

INVENTORY, AUDIT AND INSPECTION: A LAYERED APPROACH TO PLAYGROUND SAFETY

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The sound of laughter from children at play remains constant from generation to generation. Unfortunately, the spaces we design for children's play are not as immortal. Playgrounds and play structures have a finite life. No matter how much time or money is exhausted on the planning of a playground or the purchasing of state-of-the-art play equipment, neither will last without proper care. Exposure to the elements, usage and vandalism cause deterioration of playgrounds and play equipment. Play spaces and play structures constructed or purchased more than ten or even five years ago may not meet current accepted playground safety standards of care. Without a process or plan in place to address safety and maintenance of our play spaces, we as professional playground providers endanger the life and limb of the very population we strive to serve--children.

A plan or process that covers playground safety and maintenance must be comprehensive and consistent. By dividing the process into layers or tiers, we can develop a system that overlaps and interlocks all facets of playground safety and maintenance. Three key layers of a comprehensive playground safety and maintenance plan include: inventory; audit; and inspection, see Figure 1.



Figure 1. Layers of a Playground Safety Program

Inventory

First, an inventory of the existing playground(s) should be conducted. This inventory will function as the management baseline of the master plan for playground safety and maintenance. An inventory will:

- Identify different pieces of play apparatus. Play pieces are varied in function, design and safety concerns. By listing the specific pieces in use at the beginning of the process, a comprehensive and accurate audit, the second layer, can be conducted with regards to each piece's specific safety concerns;
- Identify the manufacturer for each piece of play equipment. This may involve some detective work: searching through old purchase orders or involving a playground vendor to determine who built which piece. If problems arise during the audit concerning a specific piece, then the manufacturer should be contacted and his/her modifications of the piece requested. A key point about the identification of the manufacturer to consider: if modifications are made to a piece of equipment without contacting the manufacturer, then liability may be removed from the manufacturer. If the manufacturer does not respond to inquiry, initiate documentation that you have attempted, unsuccessfully, to gain their assistance-- then modify the piece to the best of your ability within the framework of the current accepted playground safety standards of care;
- Determine the approximate age of individual pieces of play equipment (again, an exercise in detective work). With this bit of information, the amortization procedure for play apparatus can be initiated. The determination of the longevity of play pieces allows for replacement and renovation planning with the capital improvement budgeting process;
- Discern the physical location of play pieces located within the playground. This assists playground safety inspectors during the audit and inspection layers as well as maintenance staff during scheduled, preventative maintenance;
- Record playground surfacing data: type of surface, depth of surface, surfacing dimensions and critical height of equipment (best described as the highest accessible point of the equipment). The issue of adequate surfacing under and around play equipment has become one of if not the most significant issue of playground safety. The United States Consumer Product Safety Commission reported in 1990 that nearly 75% of reported playground injuries resulted from falls from play equipment to the surface below the equipment. Accepting the statement that a fall injury is a function of two things: the height a child falls from and what he/she falls upon, identifying surfacing information under and around each play piece is critical for preparing a playground safety plan; and
- Determine user ages appropriate for the play equipment. Up until the early 1990's most playground equipment design considered the physical dimensions and

limitations of school age children, six to twelve years old. Play research in conjunction with demographic data of playground users uncovered a wider range of needs for play equipment design. Age appropriateness has become another significant concern for a playground safety plan. The inventory should discern which play equipment or structures are appropriate for the two primary use groups, pre-school age (two to five year olds) and school age users (six to twelve year olds).

Audit

While the inventory layer of the playground safety and maintenance plan is quantitative, the second layer, the audit, is qualitative. An audit is a detailed, intricate and careful examination of the playground as a whole and the individual play pieces within the playground. The data gathered during the inventory serves as the information that focuses the audit. The audit contains three components: test, evaluate, and rectify. One of the recognized playground safety standards of care, the US Consumer Product Safety (CPSC) *Commission's Handbook for Public Playground Safety 1998*, or the American Society for Testing and Materials (ASTM) Standard F 1487-98 *Consumer Safety Performance Specification for Playground Equipment for Public Use*, should be adopted as the performance benchmark for the test phase of the audit. For playground providers just initiating a playground safety and maintenance program, the CPSC Handbook for Public Playground Safety offers the best starting point, with the ASTM F 1487-98 standard serving as a playground safety endpoint. CPSC playground safety tests include:

General Hazards of All Play Apparatus:

- Sharp points, corners and edges
- Protrusions or projections
- Pinch crush and shearing points
- Head entrapment and upright V-angles
- Tripping hazards

Access and Platforms (with separate benchmarks for the different user age groups pre-school (two to five year olds) and school age (six to twelve year olds))

- Stairways and ladders
- Stepped ladders
- Rungs and handgrips
- Handrails
- Guardrails and protective barriers

Major Safety Concerns of Specific Playground Equipment

- Surfacing
 - o Critical Height
 - o Acceptability of various surfacing materials, unitary and loose-fill

- Use Zones for Equipment
 - o Fall Zones

The second component of the audit evaluates the results from the test phase of each playground and each piece of play equipment within the playground. Criteria should be developed and established in the playground safety and maintenance plan to prioritize the levels of safety hazard discovered during the test. Several public agencies, Wheaton Park District in Wheaton, Illinois and the City of Pittsburgh, Pennsylvania have developed detailed and intricate playground safety hazard classification or priority systems. An example of a playground safety hazard classification system may include three levels of safety hazard: High level of hazard - life or limb threatening hazard like a climbing structure located over an asphalt surface or a head entrapment hazard located within a protective barrier; Medium level of hazard- injury potential but not life threatening like sharp edges on a ladder; and Low level of hazard -minor injury or does not comply with adopted standard of care like more than two swings per bay.

The third component of the audit, rectify, utilizes the safety hazard priority system to facilitate replacement, renovation and repair. For example, all High levels of safety hazard should be removed from play immediately and replaced or repaired as the first or emergency priority of the playground provider. Those areas or apparatus that scored a medium level of safety should be repaired or replaced as second priority of the provider and receive primary emphasis when budgeting for capital improvements. The lowest level of safety hazard should be repaired or replaced as third priority and receive secondary emphasis for capital improvement funds.

Inspection

The inventory layer is quantitative: the audit layer is qualitative. The final layer in the playground safety and maintenance plan, inspection, is both quantitative and qualitative. Inspections must be conducted as a "hands-on" procedure and work well when incorporated into routine, scheduled maintenance. If a problem is discovered during the inspection, then either repair while on-site (broken glass under a swing set, etc.) or, if the problem is of a larger scale (missing bolt on a ladder, etc.), initiate the proper work order/repair procedure.

"Linking Pins"

The three layers, inventory, audit and inspection, provide the basic framework for a playground safety and maintenance plan. But, when all three layers are linked together the plan provides adequate coverage of all facets of playground safety. The interlocking components or "linking pins" between layers include: training, instrument, frequency and documentation, see Figure 2.



Figure 2. "Linking Pins"

Training: All people responsible for playgrounds must be trained. From the administrator all the way down through the organization to nursery aides and summer seasonal staff must know how to identify hazards on playgrounds and how to initiate repair procedures.

Instrument: The instrument or procedure for the inventory should be consistent from year to year. The instrument for the audit must be the adopted standard of care for the agency or organization. This standard of care should be currently acceptable by the court system or recommended by risk managers. The checklist utilized for the inspection should be consistently used for the playground for which it was developed. Two inspection checklist strategies exist. One develops a general checklist that encompasses all issues for any playground. The second strategy develops a checklist specific to issues and apparatus of each individual playground. Both checklists are acceptable, but when actually conducting inspections, the second strategy shows greater efficiency.

Frequency: The inventory of playgrounds and play equipment should be conducted one time and then updated as components are added or removed. The audit should optimally be conducted twice a year, but at least once annually. Inspections should be conducted weekly and depending on usage even more frequently.

Documentation: Operate under the principal that if it has not been documented, then it has not been done! Everything should be documented within the three layers. Data collected for the inventory should be placed in a playground specific master file. Audit documentation should include test results, hazard levels, hazard mitigation, dates of audits, and critical information about personnel conducting the audit. Records of all inspections need to be included complete with dates, findings and critical information about personnel conducting the inspections. Other pertinent documentation items to

include in a master file may be; playground safety staff training data; playground injury or accident reports; letters to or from play equipment manufacturers; etc.

To ensure the safety of our playgrounds for our children, we must become sensitive to the potential hazards lurking on playgrounds and play apparatus. We must take steps and actions to remove hazards and maintain the integrity of the play areas. Since 1991 there has been a groundswell of movement concerning playground safety. Agencies such as CPSC and ASTM as well as programs like the National Playground Safety Institute, (703) 858-2148, and the National Program for Playground Safety, 800-554-PLAY, provide tremendous safety resources for playground providers. And as providers of play spaces, we must make an earnest commitment and effort to ensure the safety of our future generations.

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