Change from 1997 to 2002 is +12,080. This is not a statistically significant change (p = .2206).

<sup>1</sup> Fire estimate was obtained from the 1999 Residential Fire Loss Estimates (under “Other Materials – Toy, Game”) – specific toy products were not identified.

<sup>2</sup> This total represents an index rather than an actual single year estimate of costs, because injury costs are based on 2002, death costs are based on 2000, and fire costs are based on 1999. 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 Toys, 2002**



**Age Distribution of Emergency Room-Treated Injuries\***

Age Group	Estimated Injuries - 2002
Under 5	65,970
5 – 9 Years	31,760
10 – 14 Years	12,160
15 +	34,360
Total	144,240

\*Estimates may not add to total due to rounding.



## **DEATHS**

For 2000, CPSC received 36 reports of deaths that were identified as toy related. This count includes all deaths that indicated toy involvement, including deaths to adults.

Of the 36 deaths, victims' ages ranged from 11 months to 75 years old. There were 16 choking or aspiration deaths which involved balls (5); balloons (2); marble (1); a building block (1); a bead (1); toy baseball with candy<sup>3</sup> (2); and unidentified toys (4).

There were five deaths which may have involved suffocation, two of which involved infants. In one case, the child was found with half of a hollow toy plastic ball over his face while in a crib, and the other indicated that the child was suffocated by a teddy bear that was left in her crib. Staff review of this case determined that there was insufficient detail to conclude that the stuffed bear was the causative agent. In the remaining three cases, a 2 year old child was found with a toy gym/activity set on his chest and neck area, a 17 month old was found with his upper body inside a wooden toy box with the lid closed, and an 11 month old child became wrapped up in a tent and suffocated.

Four of the deaths involved Halloween costumes. Three victims died from burns they suffered while wearing Halloween costumes. Two of the burn victims, aged 2 and 4 died in a car fire, while the third victim aged 75, died from burns she sustained when her homemade costume ignited upon contact with a flammable liquid. Lastly, a 15 year-old boy strangled when his Halloween costume became caught in a residential fence as he attempted to climb over the fence.

There were four deaths involving riding toys; two drowning cases in which the victims rode their tricycles into nearby lakes and subsequently drowned and two motor vehicle deaths in which the victims were struck by motor vehicles while on a riding toy.

One child was run-over by a riding lawn mower as he pushed a toy lawn mower nearby. Another child died in a fire when a sibling ignited a doll with a cigarette lighter. There was one head injury death where the victim was struck in the head by a plastic golf club and another child was strangled by the plastic cord on an unidentified toy.

A total of four deaths involved victims over age 20 (including the Halloween costume fire death of the 75 year old mentioned above). In the remaining cases, a 23 year old male was shot and killed by a police officer as he held a toy gun; a 25 year old male drowned while using a "boogie board floatation device" and a 61 year old man died after ingesting a game board piece. Of the 36 deaths reported, 22 were determined to be addressable.

## **POPULATION DATA**

The majority of injuries associated with toys were sustained by children under the age of five. Since most of these products are designed for use by or with children it is relevant to compare the yearly injury frequency with the U.S. population data for children under the age of five (Table A, Figure A) and with the number of live births each year (Table B). There is no indication in the population data for children under five of a dramatic increase or decrease that would have an affect on the yearly injury frequency.

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<sup>3</sup> Although incidents indicate toy involvement, the product falls under FDA jurisdiction as food item.

**Table A. Population of Children Under the Age of 15 Years, by Year, 1997 – 2002, Three Age Groups, (in thousands)**

	1997	1998	1999	2000	2001	2002
Under 5	19,099	18,989	18,942	19,212	19,364	19,609
5-9 Years	19,754	19,929	19,947	20,476	20,208	19,901
10-14Years	19,097	19,242	19,548	20,601	20,910	21,136
Total	57,950	58,160	58,437	60,289	60,482	60,646

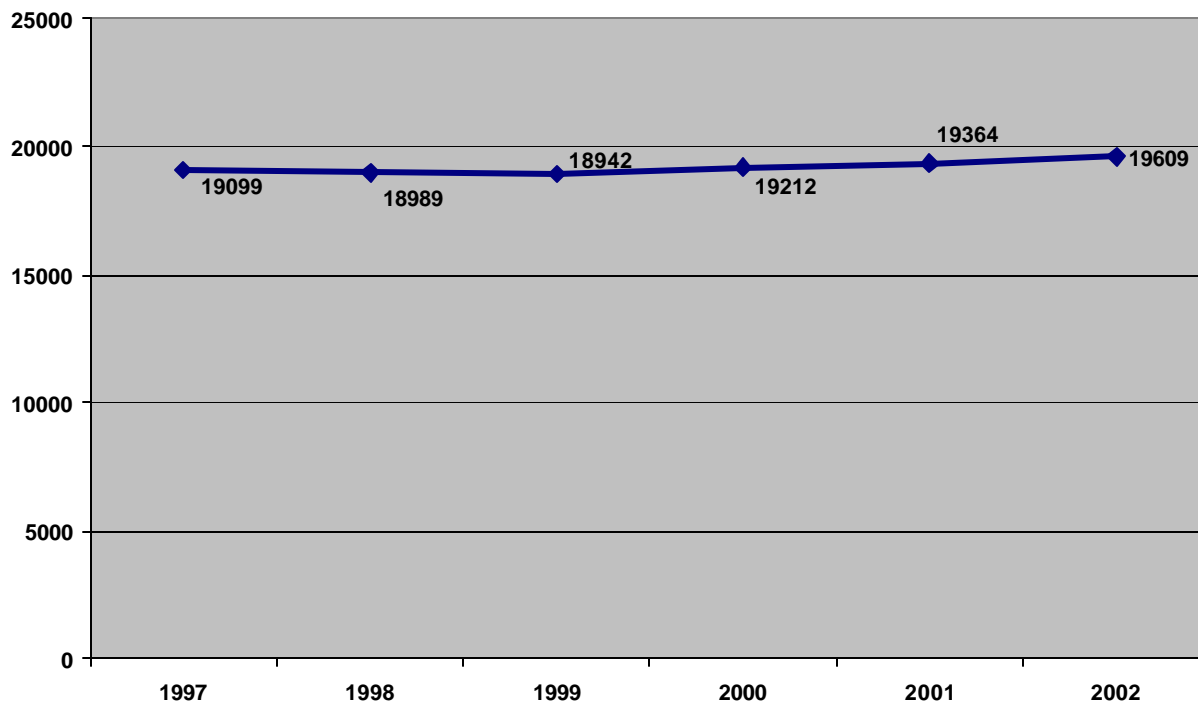
Source: National Vital Statistics Report, 1997-2002

**Table B. Number of Live Births in the United States, by Year 1997 – 2002**

	1997	1998	1999	2000	2001	2002
Number of Live Births	3,880,894	3,941,553	3,959,417	4,058,814	4,025,933	4,019,280

Source: National Vital Statistics Report, 1997-2002

**Figure A. Estimated Population, in thousands, of Children Less than 5 Years of Age, by Year, 1997 - 2002**



Source: National Vital Statistics Report, 1997-2002

## Overview Summary

There is no trend in emergency room treated injuries for the period 1997 –2002. The change in injury frequency over the 6 year period is +12,083. This is not a statistically significant change ( $p = .2206$ ).

Table 1 provides a summary of all product groups examined for this report. The table provides information on the number of emergency room-treated injuries, the number of medically-treated injuries, the percentage of the emergency room treatments 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 estimated useful product life for each category, and 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 and 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 toys may not be addressable because the injury was sustained as a result of 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 overview report. What we have done is identify that portion of the injury and death costs that is not addressable through case by case review. The remaining injuries were then run through the Injury Cost Model (ICM), 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.**

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.

Example: Approximately 62% of the estimated injuries for toy boxes and chests resulted from incidental contact with the product. Specifically, children fell on and off toy boxes. Judging by the fall scenarios described in the narratives, it is unlikely that the Commission can prevent such injuries, therefore, these injuries were not considered addressable. Injuries identified as possibly addressable within this category resulted from entrapment, lid failure and finger pinches. A description of the criteria for maximum addressability for each of the products in this report is contained on pages 14 and 15 of this section.

The staff reviewed the narratives included in the National Electronic Injury Surveillance System (NEISS) injury reports, and reviewed the death reports.<sup>4</sup> Due to the brief nature of the NEISS narratives, cases were categorized as “not addressable” only if it was clear that the injury was

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<sup>4</sup> See Methodology Section for a description of these databases.

incidental or not related to the product. For example, a toy-related injury sustained by an adult would not be sufficient reason to consider the injury as non-addressable. In other words, the age of the victim in relation to the toy would not necessarily preclude the injury from being considered addressable. 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 gives us maximum addressable cost estimates for all medically-treated injuries. Deaths were also reviewed and determined to be in either the not-addressable or maximum addressable category, and were valued at \$5 million each. This “value of statistical life” of \$5 million is consistent with current economic literature. 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-treated 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 Toys, we find that the total maximum addressable injury and death cost is \$2.7 billion, out of a total cost associated with these products of \$5 billion, about 54% maximum possibly addressable. Note that the percentage of addressable injuries is different than the percentage of addressable costs. The cost estimates were derived from a number of variables associated with each injury<sup>5</sup>, 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<sup>6</sup> of estimated injury and death costs for each of the product categories and the estimated maximum addressability of those costs.

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 estimates 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 a new study or hazard reduction activity may be appropriate are noted below:

Riding Toys: This product category ranked second in both maximum addressable costs and total injury and death costs. Most of the emergency room-treated injuries were due to falls from riding toys (tricycles, wagons, riding horses, jeeps, etc.). Due to the limited information provided by the NEISS narratives, it is unclear whether these falls were all

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<sup>5</sup> See Methodology Section for more description of how the cost estimates are computed.

<sup>6</sup> This total represents an index rather than an actual single year estimate of costs, because injury costs are based on 2001 and the death costs are based on 2000. These are the most recent years for which each of these cost items was available.

incidental in nature. A NEISS based study could provide more information about how these falls are happening and help identify actions CPSC could take to prevent them.

**Pogo Sticks & Stilts:** This product category ranked third in total injury and death costs. There was a statistically significant increase in injuries from 1997 to 2002. Most of the emergency room-treated injuries occurred as a result of users falling off pogo sticks. Due to the limited detail in the NEISS data, it is unclear whether product design, construction or failure contributed to any of these falls. The victims' ages ranged from 3 to 66 years old. Emerging Hazards will assign and collect investigations of NEISS reports to determine if a study is needed to provide more information about how these falls are happening and help identify actions CPSC could take to prevent them.



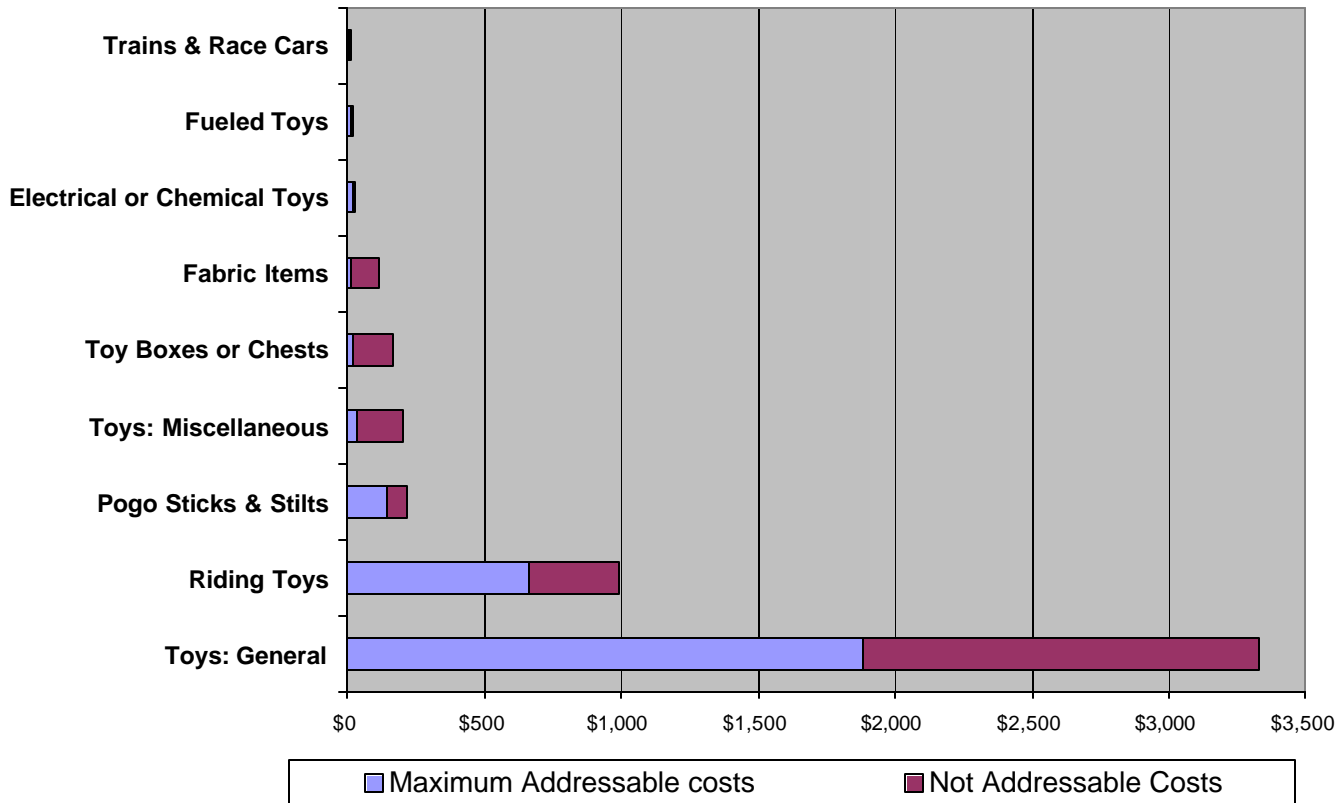
**Table 1 – Product Summary Table – Injury, Death, and Cost Estimates**

Product	Codes	ER Injuries 2002	All Medically Treated Injuries	Hosp. % of ER Treated 2002	Incident Reports 2002	DT HS 2000	# of Products in Use	Estimated Useful Product Life (Years)	Death Costs *2000	Estimated Retail Price Range (\$)	Med. Trtd. Injury Costs	Total Known Costs
Electrical or Chemical Toys	1319, 1334, 1335, 1362, 1393	520	1,120	3%	2	0	103,000,000	2	\$0	\$7 - \$14	\$25,000,000	\$25,000,000
Fabric Items	1322, 1342	1,910	4,710	0	23	5	Not Available	Not Available	\$25,000,000	Not Available	\$86,000,000	\$111,000,000
Fueled Toys	1306, 1314, 1356	410	870	4%	3	0	127,000,000	1 - 2	\$0	\$1 - \$24	\$17,000,000	\$17,000,000
Toys: Miscellaneous	1347, 1376, 5010	6,630	15,330	3%	26	2	3,034,000,000	2	\$10,000,000	\$3 - \$6	\$191,000,000	\$201,000,000
Pogo Sticks & Stilts	1310, 1349	4,030	9,580	1%	8	0	Not Available	Not Available	\$0	Not Available	\$214,000,000	\$214,000,000
Riding Toys	1301, 1327, 1328, 1330, 1398, 5005	22,060	48,900	1%	195	4	36,000,000	3	\$20,000,000	\$30 - \$175	\$973,000,000	\$993,000,000
Toy Boxes or Chests	1353	5,130	11,000	2%	12	1	Not Available	Not Available	\$5,000,000	Not Available	\$163,000,000	\$168,000,000
Toys: General	1309, 1317, 1318, 1325, 1338, 1345, 1346, 1352, 1354, 1389, 1390, 1392, 1399, 5001, 5004, 5006, 5007, 5013, 5015	102,980	236,560	1%	1,280	24	335,000,000	1 - 6	\$120,000,000	\$3 - \$19	\$3,205,000,000	\$3,325,000,000
Trains and Race Cars	1332, 1383	570	1,250	0%	6	0	Not Available	Not Available		Not Available	\$13,000,000	\$13,000,000
Total		144,238	329,304	1.2%	1,555	36			\$180,000,000		\$4,887,000,000	\$5,067,000,000

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

Not Available – Product information was not available.

**Figure 3. Estimated Cost Index in Millions of Dollars, Toys, by Total Costs.**



Source: National Electronic Injury Surveillance System (NEISS), 2002, Injury, Potential Injury, and Incident database (IPII), 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**

<b>Product</b>	<b>Codes</b>	<b>Percentage of injuries included in Maximum Addressable</b>	<b>Maximum Number of Addressable Deaths/ Total Deaths Reported</b>
Electrical or Chemical Toys	1319, 1334, 1335, 1362, 1393	84%	0 of 0
Fabric Items	1322, 1342	5%	1 of 5
Fueled Toys	1306, 1314, 1356	75%	0 of 0
Toys: Miscellaneous	1347, 1376, 5010	11%	2 of 2
Pogo Sticks & Stilts	1310, 1349	68%	0 of 0
Riding Toys	1301, 1327, 1328, 1330, 1398, 5005	68%	0 of 4
Toy Boxes or Chests	1353	9%	1 of 1
Toys: General	1309, 1317, 1318, 1325, 1326, 1338, 1345, 1346, 1352, 1354, 1389, 1390, 1392, 1399, 5001, 5004, 5006, 5007, 5013, 5015	56%	18 of 24
Trains & Race Cars	1332, 1383	18%	0 of 0
<b>Total</b>		<b>39%</b>	<b>22 of 36</b>

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

**Maximum Addressability Definitions used for each class of products - Injuries.**

<b>Electrical or Chemical Toys-</b>	Cut on, hot surface burns
<b>Fabric Items -</b>	Entrapment, flammable fabric, allergic reaction
<b>Fueled Toys-</b>	Cut on (propellers), impact
<b>Miscellaneous -</b>	Choking/aspiration, allergic reaction
<b>Pogo Sticks –</b>	Failures, falls, cut on
<b>Riding Toys–</b>	Stability (tip-over)/falls, fire/overheating, motor vehicle collision
<b>Toys, General-</b>	Failures, small parts (under 3 years of age), sharp edges, choking/aspiration, tip-over, projectiles, broken parts
<b>Trains and Race Cars -</b>	Fire/overheating, projectiles
<b>Toy Boxes/Chests -</b>	Entrapment, finger pinches, lid/hinge support failures

**Maximum Addressability Definitions used for each class of products - Deaths.**

<b>Electric or Chemical Toys-</b>	None reported
<b>Fabric Items -</b>	Fabric ignition
<b>Fueled Toys -</b>	None reported
<b>Miscellaneous -</b>	Aspiration
<b>Pogo Sticks -</b>	None reported
<b>Riding Toys -</b>	Drowning, motor vehicle collision
<b>Toys, General -</b>	Suffocation, choking/aspiration on small toys/objects (such as balls)
<b>Trains and Race Cars -</b>	None reported
<b>Toy Boxes/Chests -</b>	Entrapment/suffocation

**Table 3 - Calculation of Indices<sup>78</sup> using cost estimates from Injury Cost Model, Death Certificates File, and Estimates of Number of Products in Use.**

Title	Medically Attended Injury Costs	Death Costs	Total Injury and Death Costs	Total Maximum Addressable Costs	Rank on Total Costs	Rank on Maximum Addressable Costs	Products in Use	Maximum Addressable Costs per Unit	Rank on Maximum Addressable Costs per Unit
Electrical or Chemical Toys	\$25,000,000	0	\$25,000,000	\$21,000,000	7	5	103,000,000	\$0.20	3
Fabric Items	\$86,000,000	\$25,000,000	111,000,000	\$9,300,000	6	8	Not Available	Not Available	Not Available
Fueled Toys	\$17,000,000	0	\$17,000,000	\$12,750,000	8	7	127,000,000	\$0.10	4
Toys: Miscellaneous	\$191,000,000	\$10,000,000	\$201,000,000	\$31,010,000	4	4	3,000,000,000	\$0.01	5
Pogo Sticks & Stilts	\$214,000,000	0	\$214,000,000	145,520,000	3	3	Not Available	Not Available	Not Available
Riding Toys	\$973,000,000	\$20,000,000	\$993,000,000	\$661,640,000	2	2	36,000,000	\$18.38	1
Toy Boxes or Chests	\$163,000,000	\$5,000,000	\$168,000,000	\$19,670,000	5	6	Not Available	Not Available	Not Available
Toys: General	\$3,205,000,000	\$120,000,000	\$3,325,000,000	\$1,884,800,000	1	1	335,000,000	\$5.62	2
Trains & Race Cars	\$13,000,000	0	\$13,000,000	\$2,340,000	9	9	Not Available	Not Available	Not Available
Total	\$4,887,000,000	\$180,000,000	\$5,067,000,000	\$2,788,030,000					

<sup>7</sup> These “total injury and death costs” estimates and “total maximum addressable cost” 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.

## 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) and 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.<sup>9</sup>

This analysis uses NEISS data for the period 1/1/1997 through 12/31/2002.

### 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 (discussed below) database. 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 at the time 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.

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<sup>9</sup> 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 is hospitalized 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 addressable. The remaining injuries were then run through the Injury Cost Model, producing the estimate of maximum addressable costs.

### **Variables Associated with Products in Use Estimates**

Inputs needed for number of products in use estimates include: Annual sales, Retail price range, Expected useful life, and Expected number in use.

**Annual Sales:** The annual sales data are from trade sources, from published information and association estimates. Economic Analysis Staff used the average of unit sales as reported by appropriate industry sources.

**Retail Price Range:** The retail price range was reported by industry trade groups for some categories. For others Economic Analysis Staff used information from retail stores and information developed from internet searches.

**Expected Useful Life:** The useful life was reported by industry sources for some products. Available studies are also used, if no industry sources are found. In some cases, Human Factors staff was consulted to determine appropriate age groups, and thus, the length of time a product may remain in use.

**Expected Number in Use:** There is often not sufficient data available to conduct a Product Population Estimate for a class of products. As a surrogate in these cases, Economic Analysis Staff used average sales multiplied by the useful life estimate. This will understate the number of products in use for products that have seen substantial growth in sales, and overstate the number in use for products that have seen substantial decreases in sales in recent years.