Appendix 107
January 1991

BIKE HELMETS

I. INTRODUCTION

A. Background Information

There are a large number of bicycle-related injuries with serious outcomes (including death) that occur each year. Annually, there are about one-half million emergency room-treated injuries and about 1,200 deaths. About two-thirds of the injuries and one-third of the fatalities involve children under age fifteen. A recent Seattle study (and other studies of more limited scope) concluded that bicycle helmets reduce the risk of injuries and deaths.

Numerous organizations are now actively promoting helmet use (e.g., American Academy of Pediatrics, Safe Kids, etc.). In May of 1989, CPSC signed an agreement with the National Highway Traffic Safety Administration (NHTSA) to cooperate in efforts to improve the safety of bicyclists. CPSC has also issued a Back-to-School Safety Alert urging bicyclists to wear helmets. Both the American National Standards Institute (ANSI) and the Snell Memorial Foundation have voluntary helmet standards. CPSC staff is now in the process of evaluating a petition which requested the Commission to establish a mandatory safety standard for bicycle helmets.

A comprehensive bicycle project will be conducted FY 91 and 92 to determine the factors contributing to bicycle-related injuries, including injuries to the head. Meanwhile, public interest in promoting the use of helmets to increase bicycle safety continues. Further CPSC endorsement of the use of helmets would be greatly enhanced by a hazard assessment from which the Commission could more authoritatively cite evidence of the injury prevention potential of helmets.

This guideline should be used when conducting bicycle helmet-related investigations. When the investigation is of a bicycle-related accident in which those involved were wearing helmets, be sure to use the investigative guideline for bicycles (Appendix 44) as well.

B. Specific Items of Interest

We are interested in finding out the types of helmets worn by bicyclists today, including the relative levels of safety offered by the various designs. We will need to consider accident information in evaluating the adequacy of the existing voluntary standards for bicycle helmets (ANSI and Snell); as well as in determining the need for a mandatory helmet standard. Of particular interest are incidents in which the bicyclist or passenger incurred a head or neck injury while wearing a helmet, or in which it appeared that the helmet didn't function properly (e.g., broke, came off, etc.) in an accident situation.

C. Headquarters Contacts

Deborah Tinsworth, EPHA 504-0470
John Preston, ESME 504-0494

II. INSTRUCTIONS FOR COLLECTING SPECIFIC INFORMATION

A. Synopsis

Provide a brief summary of the accident sequence. Indicate the factors that contributed to the accident, such as product failure, collision, loss of control, surface hazard, stunting, etc. Describe the resulting injuries, particularly if they involved the head area. Be sure to note that the victim was wearing a helmet.

For data retrieval from the computer, please make sure the following key words are used in the synopsis as appropriate: helmet, collision, head, struck, or fell.

B. Description of Victim Contact With Product

- Describe accident scenario, including all injuries or deaths sustained. Use diagrams to illustrate the victim's movements during the incident, including the distance and height of the fall.

- Note the approximate speed the victim was travelling (e.g., fast vs slow). Describe any factors which appeared to contribute to the accident, including

product failure, collision, loss of control, surface hazards, stunting, the involvement with motor vehicles, etc. Determine if the victim fell over the handlebars, or to the side.

- If the victim hit his or her head (or the helmet), try to determine the area(s) hit, and the object or surface on which it impacted. Document with diagrams and/or photographs any evidence (scratches, cracks, etc.) of helmet impact.

- If a head injury occurred, attempt to determine why. Ask victim for his/her opinion of the performance of the helmet.

- Determine if the helmet contributed to the accident in any way (e.g., blocked vision, caused overheating, etc.)

- Find out if chin strap was secured and if helmet stayed on head at the time of the accident. Indicate if chin strap broke or helmet broke or cracked during the accident.

- Find out if the victim always wears a helmet. If not, probe for the circumstances under which they might not (e.g., when they forget, when it is too hot, when riding a short distance, when not riding in traffic, when riding at low speeds, etc.).

- Find out to whom the helmet belongs. If it belongs to the victim, determine if there were I specific helmet features that were important in the selection of this helmet (e.g., safety certification, design, cost, etc.).

- Specify how many years victim had been riding bicycles, the frequency of riding (e.g., daily, weekends, holidays, vacations, etc.), and how long the victim had been using a bicycle helmet.

C. Description of Product

- Describe the design of the helmet (e.g., a hardshell

helmet may be composed of polystyrene foam covered with a heavy plastic covering; a softshell helmet may be made of lightweight polystyrene foam with no plastic covering: a thinshell helmet may be made of polystyrene foam with a light or thin plastic covering). Include the ventilation features of the helmet; the extent of head coverage; the presence or absence of features to protect the face; and the type of attachment straps on the helmet (e.g., adjustable on one or both sides, made from one or more than one piece, riveted to the helmet or attached in some other way, the type of buckle, etc.). Obtain color photographs, if possible.

- Indicate the presence of an ANSI (American National Standards Institute), SNELL (Snell Memorial Foundation), or other safety certification sticker on the helmet.

- Describe any other markings, cautions, and whether or not labeled to discard if involved in an impact incident.

- Specify the presence of reflective materials on the helmet.

- Report the manufacturer name, brand name, model/serial number, and price of the helmet.

- Specify the size of the helmet for a child/adult), and describe how well it fit the victim (and who did the fitting). Find out if the helmet was purchased specifically for the wearer or for someone else.

- If the helmet was owned by the victim, specify whether the helmet was purchased new or used, and the date and place (i.e., name and type of store) of purchase. Indicate whether the helmet was purchased with or after the purchase of a bicycle.

- Find out if helmet had ever been involved in a previous impact incident, and if so, severity and description of damage to helmet. NOTE: IF THE HELMET HAD EVER BEEN INVOLVED IN A MAJOR IMPACT INCIDENT AND IS STILL BEING USED, ADVISE THE VICTIM TO REPLACE IT.

D. Description of Victim

- Indicate the victim's age, sex, height, and any competence-reducing factors (e.g., impaired vision, physical handicaps, medication, alcohol, etc.) that may have been present at the time of the accident.

- Describe how the victim was clothed at the time of the accident (including -any other protective equipment that may have been worn). Indicate if anything beside a helmet was worn on the head (e.g., headphones, hat, etc.).

- Find out if the victim was the rider of the bicycle, a passenger or a non-rider (i.e., bystander).

- Describe the nature and extent of the injuries, with

special attention to the points of impact (and if possible, the sequence of impact) of the body parts involved. Indicate the body part(s) treated, and the type of treatment received. If a head injury was involved, find out if the victim lost consciousness, or felt any dizziness, nausea, or headaches. Determine if there were any lasting or permanent effects due to the accident. Obtain the medical records of treatment, including hospital records, ER records, and records of subsequent treatment received, particularly for head injuries. If death occurred, obtain police, medical examiner, coroner, or other relevant reports.

- Determine if there were any passengers on the bicycle at the time of the accident. If so, describe the nature and extent of any injuries incurred by the passenger, and indicate whether or not they were wearing a helmet.

E. Description of Environment

- Describe the terrain and surface on which the victim was riding at the time of the accident. Note the condition of the riding surface (e.g., slick from gravel, water, ice, leaves; uneven with ruts, bumps, potholes, etc.).

- Indicate time of day of the accident, and the amount of daylight or other lighting present.

- Describe the weather conditions at the time of the accident, including temperature, precipitation, and visibility.

- Report the location of the accident (e.g., sidewalk or playground; neighborhood street with low traffic volume; highway or street with high traffic volume; bike path, indicating whether on or separate from roadway; unpaved road; other unpaved surfaces or trails; etc.).

III. INSTRUCTIONS FOR PHOTOGRAPHING AND DIAGRAMING HELMET AND ACCIDENT SEQUENCE

We are interested in obtaining color photographs of the helmet to illustrate the construction, design, fit, and areas of failure or damage. We would also like a step-by-step, detailed diagram of the accident sequence. Include measurements of the distance(s) the victim(s) fell or were thrown, the location of objects impacted, the direction of the fall, and the orientation of the head and body at the time of impact.