

ARE YOU FAMILIAR WITH THE PUBLIC PLAYGROUND SAFETY GUIDELINES?

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In the event of litigation associated with a public playground injury, the reasonableness of your conduct, or that of your agency, will most likely be judged with reference to A Handbook for Public Playground Safety produced by the U.S. Consumer Product Safety Commission (CPSC). This information has been available since 1979. As a result, I continue to be amazed when I ask the audience during my presentations on recreational injury liability, "How many have heard of the CPSC Playground Safety Guidelines?" Usually, about half the attendees acknowledge having heard of this document. Fewer still acknowledge having a copy of the Handbook in their possession. And, only a handful indicate that they have actually read the information contained therein. I can assure you that a plaintiff's attorney (with assistance provided by a cadre of professional "expert witnesses" who make a living in this area) will beat you over the head with this document during a playground injury lawsuit.

Although the CPSC was careful to label this information "guidelines", rather than a mandatory standard, courts tend to view this document as the applicable standard of care for assessing reasonable conduct in cases involving public playground injuries. With this in mind, it would behoove those of us involved with public playgrounds to secure the two volumes of the Handbook. Read, review, and make sure you understand the information. Refer to the guidelines contained in the Handbook on a regular basis to continually reassess the safety of your playgrounds. In so doing, you will become more familiar with the safety rules most likely to be applied in the event of a playground injury lawsuit. More importantly, however, your playgrounds will be safer places to play. This added margin of safety will prevent the serious injuries which prompt the majority of lawsuits involving public playgrounds.

To receive your free copy of A Handbook for Public Playground Safety call the Consumer Product Safety Commission toll free at 800 638-2772. Be sure to ask for both volumes. Correspondence should be addressed to: Office of the Secretary, Consumer Product Safety Commission, 5401 Westbard Avenue, Bethesda, Maryland 20207. The U.S. Consumer Product Safety Commission is the federal agency charged with reducing unreasonable risks of injury associated with consumer products.

In the following paragraphs, I have tried to provide a brief synopsis of the information contained in volume one of the Handbook. While this presentation will hopefully give you a feeling for the safety issues raised in the Handbook, it is not intended as a substitute for your actually reading and understanding the document itself. Similarly, articles and books based upon the CPSC Handbook are secondary materials which should be used, if at all, in conjunction with the Handbook. In addition to a

bibliography, the Handbook contains a series of playground safety checklists. These checklists are a good resource which may prove helpful in reviewing existing maintenance programs for public playgrounds.

#### 93,000 INJURIES IN '77

A Handbook for Public Playground Safety is divided into two volumes. As mentioned, this article provides a synopsis of Volume one entitled "General Guidelines for New and Existing Playgrounds." Volume two, is entitled "Technical Guidelines for Equipment and Surfacing." As the title suggests, this second volume provides technical data to illustrate the information contained in volume one. As a result, volume two is more useful for those who require such technical specifications, e.g. engineers, equipment installers, landscape architects, etc.

The purpose of the CPSC Guidelines is intended "to provide information about hazards associated with the use of public playground equipment and suggestions for helping to reduce the frequency and severity of injuries." In so doing, this document presents "some general guidelines that responsible officials and parents may use to increase the safety of public playgrounds for our children." Given the life of equipment, estimated at 15 to 20 years, the Guidelines note that "updating and maintaining playgrounds and equipment are essential for continued safety."

In 1974, the CPSC was petitioned by a consumer to develop mandatory safety standards for public playground equipment. The National Recreation and Park Association became involved in the process, completing a draft standard in 1976. This draft standard was revised to reflect technical revisions suggested by the National Bureau of Standards (NBS). Since surfacing materials were considered a significant safety factor, NBS also developed a method for testing various surfaces commonly used under playground equipment.

During this process, it became apparent to the CPSC that one mandatory safety standard would be unrealistic, given the diversity of circumstances involving public playground equipment. The CPSC, therefore, developed "guidelines," rather than a mandatory safety standard. Unlike the uniformity and rigidity inherent in the term "mandatory standard," suggested guidelines allow for some flexibility in addressing a particular situation.

While the Commission's initial work was clearly oriented toward developing mandatory safety standards for equipment, the Commission decided not to issue such a mandatory standard. Over the years, its evaluation of playground safety led the Commission to conclude that a mandatory specification rule by itself would not adequately address the problem of playground injuries. Such factors as the diverse ways equipment is used, the varying quality of supervision on equipment, equipment placement, and equipment

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maintenance all play a part in playground injuries. In addition, most injuries associated with playground equipment involved falls, which would not be addressed by equipment specifications alone.

The Commission believes, however, that the results of the studies and research conducted by NRPA and NBS can serve as guidelines for the design of public playground equipment, and can be used by people involved with playground safety to help reduce the frequency and severity of injuries associated with equipment... Since the guidelines are not a CPSC standard, the Commission is not endorsing them as the exclusive method of safe playground equipment construction. The Commission believes, however, that the safety features in many of the guidelines such as those addressing protrusions, slip-resistant surfaces, durability and stability, and so forth, will contribute to greater equipment safety, and that publication of the guidelines as a whole will promote greater safety consciousness among manufacturers and purchasers of equipment.

According to the Guidelines, approximately 93,000 injuries associated with public playground equipment required hospital emergency room treatment in 1977. This data was derived from a December 1978 CPSC Hazard Analysis on public playground equipment. This same analysis also noted that 4 out of 5 of the injuries involved children 10 years of age or younger. Seventy percent of the injuries were caused by falls, "the most common playground accident." As a result, the Guidelines note that "the type of surface on the playground was a major factor affecting the number and severity of injuries associated with falls."

Falls onto paved surfaces resulted in a disproportionately high number of severe injuries. While protective surfaces such as wood chips, shredded tires, sand, etc. may not have reduced the number of injuries from falls, these materials may have reduced the severity of injuries.

The Guidelines describe the "typical accident patterns" associated with "conventional types of public playground equipment" (i.e. climbers, swings, slides, merry-go-rounds, and seesaws) as follows:

Falls accounted for 72 percent of the injuries from climbing apparatus such as monkey bars, chinning bars, etc. Victims fell when they slipped, lost their grip or lost their balance. Falls occurred when children were swinging from rung to rung, performing stunts and jumping on, or from, bars.

[Climbers accounted for 51% of the equipment in use and 42% of the injuries.]  
Sixty-nine percent of the injuries related to swings occurred when children fell or

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jumped from swings. Twenty-six percent of the injuries resulting when the children were struck by a moving swing. [Swings accounted for 20% of the equipment in use and 20% of the injuries.]

Seventy-eight percent of the injuries on slides were the result of falls over the slide, from the platform, and from the ladder. Falls were caused by roughhousing, walking up and down the slide, losing one's grip, slipping, and losing balance. Other victims hit protruding bolts, struck the slide rim and edge, or slipped on the ladder and struck the steps. [Slides accounted for 16% of the equipment in use and 12% of the injuries.]

Most of the injuries associated with merry-go-rounds resulted from falls when the children either lost their grip and were thrown from the merry-go-round, fell down while pushing it, or fell while riding it. In some instances those who were pushing were struck by the device. Those who fell while on the merry-go-round either struck or were struck by other gripping bars, or struck the base itself. [Merry-go-rounds accounted for 5% of the equipment in use and 8% of the injuries.]

Although about one out of every six injuries occurred when the victim was hit by a moving seesaw, most injuries resulted from falls. In some instances, the victims were punctured by long splinters from worn, poorly maintained or damaged wooded seesaws. [Seesaws accounted for 6% of the equipment in use and 5% of the injuries.] Other types of equipment involved in injuries were spring action riding equipment, rope or tire swings, etc. Typically, falls contributed to over half of the injuries associated with this equipment.

### PLAYGROUND SURFACING

As noted above, seventy percent of playground injuries are attributable to falls. Head trauma accounted for nearly half of the injuries sustained in these falls. According to the CPSC, these injuries "range in severity from minor bruises to skull fractures, concussions, brain damage, and even death."

In its study of playground surfacing, the National Bureau of Standards (NSB) evaluated "the relative ability of surfacing materials to protect children from head injuries resulting from falls." Analyses of NSB test results indicated the following:

[W]hile they require little maintenance or repair, hard surfacing materials such as asphalt and concrete do not provide injury protection from accidental fall impacts and are therefore unsuitable for use under public playground equipment. More resilient surfacing materials such as bark, wood chips, or shredded tires, for example, appear to

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provide greater protection to a child in the event of a fall. However, these materials require continuous maintenance to retain their optimum cushioning effectiveness. The choice of surfacing material will, of course, be based in part upon local conditions and financial considerations.

According to the Guidelines, the cushioning protection provided by organic materials, such as pine mulch or shredded bark, depends upon pockets of air trapped between the particles. As a result, environmental factors which compact or erode these materials, such as moisture or wind, reduce the degree of protection. Further, the scuffing action of children at play requires frequent grading and leveling to maintain the recommended six inch depth in areas where falls are likely. In addition, the likelihood of foreign objects or materials (such as litter, animal droppings, broken glass, or other sharp objects) makes frequent maintenance necessary.

Inorganic loose materials such as sand and shredded tires are subject to the same limitations as organic materials, i.e. compaction when subject to moisture or mixture with other materials. Further, any type of loose material, whether organic or inorganic, may be blown or thrown into a child's eyes. On the other hand, compact materials such as rubberized mats are expensive and likely targets for burning or other destructive acts by vandals. In addition, matted surfacing materials require a uniform surface and only provide protection from falls five feet or less.

According to the Guidelines, soil appears to provide less cushioning protection than the surfacing materials described above. Once again, however, the degree of protection will depend on various environmental factors, such as the amount of organic material, sand, moisture, and compaction in a given area. Although difficult to maintain in high traffic areas, grass provides additional cushioning properties in turf areas. In any event, soil surfacing or bare ground still provides greater protection than asphalt or concrete. The Guidelines are adamant in denouncing the use of concrete, asphalt, and other paved surfaces. "Although paved surfaces require little or no maintenance, they are major contributors to playground injuries. Concrete, asphalt and similar materials are not recommended for use under playground equipment because of their hard, unyielding characteristics."

### PLAYGROUND DESIGN

In the layout and design of public playgrounds, the Guidelines found it "essential to provide adequate space around each piece of playground equipment." Planning should take into account the equipment's "use zone, that is, any activity or movement which can be expected around the equipment. For example, sufficient space should be allotted for swing sets to accommodate the largest arc through which the swing travels, including a child's extended legs. Adequate room must also be provided for children to exit slides, jump from swings, and "spin-off" from merry-go-rounds. Buildings, paths and walkways, gates, fences, and other play areas such as sand boxes should be located at least 8 feet

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away from the estimated use zone associated with a piece of playground equipment.

Equipment should also be arranged to accommodate the traffic of children at play... Poorly placed equipment can lead to misuse and accidents... Ample pathways should link activity areas, provide easy access from one piece of equipment to another and offer unobstructed vision from a child's height. Smoothly flowing traffic will eliminate many accidents such as collisions between children and equipment and between children and other children.

Despite extensive testing to ensure the design safety and structural integrity of public playground equipment, the Guidelines advise purchasers to carefully read and follow the manufacturer's installation and maintenance instructions. For example, instructions for anchoring equipment securely to the ground must be adhered to. In selecting equipment, the purchaser should also be conscious of a product's durability.

Equipment should be constructed of materials which have proved durable in a playground or other outdoor setting. Metals should be painted or galvanized to prevent rust, and wood surfaces treated to prevent wood rot. No substances should be used in the material or treatment processes that, if released from equipment, could injure children if ingested, inhaled, or absorbed through the skin.

### SUGGESTED PRECAUTIONS

Based upon the studies conducted by the National Bureau of Standards, the Guidelines recommended a number of precautions to address general hazards encountered in public playgrounds. In making these recommendations, the CPSC reiterated that it was "not endorsing any particular specifications" or creating "mandatory requirements for the design and construction of public playground equipment." The following is a representative sample of these recommendations:

No component or group of components should form angles or openings that could trap any part of a child's body or a child's head... In general, accessible parts of moving apparatus and components next to sliding surfaces - ladders and uprights, protective barriers, handrails, etc. - should be designed so they cannot catch a child's clothing...

Playground equipment should present no accessible sharp edges or protruding points or ends that could cut or puncture children's skin or catch their clothing...

[E]xposed ends of tubing which can lacerate or puncture a child's skin on impact should be covered with caps or plugs. Open ended "S" hooks that can catch clothing should

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also be avoided. If there are such open hooks, pinch the ends tightly closed. Whenever possible, avoid equipment with accessible pinch, crush, or scissor-like areas caused by adjacent moving parts...

[For climbing equipment, such as jungle gyms and monkey bars] the spacing of support members and climbing bars should be closely examined to ensure that it is neither too wide nor too tall to match children's arm or leg reaching abilities...

Climbing equipment should not lure a child to make an easy climb to the top without providing a way for the child to descend as easily, or furnishing a way out to another platform or piece of equipment for descent... [For swings, a] minimum clearance of 18 inches is recommended between the outside edges of swings and between the swings and nearby components such as frames or supporting structures... To reduce the risk of serious injury, seats should be constructed of lightweight material such as plastic, canvas, or rubber... To reduce the possibility of excessive speed, the average incline of the sliding surface [for slides] should not exceed 30 degrees... Slides over 4 feet high should be equipped with sides at least 2 1/2 inches in height for the entire length of the sliding surface. These barriers also serve as hand and foot guides to help prevent the falls off the edges of the slide... Because metal slides left in the sun can cause burns, they should be placed in shaded areas or installed so that the sliding surface faces the north whenever possible. Placing metal slides in a shaded location will also prevent them from reflecting the glare of the sun and interfering with children's vision...

[For merry-go-rounds,] the rotating base of the equipment should have no spaces or openings that would permit penetration by a rod of 3/10 of inch in diameter.

According to the Guidelines, "retrofitting and maintaining existing playgrounds and equipment play a vital role in improving playground safety," given the 15 to 20 year life expectancy of most equipment. The Guidelines offer a number of suggestions for retrofitting and modifying playgrounds. While acknowledging that a few of these recommendations reiterated points described above, the Guidelines concluded that this information was "worth repeating" to make "existing playgrounds safer." Included in these suggestions for retrofitting existing playgrounds were the following:

Remove equipment from asphalt or concrete surfaces--- Do not hesitate to eliminate a piece of equipment which has been associated with frequent injuries. Take special note of slides more than 10 to 12 feet high; they present the potential for serious injury in the event of a fail. Equipment should be firmly anchored in the ground by concrete... If any concrete footings do exist, cover them with earth or padding. Also consider recovering worn surfaces where rocks or other hazards may protrude... Replace heavy swing

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seats with lightweight seats, e.g. canvas or plastic... Install, or paint on, slip resistant surfaces on climbing and gripping components...

Consider color coding equipment for different age groups and posting explanatory signs in prominent locations... A regular inspection and maintenance schedule is essential to ensure the safety of the equipment and surrounding area.