

U.S. Consumer Product Safety Commission Soft Contained Play Equipment Safety Review (5/02)

Executive Summary

Soft Contained Play Equipment (SCPE) is a new type of playground characterized by plastic tubes for children to crawl through, ball pools, climbing nets, slides and padded floors. In the past five years, SCPE has become increasingly popular, and can be found in fast food and family restaurants, theme parks, and shopping malls. Children who are less than two years old up to teenagers and adults play in SCPE

Between May and October 1995, the Consumer Product Safety Commission (CPSC) staff conducted a review of the safety issues for SCPE. Based on the design, layout and use of SCPE, the staff made the following observations in its review:

- The equipment design minimizes falls and injuries that can result from falls.
- Adult supervision is critical to ensure that children are in the age-appropriate areas and are using the equipment properly and within their physical abilities.
- Slides that exit into ball pools and climbing equipment such as the mountain climb, located in these ball pools are of some concern since children bury themselves under the balls. If a slide exits into a ball pool, a child playing in front of the exit could get struck. A child jumping off of the mountain climb could collide with a child playing at the base of the mountain.
- Routine maintenance is important to ensure the safety of the equipment.

The staff believes that a properly supervised and maintained SCPE is a safe alternative to traditional playgrounds. Most of the injuries in traditional outdoor playgrounds are due to falls from the equipment. Padded floor surfaces and equipment that contains the user inside a structure minimize injuries due to falls. Adult supervision is critical to ensure the proper use of the equipment, and to prevent infants and toddlers from mixing with older children. If children of different ages play in the same area, the younger, smaller children are exposed to potential collisions and rougher play not present while playing with children of the same age. This report concludes with a Safety Checklist that a consumer can use to help assure the safe use of SCPE.

BACKGROUND

Soft Contained Play Equipment (SCPE) is a new type of playground characterized by plastic tubes for children to crawl through, ball pools, climbing nets, slides and padded floors. In the past five years, SCPE has become increasingly popular, and can be found in fast food and family restaurants, theme parks, and shopping malls. Children who are less than two years old up to teenagers and adults play in SCPE

SCPE centers can be categorized into free-play or pay-for-play centers. Free-play centers, typically located in fast food or family restaurants, do not charge admission. Pay-for-play centers typically located in shopping malls, charge admission. According to industry representatives, there are 7,000 – 8,000 free-play centers and approximately 600 pay-for-play centers in the U.S. Fifty million to one hundred customers per year visits SCPE centers in the U.S.

SCPE offers children a unique play environment. Padding on the floor and around the equipment, and the requirement for no shoes promote an environment for active play. The layout of the equipment encourages children to move from one event to the next. The equipment offers children opportunities to use and test their skills in different areas. Also, children of all skill levels can use the equipment.

Between May and October 1995, the CPSC staff conducted a review of the safety issues for SCPE. On-site reviews consisted of visual inspections of the equipment and use patterns. The staff used the CPSC Handbook for Public Playground Safety as a guide to identify and evaluate the safety of SCPE. The handbook, however, does not address many features of soft play equipment such as ball pools and crawl tubes. Investigations of incidents were also included in the review.

II. DISCUSSION

A. Equipment

SCPE consists of equipment supported on a structural pipe frame. Play activity modules are enclosed with netting, and floors are exposed structural supports are padded. The size of a SCPE center can range from one or two play activities to large systems with over 50 play activities several levels high. Figure 1 shows some typical elements.



Equipment shown: tube slide, ball pool, crawl tubes.
Figure 1. Typical Soft Contained Play Equipment

A popular component of SCPE is the ball pool. It consists of an activity module with plastic balls on the floor to a depth of 1-2 feet. Common upper level SCPE components include 30-inch diameter plastic tubes for the user to crawl through and tube slides to exit into the ground level activities. Larger SCPE centers can have a maze of upper level crawl tubes ending in a junction boxes or pods. Components such as track rides, trapeze bars, overhead bars, air or water mattresses, spiral tube slides, roller slides, rope bridges, and mountain climbs are used in larger SCPE centers. Since the equipment is modular, manufacturers continue to develop new equipment and play systems.

B. Injuries

The CPSC staff investigated 16 incidents associated with SCPE and treated in hospital emergency rooms from January 1, 1995, through May 9, 1995. The injuries ranged from contusions and abrasions to sprains and fractures. The children were 18 months to 14 years, and most were males.

The Consumer Product Safety Commission is aware of one death in a restaurant establishment when a 13 year-old male was struck at the base of a slide in the ball pool. According to the investigation report, the victim was lying underneath the balls and asked the other teenagers to slide down on top of him. He was found unconscious under the balls and taken to the hospital where he was declared dead a short time later.

C. Standards

Currently an ASTM (formerly Society for Testing and Materials) subcommittee, F15.36 on Soft Contained Play Equipment, is developing a voluntary safety standard. The National Fire Protection Association is developing a new section of their Life Safety Code to address fire issues associated with SCPE. The staff is not aware of any other safety standards for Soft Contained Play Equipment. The industry is self regulating, using safety and maintenance guidelines developed by the equipment manufacturers.

D. On-site Evaluation

The staff visited 13 SCPE centers. During each visit, the staff looked for general hazards, supervision, equipment usage and emergency provisions and observed the following:

General Hazards

The staff used the Consumer Product Safety Commission Handbook for Public Playground Safety as a guide to identify general hazards such as falling, head entrapment, and clothing entanglement. The staff observed that the design of SCPE addresses the fall hazard. Padded floor surfaces inside the SCPE play space would minimize injuries due to falls from ground level equipment. Upper level equipment contained the user inside an enclosed structure such as a tube, box, or netting that prevents falls from the equipment to the ground surface. Netting blocked off exterior access points to crawl tubes or tube slides, preventing the user from climbing on the outside of the surface of the tube and falling onto a hard surface.

The CPSC staff did not observe any openings that would be considered head entrapment hazards. The grid sizes for the nets were small enough to prevent a head entrapment. The staff did not find protrusion or projections that could entangle drawstrings on children's clothing. The seams inside the crawl tubes and tube slides were tight, and would not catch a knotted or toggle drawstring.

Supervision

The children's parents or caregivers usually provided supervision in the free-play centers, and the pay-for-play centers employed young adults who monitored the children and helped them through the equipment. The pay-for play centers had a separate section for children under 40 inches, but the free-play centers had a minimum and maximum height requirement or no size requirement. The staff observed that children of different sizes were playing in the same area, even when separate toddler section was available. If children of different ages play in the same area, the younger, smaller children are exposed to potential collisions and rougher play not present while playing with children of the same age. Supervision is critical to ensure that children are in the age-appropriate area and are using the equipment properly.

Equipment Usage

The staff observed the children in the ball pool often buried themselves as shown in figure 2. Equipment such as the mountain climb as shown in figure 3 encourages children to jump off the structure into the ball pool. This could be hazardous if the child is playing in the ball pool near the edge of the mountain structure and is struck by a child jumping off the mountain.



**Children often bury themselves under the balls in the ball pool.
Figure 2. Child in ball pool.**



Children jump off the mountain climb into the ball pool.

Figure 3. Mountain Climb Equipment

Slides exiting into a ball pool could also present a potential hazard. If the slide exits into the ball pool, a child playing in front of the exit may be struck. To further increase the potential of an accident, the slides are often curved, and the user cannot see or avoid a child playing at the slide exit.

Several SCPE manufacturers have agreed to stop offering slides that exit into ball pools or equipment like a mountain climb inside a ball pool. One major pay-for-play company plans to remove the mountain climb from their play centers. They also plan to retrofit existing equipment by placing a foam-landing pad at the slide exit into the ball pools. The pad will be higher than the height of the balls to prevent children from playing in the balls at the slide exit.

Maintenance and Hygiene

The owner or operator is responsible for maintenance of SCPE. This includes routine cleaning, inspection and repair of the equipment and support structure. A detailed study of the maintenance and hygiene issues was beyond the scope of this report. The ASTM subcommittee F15.36 on Soft Contained Play Equipment plans to address these issues in its voluntary safety standard.

III. Conclusion

The Consumer Product Safety Commission staff believes that a properly supervised and maintained SCPE is a safe alternative to traditional playgrounds. Most of the injuries in traditional outdoor playgrounds are due to falls from the equipment. Padded floor surfaces and equipment that contains the user inside a structure minimize the fall hazard in SCPE. Adult supervision is critical to ensure the proper use of the equipment, and to prevent infants and toddlers from mixing with older children. If children of different ages play in the same area, the younger, smaller children are exposed to potential collisions and rougher play not present while playing with children of the same age. The following section includes a staff developed consumer checklist for the safe use of Soft Contained Play Equipment.

**U.S. Consumer Product Safety Commission
Soft Contained Play Equipment Safety Checklist**

The Consumer Product Safety Commission staff developed the following checks to help parents and children use Soft Contained Play Equipment safely.

Equipment Check:

- Check the safety netting for tears or frays.
 - Torn netting could allow a child to climb onto the outer portions of the equipment and fall onto a hard surface.
- Check cargo webbing and rope equipment for tears or frays.
 - Torn rope equipment or loose sewing connections in the cargo webbing may be an entrapment or tripping hazard.
- Check floor surfacing for tears.
 - Floor surfacing should not be torn, in order to prevent trips or ankle sprains.
 - If mats are used outside of the Soft Contained Play Equipment, they should be placed tightly together and should not be torn, in order to prevent trips or ankle sprains.
- Check the equipment for general cleanliness.
 - Dirty equipment is an indication that the owner/operator may not have kept up with the routine maintenance and repair.
 - Walkways should be clear of trash and clutter to prevent tripping.

Safe Use Check:

- Obey the posted safety guidelines of the Soft Contained Play Equipment.
 - Guidelines should explain proper equipment use.
- Follow use and size recommendations.
 - Smaller children are at a disadvantage in a collision with a larger child.
 - If your child meets the size restriction for the toddler section, do not bring him/her into the older children's section.
 - Keep older, larger children from playing in the toddler section.
- Remove clothing strings, necklaces, earrings and all loose items in pockets before the child enters the Soft Contained Play Equipment.
 - Loose hanging strings and jewelry can get caught in play equipment.
 - Items inside pockets can fall into the ball pools.
- Do not allow children to play or linger in front of slide exits or to climb up slides.
 - A child playing in front of a slide exit or climbing up a slide could be struck by a child coming down the slide.
 - Children like to bury themselves under the balls in a ball pool. If a slide exits into the ball pool, a child playing in the balls in front of the exit may be struck.
- Do not allow children to play or linger at the base of climbing equipment in a ball pool.
 - Children jump off equipment such as the mountain climb into the ball pool. A child playing at the base of the equipment could be struck.