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CONSUMER PRODUCT SAFETY COMMISSION
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MEMORANDUM

DATE: MAY 15 1996

TO : Ronald L. Medford, Assistant Executive Director
Office of Hazard Identification and Reduction

Through: Mary Ann Danello, Ph.D., Associate Executive Director
Directorate for Epidemiology and Health Sciences
for Robert E. Frye, Director, Hazard Analysis Division, EHHA

FROM : Suzanne P. Cassidy, EHHA

SUBJECT: Trampolines

This memorandum provides injury and death data related to trampolines. Information was obtained from CPSC's National Electronic Injury Surveillance System (NEISS), the In-Depth Investigation file, the Injury and Potential Injury Incident file (IPII), and the Death Certificate file.

Background Information

During calendar year 1995 an estimated 66,200 trampoline-related injuries were treated in U.S. hospital emergency rooms. As shown in the following table, annual NEISS injury estimates since 1991 show a continued increase in the estimated number of emergency room-treated injuries associated with trampolines.

| Years | Estimated Injuries |
|---|---|
| 1991 | 38,800 |
| 1992 | 44,700 |
| 1993 | 46,200 |
| 1994 | 52,900 |
| 1995 | 66,200 |

Trade sources have indicated that annual sales of outdoor trampolines are between 300,000 to 500,000 units, with about 29 firms supplying indoor and outdoor trampoline equipment. The trade sources also indicated the primary end use of these outdoor

trampolines was in residential backyards.[1] A copy of the memorandum providing market data is attached.

## INJURIES

### Data and Methodology

NEISS estimates for 1995 were reviewed for annual data on trampoline-related injuries. In addition, a special study was conducted during September 1995 for additional in-depth information on trampoline injuries that occurred during that month.

### Victims

During 1995, victims in trampoline-related incidents were about evenly divided between males and females. Nearly 7 out of 10 victims were between the ages of 5 and 14. About 15 percent were between 15 and 24 years of age. Just under 10 percent were age 4 or younger.

About 40 percent of the estimated injuries were to the lower leg/foot area (reported as knee, lower leg, ankle, foot or toe). The next-largest number of injuries was to the lower arm/hand area with almost 30 percent of the injuries involving the elbow, lower arm, wrist, hand, and finger. About 12 percent of the injuries involved the head. Sprains and strains were diagnosed in about 40 percent of the injuries, followed by fractures in about 30 percent. Other reported diagnoses included contusions/abrasions (17 percent), and lacerations (almost 10 percent). Slightly over 2 percent of the victims were admitted to hospitals or transferred for treatment of their injuries, compared to the overall NEISS hospitalization rate in recent years of about 4 percent. Fractures (most frequently of the lower arm and lower leg) were diagnosed in three-quarters of these admissions.

### Hazard Patterns

A review of the one-line NEISS comments reported from participating hospital emergency rooms showed that most victims appeared to have been injured when they landed incorrectly while jumping or performing stunts on the trampoline. Other injuries happened when victims fell from the trampoline to the surface below or collided with another person on the equipment. Victims were also injured when they contacted the frame and/or springs while near the edge of the jumping surface.

During 1995, the largest number of trampoline-related injuries occurred in the spring and summer months (with the largest number reported in May).

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[1]Homan, A., "Trampolines," Directorate for Economics, Consumer Product Safety Commission, February 16, 1995.

## September 1995 Special Study

To obtain additional details of the incidents, trampoline-related injuries treated in U.S. hospital emergency rooms participating in the NEISS during September 1995 were assigned for in-depth investigations. Altogether, 82 investigations were completed. Information was usually provided by the parents of victims (when children were injured). The findings from the September in-depth study appeared to be generally similar to those for the full year. Following is information from the September study.

### Product Information

Almost half (46 percent) of the respondents stated the trampolines were relatively new, or less than two years old. They were usually described as circular, with the diameters ranging from 3 to 20 feet. The largest proportion (32 percent) were described by respondents as being 14 to 15 feet in diameter. Several respondents (16 percent) could not estimate the dimensions, but described them as "large" or "big." The smallest size reported was 3 feet in diameter, and a 3 foot x 30 foot "running/tumble" type trampoline was also mentioned.

As part of the in-depth investigation, respondents were also asked the distance of the trampoline from the ground. Where ground-height measurements were given, over half were said to be between two and three feet from the ground, with most of these estimated to be about three feet. About two out of ten estimated the distance to the ground at over three feet, and a small group (5 percent) were estimated to be less than two feet from the ground. Few respondents could identify the manufacturer.

Almost all of the trampolines associated with the injuries were at private homes, usually located in backyards. A few were located at gymnastics centers, school gyms or playgrounds.

### Usage Patterns

Most incidents occurred when the trampoline user landed improperly after jumping or performing other stunts on the equipment, causing strains, sprains and fractures. Other injuries happened when the user was too close to the edge of the trampoline and fell to the ground or was injured when landing on the frame and/or springs, usually causing bruises and lacerations. A few cases involved horseplay when the equipment was not used as intended.

In describing how the injury happened, just over half (57 percent) of the respondents said the victims were on the trampoline with one or more other people when they were injured. Many of these multiple-user incidents appeared to result from contact with the other user, i.e., two children were jumping and one landed on the other's foot, causing injury. Other injuries involving more than one person happened when the victims were bumped or jolted by another user, causing them to fall awkwardly on the equipment or, occasionally, knocking the victim off the trampoline.

## DEATHS

Since 1990, the Commission has received reports of 3 fatalities[2] associated with the use of trampolines. One victim was a 3-year-old child who strangled in 1991 when her necklace caught in the spring of a home trampoline as she attempted to get off. The other two cases involved teenage males. In 1991 a 15-year-old fell from a trampoline and died from a cervical fracture. The other victim was 19 and suffered a pulmonary embolism and quadriplegia in a 1994 trampoline accident. He died seven months later.

An additional death occurred in 1994 when a 44-year-old man was struck on the head by a trampoline blown by the wind.

Attachment

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[2]This number is not a complete count, since reporting for recent years is still in progress for some data sources, and it reflects only those cases reported to CPSC.

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