Playground Safety

Does Your Equipment Make the Grade?

How safe are your public playgrounds?

Each year thousands of children are injured or even killed in playground-related accidents. The Consumer Product Safety Commission issued a report on Playground Injury Statistics in 1999/2000.

The following information was included in that report:

- 147 playground-related deaths in 10 years
- In 1999 there were an estimated 205,850 equipment-related injuries treated in U.S. hospital emergency rooms. Of that number,
- 156,040 were injuries sustained on public playgrounds; that is 425 daily injuries in the United States on public playgrounds
- 5-9 year olds had the largest portion of these injuries
- 45 % occurred at schools
- 31 % occurred at public parks
- 53 % occurred on climbers
- 79 % of these injuries were falls from public playground equipment

To help prevent injuries, the National Program for Playground Safety recommends that managers of public playgrounds follow the SAFE method.

Supervision

Have manufacturers pay attention to the sight lines in the development of playground equipment and composite structures. Park agencies should provide signage indicating the need for supervision.

Age Appropriate Design

All new playground areas designed for ages 2-12 should have two distinct areas; one for ages 2-5 and the other for ages 5-12. Composite structures that provide for mixed-age use (ages 2-12) should not be purchased. All playgrounds should have signage or labels informing and directing adults about the age appropriateness of equipment.

Fall Surfacing

Park and recreation agencies need to provide suitable surfacing materials under and around all playground equipment. Agencies need to increase efforts to maintain loose fill surfacing materials at the appropriate depth.

Equipment Maintenance

Serious consideration should be given to replacing all equipment installed prior to 1991. All newly installed equipment should be inspected as to its conformance to CPSC guidelines prior to allowing children to play on it. Park and recreation agencies should follow a schedule for routine maintenance, repair, and replacement of equipment.

The Dirty Dozen

The National Playground Safety Institute has identified 12 of the leading causes of injury on playgrounds. By familiarizing yourself with the "Dirty Dozen" you can inspect your local playground to see how safe it is.

1. **Improper protective surfacing** – The surface or ground under and around the play equipment should be soft enough to cushion a fall. Hard surfaces such as concrete, blacktop, packed earth or grass are not acceptable under play equipment. Acceptable surfaces are hardwood fiber/mulch, sand, and pea gravel. These must be maintained at a depth of 12 inches, be freee of standing water and debris, and not allowed to be compacted. Other

Grass and hard-packed earth are not acceptable surfaces under play equipment.

surface materials are synthetic or rubber tiles, shredded rubber and mats.

2. **Inadequate use zone** – A use zone is the area under and around the playground equipment where a child might fall. A use zone should be covered with a protective surfacing material and extend a minimum of 6 feet in all directions from the edge of stationary play equipment. The use zone at the bottom of a slide is between 6-8 feet, depending on the height of the slide. Swings require a much greater use zone. It should extend two times the height of the pivot or swing hanger in front of and behind the swing seats. The use zone should also extend 6 feet to the side of the support structure.

Round swing supports can present a problem of inadequate interior use zones.

3. **Protrusion and entanglement hazards** – A protrusion hazard is a component or piece of hardware that might be capable of impaling or cutting a child if a child should fall against the projection. Some protrusions are also capable of catching strings or items of clothing worn around a child's neck. Examples of protrusion and entanglement hazards includes bolt ends that extend more than two thread beyond the face of the nut, hardware configurations that form a hook or leave a gap or space between components, and open "S" type hooks. Rungs or handholds that protrude outward from a support structure may be capable of penetrating the eye socket. Special attention should be paid to the area at the top of slides and slide devices. Gaps and spaces at the top of slides may catch clothing.

Open "S" hooks and protruding bolts present many hazards on the playground.

4. **Entrapment in openings** – Enclosed openings on playground equipment must be checked for head entrapment hazards. Children often enter an opening feet first and attempt to slide through the opening. If the opening is not large enough, it may allow the body to pass through the opening and entrap the head. Generally, there should be no opening on the playground equipment that measures between 3 ½ inches and 9 inches. Pay special attention to openings at the top of a slide, openings between platforms, and openings on climbers where the distance between rungs might be less than 9 inches.

5. **Insufficient equipment spacing** – Improper spacing between pieces of play equipment can

cause overcrowding of a play area resulting in unsafe play conditions. Each item of play equipment has a use zone around it where protective surfacing material is applied. Equipment that is less than 30 inches in height may overlap use zones with six feet in between. Equipment higher than 30 inches must have 9 feet in between each structure. The to-fro area of swings, the exit area of slides, standing rock equipment, and merry-go-rounds may not overlap use zones. Swings and other pieces of moving equipment should be located in an area away from other structures.

6. **Trip hazards** – Trip hazards are created by play structure components on the playground. Exposed concrete footings, abrupt changes in surface elevations, containment borders, tree roots, tree stumps, and rocks are all common trip hazards that are often found in play environments.

Exposed concrete footings under play equipment create a trip hazard.

7. **Lack of supervision** – The supervision of a playground environment directly relates to the overall safety of the environment. A play area should be designed so that it is easy for a parent or caregiver to observe the children at play.

8. **Age-inappropriate activities** – Children's development needs vary greatly from age two to age 12. Areas for pre-school age children (2-5) should be separate from areas intended for school-age children (5-12).

9. **Lack of Maintenance** – In order for playgrounds to remain in safe condition, a program of systematic, preventive maintenance must be present. There should be no missing, broken or worn-out components. All hardware should be secure. The wood, metal, or plastic should not show signs of fatigue or deterioration. The surfacing material must also be maintained. Check for signs of vandalism.

All parts of play equipment should be kept in good repair to prevent injury.

10. **Pinch, crush, shearing, and sharp edge hazards** – Components in the play environment should be inspected to make sure that there are no sharp edges or points that could cut skin. Moving components such as suspension bridges, track rides, merry-go-rounds, seesaws, and some swings should be checked to make sure that there are no moving parts or mechanisms that might crush a child's finger.

Roller slides should be inspected for pinch/crush points.

11. **Platforms with no guardrails** – Elevated surfaces such as platforms, ramps and bridgeways should have guardrails or barriers that would prevent accidental falls. Pre-school age children are more at risk from falls; therefore equipment intended for this age group should have guardrails on elevated surfaces higher than 20 inches and protective barriers on platforms higher than 30 inches. Equipment intended for school-age children should have guardrails on elevated surfaces higher than 30 inches with barriers on platforms above 48 inches.

12. **Equipment not recommended for public playgrounds** – Accidents associated with the following types of equipment have resulted in the Consumer Product Safety Commission recommending that they not be used on public playgrounds:

Exercise rings and trapeze bars are considered athletic equipment and should not be used in public playgrounds.

1) Heavy swings such as animal figure swings and multiple occupancy/ glider type swings;
2) Free swinging ropes that may fray or form a loop; and
3) Swinging exercise rings and trapeze bars are considered athletic equipment and not recommended for public playgrounds.

Overhead hanging rings that have a short amount of chain (12 inches) are allowed on public playground equipment.

Quick Checklist for Safe Playgrounds

1. Make sure surfaces around playground equipment have at least 12 inches of wood chips, mulch, sand, or pea gravel, or area mats made of safety-tested rubber or rubber-like materials.

2. Check that protective surfacing extends at least 6 feet in all directions from play equipment. For swings, be sure surfacing extends, in back and front, twice the height of the suspending bar.

3. Make sure play structures more than 30 inches high are spaced at least 9 feet apart.

4. Check for dangerous hardware, like open “S” hooks or protruding bolt ends.

5. Make sure spaces that could trap children, such as openings in guardrails or between ladder rungs, measure less than 3.5 inches or more than 9 inches.

6. Check for sharp points or edges on equipment.

7. Look out for tripping hazards, like exposed concrete footings, tree stumps, and rocks.

8. Make sure elevated surfaces, like platforms and ramps, have guardrails to prevent falls.

9. Check playgrounds regularly to see that equipment and surfacing are in good condition.

10. Carefully supervise children on playgrounds to make sure they're safe.

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Additional Resource Material

National Playground Safety Institute
NPSI is sponsored by the National Recreation and Park Association. For a listing of playground related publications available through NRPA contact:

National Recreation and Park Association
22377 Belmont Ridge Road
Ashburn, Virginia 20148
703-858-0784 / www.nrpa.org

U.S. Consumer Product Safety Commission
For a free copy of the Consumber Product Safety Commission's Handbook for Public Playground Safety (325) contact:

U.S. Consumer Product Safety Commission
Washington, D.C. 20207
800-638-2772 / www.cpsc.gov

American Society for Testing and Materials
ASTM developed a standard for the manufacturing of public playground equipment entitled "Standard Consumer Safety Performance Specificiation for Playground Equipment for Public Use." For a copy of this standard contact the ASTM and ask for F 1487-01 Standard.

ASTM
100 Barr Harbor Drive
West Conshohocken, PA 19428-2959
610-832-9500 / www.astm.org

Information in this booklet was provided courtesy of the National Playground Safety Institute and the U.S. Consumer Product Safety Commission.

All photographs used are from public playgrounds in North Dakota and are intended as examples of safety concerns for educational purposes.

For more information, contact ND Parks and Recreation Department at 701-328-5357 or parkrec@state.nd.us