

Playground design has improved markedly since 1981, when the U.S. Consumer Product Safety Commission's (CPSC) *Handbook on Public Playground Safety* was first published. Today, any equipment that meets the standards set by the CPSC and the American Society for Testing and Materials (ASTM) is likely to be safer than the play equipment with which we grew up. And high-quality equipment that exceeds CPSC and ASTM minimums can dramatically lower the risk of accidents and injuries on a typical playground.



*“A good preventative maintenance program can dramatically lower the risk of accidents and injuries.”*

The most recent edition of the CPSC Handbook reinforces the concept of age-appropriate play, which was non-existent in the original 1981 edition. Furthermore, the 1998 ASTM standard has changed from earlier versions, as well.

Finally, even the best-designed playground can present hazards if equipment is incorrectly installed, broken, physically worn, damaged by vandals or weakened by the ravages of time. This is why a safety audit and regularly scheduled maintenance inspections are a necessary part of every playground's safety program.

### **Definition of terms**

The terms “safety audit” and “maintenance inspection” refer to two very different things.

- A playground safety audit is a one-time process that focuses on compliance with the current standard of care.
- Maintenance inspections are conducted at regular intervals and focus on immediate hazards caused by aging or damaged equipment—e.g., worn swing hangers or missing fasteners.

It's important to understand not only the difference between these types of inspections,

but the importance of both in minimizing accident risk and liability exposure.

To put it another way, a well-designed playground could pass a safety audit with flying colors, yet fail in a periodic maintenance inspection. Similarly, an impeccably maintained playground could fail a safety audit because of inherent design flaws.

### **Safety audits**

Unless your playground contains only brand-new equipment that was purchased from a knowledgeable manufacturer and installed by a manufacturer's certified installer, your playground is due for a safety audit.

#### *Purpose of the audit*

The purpose of the safety audit is to identify non-conforming products and designs, installation problems and environmental conditions that could pose long-term hazards to children. Current CPSC guidelines and ASTM standards are the prevailing standard of care.

Some of the items covered in a safety audit include:

- **Entrapment violations.** The inspector uses head, torso and neck probes to assess the entrapment risk.
- **Protrusions.** Protrusion gauges are used to determine whether protrusions are within acceptable limits.
- **Layout.** Does the equipment promote traffic conflicts? Are fall zones too small? Are there potential hazards from adjacent roads, bicycle paths, water or sports fields?
- **Surface hazards.** Is the protective surface appropriate for the height of the equipment used?



During a safety audit, hazards are categorized by their potential for causing severe injury. The resulting report will help you determine which hazards require immediate corrective action, which should be next on the list, and which are minor enough to allow corrective action as time and money permit.

### How common are safety audits?

According to a survey conducted among parks and schools for Landscape Structures, safety audits of playgrounds have yet to receive the attention they deserve. Consider:

- More than 37 percent of school officials admitted they'd never done a safety audit, even though nearly 40 percent of school play equipment was more than seven years old.
- 30 percent of park agencies had never performed a safety audit, despite the fact that 46 percent of their equipment was more than 10 years old.

The survey also made it obvious that many playgrounds were unlikely to be brought up to current safety standards without an audit, since only a small percentage of equipment was scheduled for replacement in the next few years.

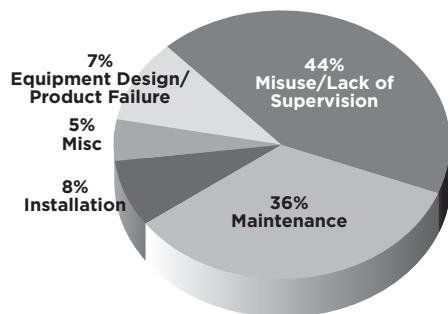
### Who should conduct a safety audit?

Ideally, a playground safety audit should be conducted by a Certified Playground Safety Inspector—meaning a person who has passed the National Playground Safety Institute's (NPSI) written examination.

Applicants for NPSI certification must attend a two-day seminar that involves classroom lectures, discussions and hands-on examples of playground safety problems.

During the seminar, attendees receive a book titled *Playground Safety is No Accident: Developing a Public Playground Safety and Maintenance Program*. The manual, published by the National Recreation and Park Association, contains articles that range from the playground safety audit process to procedures for playground area corrective action.

### PRIMARY CAUSES OF PLAYGROUND INJURIES<sup>1</sup>



<sup>1</sup>Statistics compiled by the Landscape Structures risk manager and claims investigators using 10 years of accident report history.

The seminar concludes with an exam on regulations, safety guidelines and auditing procedures. Since the NPSI began certifying inspectors in 1991, more than 4,500 applicants have become Certified Playground Safety Inspectors. (Quite a few are employees or sales representatives of Landscape Structures who use the NPSI training in their design and installation work.)

### Doing it yourself

If your local agencies haven't yet had the time or money to send any of their staff members to the NPSI Program, consider any of these items from Landscape Structures in conducting a reliable safety audit:

- A Safety Inspection Kit. This product includes a canvas carrying case, head, torso and neck probes, machine-tooled protrusion gauges and printed instructions. Order item #114837A from our Playground Equipment Catalog.
- A Safety Inspection Panel. This instructional panel helps demonstrate to your staff the probes and protrusion gauges that are used to identify hazards on playgrounds. Order item #116102A. An instructional video is also included.
- Copies of the *CPSC Handbook for Public Playground Safety* and ASTM Standard F1487, *Standard Consumer Safety Performance Specification for Playground Equipment for Public Use*.

In addition, there are commercial publications and videos available to help do-it-yourselfers. See the "For more information" listings on the back of this brochure.

### Maintenance inspections

Over a 10-year period, Landscape Structures risk manager and claims investigators compiled statistics on the primary causes of playground injuries. They found that 36 percent of all injuries were caused by inadequate maintenance of play equipment.

Clearly, a willingness to spend time and money on maintenance is the first prerequisite for reducing injuries caused by worn, broken, corroded or vandalized equipment. But it's equally vital to develop formal inspection procedures to assure that problems needing repair aren't overlooked.

### Factors that determine maintenance needs

There are many factors that contribute to the need for maintenance, such as:

- **Physical wear.** Swing hangers, bearings and spring assemblies are prime examples of wear-prone parts that require maintenance at regular intervals. School-age children tend to be harder on equipment than preschoolers, and heavily used equipment (such as on school playgrounds or in heavily populated urban areas) receives more wear than equipment in quiet neighborhood parks.
- **Environmental factors.** Wood may crack and rot over time. Uncoated steel rusts quickly, especially in humid climates or when exposed to salt air. Plastic may fade or deteriorate when continually exposed to the sun's ultraviolet rays. Freeze/thaw cycles can lead to warping or cracking. Acid soil often corrodes equipment buried in the ground. The use of quality materials can slow the aging process, but nothing lasts forever.
- **Vandalism and accidental damage.** Unscrewed fasteners, slashed swing seats, graffiti and nicks from maintenance workers' shovels and rakes are examples of damages that can affect even the best-maintained equipment. Structural damage from settling or vibration can be less obvious but even more serious.

### Designing an inspection program

Every maintenance inspection program is unique. In developing your own program, you need to consider:

- **Maintenance instructions.** It is the manufacturer's responsibility (per ASTM 1487) to provide clear, concise instructions for maintaining their equipment. The more detailed the instructions, the better. For example, an instruction for "swings" might include separate guidelines for the supporting framework, bolts or welds, swing hangers, chains, S-hooks or U-bolts, seats and the shock-absorbing surface in the surrounding "safety zone."

- **Frequency of inspection.** Heavily used components, play activities with moving parts, and items with a known history of vandalism will require more frequent inspection than little-used or mechanically simple components.
- **Preventive maintenance.** Scheduled bolt tightening, cleaning, lubrication and use of touch-up coatings can prevent safety hazards and reduce long-term maintenance costs.
- **Documentation.** Accurate records make it easier to keep on top of maintenance needs. You'll also minimize your liability exposure if you have an accurate "audit trail" of inspections and maintenance.

### Working with manufacturers

Responsible equipment manufacturers will help you develop a maintenance program for their components and play events.

For example, every Evos™, PlayBooster® or PlayShaper® system is delivered with a customized maintenance guide. Illustrated sheets provide step-by-step instructions on how to inspect each component. An accompanying "Guide to the Frequency of Inspections" helps customers weigh the various factors involved in devising a maintenance schedule.



Insist that your equipment manufacturer provide a step-by-step inspection guide and checklist for every component or play activity.

## HAZARDS IDENTIFIED IN NATIONAL PLAYGROUND SURVEY<sup>1</sup>

% of Playgrounds	Hazardous conditions
75%	Inadequate protective surfacing (Only 11% of playgrounds with loose-fill surfacing were maintained at an adequate depth, and 4.5% of the survey playgrounds were hard-surfaced.)
49%	Swings violated safety guidelines (Guidelines look at swings made with heavy, rigid materials, inadequate spacing between spacing between swings and supports and placement of tot swings with traditional swings.)
34%	Risk of entrapment (Improperly sized openings in the play equipment pose a head entrapment hazard that could lead to strangulation.)
34%	Risk of entanglement (Small gaps, open S-hooks and other protrusions can pose clothing entanglement hazards.)
58%	Equipment too high (When slides or climbers are more than six feet high, the frequency and severity of injury is increased.)

<sup>1</sup> Survey of 1,037 playgrounds in 36 states funded by the U.S. Public Interest Research Group and the Consumer Federation of America.

## ***We're ready to help.***

At Landscape Structures, we have a long history of involvement in playground safety issues. Our chairman, Steve King, heads an ASTM task group that sets voluntary standards for playground equipment. For help in designing a safer playground, or for free resource materials that can help in your planning, call your local Landscape Structures representative.

## ***FOR MORE INFORMATION***

These resources are available from your local Landscape Structures representative:

ASTM F1487-07, *Standard Consumer Safety Performance Specification for Playground Equipment for Public Use*, American Society for Testing and Materials.

*Handbook for Public Playground Safety*, U.S. Consumer Product Safety Commission.

Landscape Structures Inc. Safety Test Panel and training video.

*Playguide™ Bulletin* series on topics related to playground design and safety.

These materials from other sources are also helpful:

*Inspecting Playgrounds for Hazards*  
VHS videocassette, 35 minutes  
Information Exchange  
P. O. Box 1528  
Fair Oaks, CA 95628  
(916) 966-2375

*Points About Playgrounds:*  
*A Compilation of Significant Information*  
Compiled and edited by Monty L. Christianson  
ISBN 0-929581-69-5  
National Recreation & Park Association  
22377 Belmont Ridge Rd.  
Ashburn, VA 20148

*Safety First Checklist 2nd. Ed.*  
*Audits Inspection Program for Children's Play Areas*  
ISBN 0-944661-02-5  
MIG Communications  
800 Hearst Ave.  
Berkeley, CA 94710  
(510) 845-0953



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