KENYA STANDARD

KS 2948-1:2022

ICS ##.###

First Edition

Safe play environment for children — Guidelines

Part 1:

General Playground Considerations

Kenya Bureau of Standards

Standards for Quality life

PUBLIC REVIEW DRAFT MARCH 2022

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The following organizations were represented on the Technical Committee:

AMC Group Africa Limited (formerly, Apex Management Systems - Consultants Ltd)

Assist Development Solutions (ADS)

Competition Authority of Kenya

Consumer Information Network

Ideaz Software

Kenyatta University

Topserve East Africa Limited

Nairobi Sports House Limited

Nile Road special school

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REVISION OF KENYA STANDARDS

In order to keep abreast of progress in industry, Kenya Standards shall be regularly reviewed. Suggestions for improvements to published standards, addressed to the Managing Director, Kenya Bureau of Standards, are welcome.

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Part 1:

General Playground Considerations

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Foreword

This Kenya Standard was prepared by the Safety of toys Technical Committee under the guidance of the Standards Projects Committee, and it is in accordance with the procedures of the Kenya Bureau of Standards

This is the First edition of this standard.

The guidelines in this standard are focused on playground-related injuries and mechanical mechanisms of injury; falls from playground equipment have remained the largest single hazard pattern associated with playground use

These guidelines do not represent the sole method to minimize injuries associated with playground equipment. However, the recommendations will contribute to greater playground safety.

KS nnn consists of the following parts, under the general title *Safe play environment for children — Guidelines*

— *Part 1: General playground considerations*

— *Part 2: Playground hazards*

— *Part 3: Maintaining a playground*

— *Part 4: Parts of the playground*

During the preparation of this standard, reference was made to the following document (s):

1. Royal Society for the Prevention of Accidents – Accidents do not have to happen
2. EN1176 Playground equipment standard
3. US Consumer Product Safety Commission – Public playground safety hand book

Acknowledgement is hereby made for the assistance derived from this (these) sources

Introduction

In recent years, it is estimated that there were more than 200,000 injuries annually on public playgrounds across the country that required emergency room treatment. By following the recommended guidelines in this standard, safer playground environment for all children can be created and reduction of playground-related deaths and injuries ensured.

The safety of each individual piece of playground equipment as well as the layout of the entire play area should be considered when designing or evaluating a playground for safety. Since falls are a very common playground hazard pattern, the installation and maintenance of protective surfacing under and around all equipment is crucial to protect children from severe head injuries. Because all playgrounds present some challenge and because children can be expected to use equipment in unintended and unanticipated ways, adult supervision is highly recommended. This draft standard provides some guidance on supervisory practices that adults should follow. Appropriate equipment design, layout, and maintenance, as discussed in this draft standard, are also essential for increasing public playground safety.

A playground should allow children to develop gradually and test their skills by providing a series of graduated challenges. The challenges presented should be appropriate for age-related abilities and should be ones that children can perceive and choose to undertake. Toddlers, preschool- and school-age children differ dramatically, not only in physical size and ability, but also in their intellectual and social skills.

Therefore, age-appropriate playground designs should accommodate these differences with regard to the type, scale, and the layout of equipment. Recommendations throughout this draft standard address the different needs of toddlers, preschool-age, and school-age children; “toddlers “refers to children ages 6 months through 2 years of age, “preschool-age” refers to children 2 through 5 years, and “school-age” refers to children 5 through 12 years. The overlap between these groups is anticipated in terms of playground equipment use and provides for a margin of safety.

Safe play environment for children — Guidelines

Part 1:

General Playground Considerations

1 Scope

This draft standard presents safety information for public playground equipment in the form of guidelines. The standard is expected to promote greater safety awareness among those who purchase, install, and maintain public playground equipment.

2 Application

This draft standard is intended for use by childcare personnel, school officials, parks and recreation personnel, equipment purchasers and installers, playground designers, and another members of the general public (e.g., parents and school groups) concerned with public playground safety and interested in evaluating their respective playgrounds. Due to the wide range of possible users, some information provided maybe more appropriate for certain users than others.

Public" playground equipment refers to equipment for used by children ages 6 months through 12 years in the playground areas of:

• Commercial (non-residential) child care facilities
• Institutions
• Multiple family dwellings, such as apartment and condominium buildings
• Parks, such as city, state, and community maintained parks
• Restaurants
• Resorts and recreational developments
• Schools
• Other areas of public use

These guidelines are not intended for amusement park equipment, sports or fitness equipment normally intended for users over the age of 12 years, soft contained play equipment, constant air inflatable play devices for home use, art and museum sculptures (not otherwise designed, intended and installed as playground equipment), equipment found in water play facilities, or home playground equipment.

Equipment components intended solely for children with disabilities and modified to accommodate such users also are not covered by these guidelines.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
barrier

enclosing device around an elevated platform that is intended to prevent both inadvertent and deliberate attempts to pass through the device

3.2
composite structure
two or more play structures attached or functionally linked, to create one integral unit that provides more than one play activity

3.3
critical height
the fall height below which a life-threatening head injury would not be expected to occur designated

3.4
play surface
any elevated surface for standing, walking, crawling, sitting or climbing, or a flat surface greater than 2 inches wide by 2 inches long having an angle less than 30° from horizontal

3.5
embankment slide
a slide that follows the contour of the ground and at no point is the bottom of the chute greater than 12 inches above the surrounding ground

3.7
entanglement
a condition in which the user's clothes or something around the user's neck becomes caught or entwined on a component of playground equipment

3.8
entrapment
any condition that impedes withdrawal of a body or body part that has penetrated an opening

3.9
fall **height**
the vertical distance between the highest designated play surface on a piece of equipment and the protective surfacing beneath it

3.10
footing
a means for anchoring playground equipment to the ground

3.11
full bucket seat swing
a swing generally appropriate for children under 4 years of age that provides support on all sides and between the legs of the occupant and cannot be entered or exited without adult assistance

3.12
Geotextile (filter) cloth
a fabric that retains its relative structure during handling, placement, and long-term service to enhance water movement, retard soil movement, and to add reinforcement and separation between the soil and the surfacing and/or sub-base

3.13
guardrail
an enclosing device around an elevated platform that is intended to prevent inadvertent falls from the elevated surface

3.14
infill
material(s) used in a protective barrier or between decks to prevent a user from passing through **the** barrier (e.g., vertical bars, lattice, solid panel, etc.)

3.15
loose-fill surfacing material
a material used for protective surfacing in the use zone that consists of loose particles such as sand, gravel, engineered wood fibers, or shredded rubber

3.16
Preschool-age children
children 2 years of age through 5years of age

3.17
projection
anything that extends outward from a surface of the playground equipment and must be tested to determine whether it is a protrusion or entanglement hazard, or both

3.18
protective barrier
see barrier

3.19
protective surfacing
shock absorbing (i.e., impact attenuating) surfacing material in the use zone that conforms to the recommendations in this draft standard

3.20
protrusion
a projection which, when tested, is found to be a hazard having the potential to cause bodily injury to user who impacts it

3.21
roller slide
a slide that has a chute consisting of a series of individual rollers over which the user travels

3.22
school-age children
children 5 years of age through 12years of age.

3.23
slide chute
the inclined sliding surface of a slide

3.24
Stationary play equipment
any play structure that has a fixed base and does not move

3.25
supervisor
any person tasked with watching children on a playground. supervisors may be paid professionals (e.g., childcare, elementary school or park and recreation personnel), paid seasonal workers (e.g., college

or high school students), volunteers (e.g., PTA members), or unpaid caregivers (e.g., parents) of the children playing in the playground

3.26
toddlers
children 6 months through 23 months of age

3.27
tube slide
a slide in which the chute consists of a totally enclosed tube or tunnel

3.28
unitary surfacing material
a manufactured material used for protective surfacing in the use zone that may be rubber tiles, mats, or a combination of energy absorbing materials held in place by a binder that may be poured in place at the playground site and cures to form a unitary shock absorbing surface

3.29
upper body equipment
equipment designed to support a child by the hands only (e.g., horizontal ladder, overhead swinging rings)

3.30
use zone
the surface under and around a piece of equipment onto which a child falling from or exiting from the equipment would be expected to land. These areas are also designated for unrestricted circulation around the equipment

4 General Playground Considerations

4.1 Selecting a Site

The following factors are important when selecting a site for a new playground:

Table 1 - Selecting a site for a new playground

Site Factor	Questions to ask	If yes, then…Mitigation
Travel patterns of children to and from the playground	Are there hazards in the way?	Clear hazards
Nearby accessible hazards such as roads with traffic, lakes, ponds, streams, drop-offs/cliffs, etc.	Could a child inadvertently run into a nearby hazard? Could younger children easily wander off toward the hazard?	Provide a method to contain children within the playground. For example, a dense hedge or a fence. The method should allow for observation by supervisors. If fences are used, they should conform to local building codes
Sun exposure	Is sun exposure sufficient to heat	Bare metal slides, platforms, and steps should be shaded or located out of direct sun.

	exposed bare metal slides, platforms, steps, & surfacing enough to burn children?	Provide warnings that equipment and surfacing exposed to intense sun can burn.
	Will children be exposed to the sun during the most intense part of the day?	Consider shading the playground or providing shaded areas nearby.
Slope and drainage	Will loose fill materials wash away during periods of heavy rain?	Consider proper drainage regrading to prevent wash outs.

4.1.1 Shading considerations

Utilizing existing shade (e.g., trees), designing play structures as a means for providing shading (e.g., elevated platforms with shaded space below), or creating more shade (e.g., manmade structures) are potential ways to design a playground to help protect children's skin from the sun. When trees are used for shade, additional maintenance issues arise, such as the need for cleaning up debris and trimming limbs.

4.2 Playground Layout

There are several key factors to keep in mind when laying out a playground:

a) Accessibility

b) Age separation

c) Conflicting activities

d) Sight lines

e) Signage and/or labelling

f) Supervision

4.2.1 Accessibility

Special consideration should be given to providing accessible surfaces in a play area. Equipment selection and location along with the type of protective surfacing are key components to ensuring the opportunity for children with disabilities to play on the playground.

4.2.2 Age separation

For playgrounds intended to serve children of all ages, the layout of pathways and the landscaping of the playground should show the distinct areas for the different age groups.

The areas should be separated at least by a buffer zone, which could be an area with shrubs or benches. This separation and buffer zone will reduce the chance of injury from older, more active children running through areas filled with younger children with generally slower movement and reaction times.

4.2.3 Age group

In areas where access to the playground is unlimited or enforced only by signage, the playground designer should recognize that since child development is fluid, parents and caregivers may select a playground slightly above or slightly below their child's abilities, especially for children at or near cut-off age (e.g., 2-years old and 5-years old). This could be for ease of supervising multiple children, misperceptions about the hazards a playground may pose to children of a different age, advanced development of a child, or other reasons. For this reason, there is an overlap at age 5.

Developmentally a similar overlap also exists around age 2. Playgrounds used primarily by children under the supervision of paid, trained professionals (e.g., child-care enters and schools) may wish to consider separating playgrounds by the facility's age groupings. For example, childcare facility may wish to limit a playground to toddlers under 2 exclusively and can draw information from this guide.

A school, on the other hand, may have no children under 4 attending, and can likewise plan appropriately. Those who inspect playgrounds should use the intended age group of the playground.

4.2.4 Conflicting activities

The play area should be organized into different sections to prevent injuries caused by conflicting activities and children running between activities. Active, physical activities should be separate from more passive or quiet activities. Areas for

playground equipment, open fields, and sand boxes should be located in different sections of the playground. In addition, popular, heavy-use pieces of equipment or activities should be dispersed to avoid crowding in any one area.

Different types of equipment have different use zones that must be maintained. The following are general recommendations for locating equipment within the playground site. Moving equipment, such as swings and merry-go-rounds, should be located toward a corner, side, or edge of the play area while ensuring that the appropriate use zones around the equipment are maintained.

a) Slide exits should be located in an uncongested area of the playground.

b) Composite play structures have become increasingly popular on public playgrounds. Adjacent components on composite structures should be complementary. For example, an access component should not be located in a slide exit zone.

4.2.5 Sight lines

Playgrounds that are designed, installed, and maintained in accordance with safety guidelines and standards can still present hazards to children. Playgrounds should be laid out to allow parents or caregivers to keep track of children as they move throughout the playground environment. Visual barriers should be minimized as much as possible. For example, in a park situation, playground equipment should be as visible as possible from park benches. In playgrounds with areas for

different ages, the older children’s area should be visible from the younger children’s area to ensure that caregivers of multiple children can see older children while they are engaged in interactive play with younger ones.

4.2.6 Signage and/or labelling

Although the intended user group should be obvious from the design and scale of equipment, signs and/or labels posted in the playground area or on the equipment should give some guidance to supervisors as to the age appropriateness of the equipment

4.2.7 Supervision

The quality of the supervision depends on the quality of the supervisor's knowledge of safe play behaviour. Playground designers should be aware of the type of supervision most likely for their given playground. Depending on the location and nature of the playground, the supervisors may be paid professionals (e.g.,

childcare, elementary school or park and recreation personnel), paid seasonal workers (e.g., college or high school students), volunteers (e.g., PTA members), or unpaid caregivers (e.g., parents) of the children playing in the playground.

Parents and playground supervisors should be aware that not all playground equipment is appropriate for all children who may use the playground. Supervisors should look for posted signs indicating the appropriate age of the users and direct children to equipment appropriate for their age. Supervisors may also use the information in Table 2 to determine the suitability of the equipment for the children they are supervising. Toddlers and preschool-age children require more attentive supervision than older children; however, one should not rely on supervision alone to prevent injuries.

a) Supervisors should understand the basics of playground safety such as:

b) Checking for broken equipment and making sure children don't play on it.

c) Checking for and removing unsafe modifications, especially ropes tied to equipment, before letting children play.

d) Checking for properly maintained protective surfacing.

e) Making sure children are wearing foot wear.

Table 2. Examples of age appropriate equipment

Toddler — Ages 6-23 months	**Preschool — Ages 2-5 years**	**Grade School — Ages 5-12 years**
a) Climbing equipment under 32" high b) Ramps c) Single file step ladders d) Slides* e) Spiral slides less than 3 0° f) Spring rockers g) Stairways h) Swings with full bucket seats	a) Certain climbers b) Horizontal ladders less than or c) equal to 0" high for ages & 5 d) Merry-go-rounds e) Ramps f) Rung ladders g) Single file step ladders h) Slides* i) Spiral slides up to 3 0° j) Spring rockers k) Stairways l) Swings – belt, full bucket seats (2- years) & rotating tire	a) Arch climbers b) Chain or cable walks c) Free standing climbing events with flexible parts d) Fulcrum seesaws e) Ladders – Horizontal, Rung, & Step f) Overhead rings*** g) Merry-go-rounds h) Ramps i) Ring treks j) Slides k) Spiral slides more than one 3 0° turn l) Stairways m) Swings – belt & rotating tire n) Track rides o) Vertical sliding poles

Watching and stopping dangerous horseplay, such as children throwing protective surfacing materials, jumping from heights, etc.

Watching for and stopping children from wandering away from the play area.

4.3 Selecting Equipment

When selecting playground equipment, it is important to know the age range of the children who will be using the playground. Children at different ages and stages of development have different needs and abilities. Playgrounds should be designed to stimulate children and encourage them to develop new skills, but should be in scale with their sizes, abilities, and developmental levels. Consideration should also be given to providing play equipment that is accessible to children with disabilities and encourages integration within the playground.

Table 2 shows the appropriate age range for various pieces of playground equipment. This is not an all-comprehensive list and, therefore, should not limit inclusion of current or newly designed equipment that is not specifically mentioned. For equipment listed in more than one group, there may be some modifications or restrictions based on age.

4.3.1 Equipment not recommended

Some playground equipment is not recommended for use on public playgrounds, including:

a) Trampolines

b) Swinging gates

c) Giant strides

d) Climbing ropes that are not secured at both ends.

e) Heavy metal swings (e.g., animal figures) – These are not recommended because their heavy rigid metal framework presents a risk of impact injury.

f) Multiple occupancy swings – With the exception of tires wings, swings that are intended for more than one user are not recommended because their greater mass, as compared to single occupancy swings, presents a risk of impact injury.

g) Rope swings – Free-swinging ropes that may fray or otherwise form a loop are not recommended because they present a potential strangulation hazard

h) Swinging dual exercise rings and trapeze bars – These are rings and trapeze bars on long chains that are generally considered to be items of athletic equipment and are not recommended for public playgrounds. NOTE: The recommendation against the use of exercise rings does not apply to overhead hanging rings such as those used in a ring trek or ring ladder.

4.4 Surfacing

The surfacing under and around playground equipment is one of the most important factors in reducing

the likelihood of life-threatening head injuries. A fall onto a shock absorbing surface is less likely to cause serious head injury than a fall onto a hard surface. However, some injuries from falls, including broken limbs, may occur no matter what playground surfacing material is used.

The most widely used test method for evaluating the shock absorbing properties of a playground surfacing material is to drop an instrumented metal head form onto a sample of the material and record the acceleration/time pulse during the impact.

This height can be considered as an approximation of the fall height below which a life-threatening head injury would not be expected to occur. Manufacturers and installers of playground protective surfacing should provide the critical height rating of their materials. This rating should be greater than or equal to the fall height of the highest piece of equipment on the playground. The fall height of a piece of equipment

is the distance between the highest designated play surface on a piece of equipment and the protective surface beneath it.

4.4.1.Equipment not covered by protective surfacing recommendations

4.4.1.1 The recommendations for protective surfacing do not apply to equipment that requires a child to be standing or sitting aground level. Examples of such equipment are:

a) Sand boxes

b) Activity walls at ground level

c) Play houses

d) Any other equipment that children use when their feet remain in contact with the ground surface

4.4.1.2 Appropriate Surfacing

e) Pea gravel

f) Sand

g) Shredded/recycled rubber mulch

h) Wood mulch (not CCA-treated)

i) Wood chips

j) Rubber mats – 1 inch to 1.5 inches thickness

4.4.1.3 Inappropriate Surfacing

a) Asphalt

b) Concrete

c) Dirt

d) Grass

e) CCA treated wood mulch

4.4.2 Selecting a surfacing material

There are two options available for surfacing public playgrounds: unitary and loose-fill materials. A playground should never be installed without protective surfacing of some type. Concrete, asphalt, or other hard surfaces should never be directly under playground equipment. Grass and dirt are not considered protective surfacing because wear and environmental factors can reduce their shock absorbing effectiveness. Carpeting and mats are also not appropriate. Loose-fil should be avoided for playgrounds intended for toddlers.

4.4.2.1 Unitary surfacing materials

Unitary materials are generally rubber mats and tiles or a combination of energy-absorbing materials held in place by a binder that may be poured in place at the playground site and then cured to form a unitary shock absorbing surface. Unitary materials are available from a number of different manufacturers, many of whom have a range of materials with differing shock absorbing properties. When deciding on the best surfacing materials keep in mind that some dark coloured surfacing materials exposed to thin tense sun have caused blistering on bare feet. Check with the manufacturer if light coloured materials are available or provide shading to reduce direct sun exposure.

Site requirements should be obtained from the manufacturer because some unitary materials require installation over a hard surface while others do not.

Manufacturer's instructions should be followed closely, as some unitary systems require professional

4.4.2.2 Loose-fill surfacing materials

Engineered wood fibre (EWF) is a wood product that may look similar in appearance to landscaping mulch, but EWF products are designed specifically for use as a playground safety surface under and around playground equipment.

There are also rubber mulch products that are designed specifically for use as playground surfacing. When installing these products, tips 1-9 listed below should be followed. Each manufacturer of engineered wood fibre and rubber mulch should provide maintenance requirements for and test data on:

a) Minimum fill-depth data.

b) Toxicity.

4.4.2.2.1 Other loose-fill materials are generally landscaping-type materials that can be layered to a certain depth and resist compacting. Some examples include wood mulch, woodchips, sand, pea gravel, and shredded/recycled rubber mulch. Important tips when considering loose-fill materials:

a) Loose-fill materials will compress at least 25% over time due to use and weathering. This must be considered when planning the playground. For example, if the playground will require 9 inches of woodchips, then the initial fill level should be 12 inches. See Table 2 below.

b) Loose-fill surfacing requires frequent maintenance to ensure surfacing levels never drop below the minimum depth. Areas under swings and at slide exits are more susceptible to displacement; special attention must be paid to maintenance in these areas. Additionally, wear mats can be installed in these areas to reduce displacement.

c) The perimeter of the playground should provide a method of containing the loose-fill materials.

d) Consider marking equipment supports with a minimum fill level to aid in maintaining the original depth of material.

e) Good drainage is essential to maintaining loose-fill surfacing. Standing water with surfacing material reduces effectiveness and leads to material compaction and decomposition.

f) Critical height may be reduced during winter in areas where the ground freezes.

g) Never use less than 9 inches of loose-fill material except for shredded/recycled rubber (6 inches recommended). Shallower depths are too easily displaced and compacted

h) Some loose-fill materials may not meet accessibility guidelines.

i) Wood mulch containing chromated copper arsenate(CCA)-treated wood products should not be used; mulch where the CCA-content is unknown should be avoided(see 4.5.5.1).

Table 2 shows the minimum required depths of loose-fill material needed based on material type and fall height. The depths shown assume the materials have been compressed due to use and weathering and are properly maintained to the given level.

4.2.3 Installing loose-fill over hard surface

Installing playgrounds over hard surfaces, such as asphalt, concrete, or hard packed earth is not recommended, unless the installation adds the following layers of protection. Immediately over the hard surface there should be a 3- to 6-inch base layer of loose-fill (e.g., gravel for drainage).

The next layer should be a Geotextile cloth. On top of that should be a loose-fill layer meeting the specifications addressed in 4.4.2.2 and Table 2.

Embedded in the loose-fill layer should be impact attenuating mats under high traffic areas, such as under swings, at slide exits, and other places where displacement is likely.

Figure 1 provides a visual representation of this information. Older playgrounds that still exist on hard surfacing should be modified to provide appropriate surfacing.

4.5 Equipment Materials

4.5.1 Durability and finish

a) Use equipment that is manufactured and constructed only of materials that have a demonstrated record of durability in a playground or similar setting.

b) Finishes, treatments, and preservatives should be selected carefully so that they do not present a health hazard to users.

Table 2. Minimum compressed loose-fill surfacing depths

Inches	Of	(Loose-Fill Material)	Protects to	Fall Height (feet)
6*		Shredded/recycled rubber		10
9		Sand		4
9		Pea Gravel		5
9		Wood mulch (non-CCA)		7
9		Wood chips		10

* Shredded/recycled rubber loose-fill surfacing does not compress in the same manner as other loose-fill materials. However, care should be taken to maintain a constant depth as displacement may still occur.

Figure 1. Installation layers for loose-fill over a hard surface

4.5.2 Hardware

When installed and maintained in accordance with the manufacturer's instructions:

1) All fasteners, connectors, and covering devices should not loosen or be removable without the use of tools.

2) All fasteners, connectors, and covering devices that are exposed to the user should be smooth and should not be likely to cause laceration, penetration, or present a clothing entanglement hazard.

3) Lock washers, self-locking nuts, or other locking means should be provided for all nuts and bolts to protect them from detachment.

4) Hardware in moving joints should also be secured against unintentional or unauthorized loosening.

5) All fasteners should be corrosion resistant and be selected to minimize corrosion of the materials they connect. This is particularly important when using wood treated with ACQ/CBA/CA-B2 as the chemicals in the wood preservative corrode certain metals faster than others.

6) Bearings or bushings used in moving joints should be easy to lubricate or be self-lubricating.

7) All hooks, such as S-hooks and C-hooks, should be closed. A hook is considered closed if there is no gap or space greater than 0.04 inches, about the thickness of a dime.

4.5.3 Metals

1) Avoid using bare metal for platforms, slides, or steps. When exposed to direct sunlight they may reach temperatures high enough to cause serious contact burn injuries in a matter of seconds. Use other materials that may reduce the surface temperature, such as but not limited to wood, plastic, or coated metal.

2) If bare or painted metal surfaces are used on platforms steps, and slide beds, they should be oriented so that the surface is not exposed to direct sun year round.

4.5.4 Paints and finishes

a) Metals not inherently corrosion resistant should be painted, galvanized, or otherwise treated to prevent trust.

b) The manufacturer should ensure that the users cannot ingest, inhale, or absorb potentially hazardous amounts of preservative chemicals or other treatments applied to the equipment as a result of contact with playground equipment.

c) All paints and other similar finishes must meet the current regulations for lead in paint.

d) Painted surfaces should be maintained to prevent corrosion and deterioration.

e) Paint and other finishes should be maintained to prevent rusting of exposed metals and to minimize children playing with peeling paint and paint flakes.

f) Older playgrounds with lead based paints should be identified and a strategy to control lead paint exposure should be developed.

4.5.5 Wood

a) Wood should be either naturally rot- and insect-resistant (e.g., cedar or redwood) or should be treated to avoid such deterioration.

b) Creosote-treated wood (e.g., railroad ties, telephone poles, etc) and coatings that contain pesticides should not be used.

4.5.5.1 Pressure-treated wood

A significant amount of older playground wood was pressure-treated with chemicals to prevent damage from insects and fungi. Chromated copper arsenate (CCA) was a chemical used for decades in structures (including playgrounds).

Since December 31, 2003, CCA-treated wood is no longer processed for use in playground applications. Other rot- and insect-resistant pressure treatments are available that do not contain arsenic; however, when using any of the new treated wood products, be sure to use hardware that is compatible with the wood treatment chemicals. These chemicals are known to corrode certain materials faster than others.

NOTE Existing playgrounds with CCA-treated wood

Various groups have made suggestions concerning the application of surface coatings to CCA-treated wood (e.g., stains and sealants) to reduce a child's potential exposure to arsenic from the wood surface. Data from various studies suggest that regular (at least once a year) use of an oil- or water-based, penetrating sealant or stain can reduce arsenic migration from CCA-treated wood. Installers, builders, and consumers who perform woodworking operations, such as sanding, sawing, or sawdust disposal, on pressure-treated wood should read the consumer information sheet available at the point of sale. This sheet contains important health precautions and disposal information.

Foot note: 2 Ammoniacal copper quat (ACQ), copper boron azole (CBA), copper azole type B (CA-B), etc.

When selecting wood products and finishes for public playgrounds, it is reccommended:

a) Avoid "film-forming" or non-penetrating stains (latexsemi-transparent, latex opaque and oil-based opaquestains) on outdoor surfaces because peeling and flakingmay occur later, which will ultimately have an impact on durability as well as exposure to the preservatives in the wood.

b) Creosote, pentachlorophenol, and tributyl tin oxide aretoo toxic or irritating and should not be used as preservatives for playground equipment wood.

c) Pesticide-containing finishes should not be used.

d) CCA-treated wood should not be used as playground Mulch

4.6 Assembly and Installation

a) Strictly follow all instructions from the manufacturer when assembling and installing equipment.

b) After assembly and before its first use, equipment should be thoroughly inspected by a person qualified to inspect playgrounds for safety.

c) The manufacturer's assembly and installation instructions, and all other materials collected concerning the equipment, should be kept in a permanent file.

d) Secure anchoring is a key factor to stable installation, and the anchoring process should be completed in strict accordance with the manufacturer's specifications.

Annex A
(Informative)

Playground Injuries

A.1 General

The potential hazards that exist with the use of playground equipment are numerous with over 200,000 estimated emergency room-treated injuries annually. Playground equipment-related incidents vary from falls, equipment-related hazards, such as breakage, tip over, design, and assembly.

Other hazard patterns involve entrapment and colliding other children or stationary equipment. Playground-related deaths may involve entanglement of ropes, leashes, or clothing; falls; and impact from equipment tip over or structural failure.

The guidelines in this draft standard have been developed to address the hazards that result in playground related injuries and deaths. The recommendations include those that address:

a) The potential for falls from and impact with equipment

b) The need for impact attenuating protective surfacing under and around equipment

c) Openings with the potential for head entrapment

d) The scale of equipment and other design features related to user age and layout of equipment on a playground

e) Installation and maintenance procedures

f) General hazards presented by protrusions, sharp edges, and crush or shear point

