

# **Guidelines for School Playgrounds: Playground Safety Management**

**February 2005**

**Website address: [www.sofweb.vic.edu.au/scln/menu.htm](http://www.sofweb.vic.edu.au/scln/menu.htm)**

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## **Acknowledgement**

The Department of Education and Training would like to acknowledge and thank the Playgrounds and Recreation Association of Victoria and Phillips Fox law firm for assistance and advice in developing these Guidelines.

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# 1. Introduction

Opportunities for play must be nurtured if children are to develop physically, emotionally and socially. While playground designs have recently become more complex, they do so against a background of increased community expectations of safer environments. Fortunately, research has shown that a substantial number of accidents can be prevented and the severity of injuries reduced if greater care is taken in the design, repair and maintenance of playgrounds. This can be achieved with little conflict between the goals of maximising constructive play and minimising injury.

These Guidelines are primarily written for principals, teachers and school council members. It is generally the responsibility of the building and grounds subcommittee of the school council, in consultation with the principal, to develop a school policy on school playgrounds. It is generally the task of the delegated school playground coordinator to be responsible for ongoing implementation.

While this information is written for all schools, the majority of students who actually play on play equipment are primary students.

The aim of these Guidelines is to improve students' safety, while reinforcing that the primary objective of play equipment lies in its value for play and adventure. Schools are encouraged to assess the safety, quality and diversity of the recreation environment available to students. These Guidelines are intended to help schools set up a comprehensive system for the installation, maintenance, management and audit of play equipment and associated areas. Processes are provided for identifying risks and minimising playground injuries.

## 1.1 Australian Standards

Schools are required to ensure that all playgrounds comply not only with the information in these Guidelines, but also with the current Australian Standards, in particular, AS/NZS 4486.1:1997.

The Australian Standard *AS/NZS 4486.1:1997 - Playgrounds and Playground Equipment. Part 1: Development, Installation, Inspection, Maintenance and Operation*, is designed to minimise the risk of injury to children using playgrounds by providing guidelines for siting and developing playgrounds, product information requirements, instructions and operating procedures intended to support sound playground design, the selection of appropriate equipment and to minimize operational hazards. The Standard is intended for use by designers, manufacturers and installers of playground equipment, as well as operators of the playground.

Other Standards referenced in AS/NZS 4486.1,1997 or referencing playground equipment include:

- AS 4685 (Set)-2004 *Playground equipment* including Parts 1 – 6.
- AS 2555-1982 *Supervised adventure playgrounds – Guide to establishment and administration.*
- AS/NZS 4422:1996 *Playground surfacing — Specifications, requirements and test method, including Amendment No. 1, 5 May 1999.*
- AS 1428 Parts 1:2001, 2:1992, 3:1992 and 4:2002 *Design for Access and Mobility.*

These standards can be accessed through de&t @ work, at: Facilities Online/Standards Australia Online, or at:  
<https://www.eduweb.vic.gov.au/intranet/facilites/standards.htm> (EduMail password is required).

Any new work or refurbishment for schools (which includes playgrounds) must also meet the requirements of the Department of Education and Training's 'Building Quality Standards Handbook'. This information can be found at [www.sofweb.vic.edu.au/facility/docResearch/index.htm](http://www.sofweb.vic.edu.au/facility/docResearch/index.htm) under 'Key Documents' / 'Standards and Procedures'.

A systematic program of ongoing inspection and maintenance of playground equipment will enable the school council to set priorities for repair and replacement of equipment and help maintain the surrounding area in a condition that will not compromise children's safety.

Specialist play equipment should be designed or selected with a view to students' capacity and learning needs, including considering access for those with a disability. Further, special schools are advised to seek approval from the Regional Director to install playground items on the basis of need.

It is recommended that school staff and students should be instructed in the safe use of playgrounds and play equipment. Students could participate in an introductory program whenever new playground equipment is installed.

## 1.2 Copper-chromium-arsenate treated timber

In March 2003 the Australian Pesticides and Veterinary Medicines Authority ('APVMA') the responsible regulatory authority has recently released a draft report for public consultation on whether copper chromium and arsenate ('CCA') treated wood has an effect that is harmful to human beings. In particular, APVMA was concerned about potential exposure of children to CCA from close contact with treated timber surfaces.

As there was insufficient data, APVMA could not be satisfied there was no undue risk from continuing use of CCA treated timber in the manufacture of certain structures. In those structures with which members of the public are likely to come into *intimate and frequent contact* such as children's play equipment and picnic tables, APVMA proposed prohibiting future CCA treated timber products in those structures. The draft specifically relates to *future* use of CCA timber for items such as children's playgrounds - not the existing structures such as those currently in school adventure playgrounds. Playground equipment and picnic tables can be contrasted with those products where there is little likelihood people will have any frequent physical contact, such as fence posts and telegraph poles. For those items APVMA did not make any recommendation to discontinue future use of CCA treated timber.

The APVMA stated there was not enough evidence to conclude that existing CCA treated timber structures are unsafe. It was noted that to date, no overseas regulator (including the US, Canada, New Zealand and the European Union) has required the demolition of CCA treated structures. APVMA is continuing to monitor ongoing worldwide studies, in particular research by the US EPA on risks to children from existing CCA treated timber, which may shed further light on this safety issue.

Even though the APVMA report is a draft document the Department recommends adopting the following precautionary approach:

- 1.2.1 as there are now alternative materials, new playground equipment in schools should not be constructed of CCA treated timber
- 1.2.2 hands should be thoroughly washed after contact with any outside surfaces, especially prior to eating and drinking, as part of sound general public health advice
- 1.2.3 food should not come into direct contact with CCA treated timber.

The above approach is in accordance with APVMA recommendations and consistent with other recently released studies on potential risks of CCA treated timber.

Existing CCA treated timber equipment need not be removed or replaced.

If CCA treated wood structures are to be dismantled the wood must not be disposed of by burning. Further, if dismantling, repairing, altering or restructuring any existing playground equipment made from CCA treated timber, its integrity must not be interfered with by sanding, sawing or any other process.

## **2. Playground safety management**

### **2.1 Safety management system**

Playgrounds and play structures have a finite life. Exposure to the elements, usage and vandalism will contribute to deterioration. Play spaces and play structures constructed or purchased as little as five years ago may no longer meet the current Australian Standards.

An effective *Playground Safety Management System* needs to be in place to ensure that risks and injuries to students are kept to a minimum.

The school council is required to identify an appropriately skilled person to act as playground coordinator to ensure that all inspections, maintenance and improvements are carried out in accordance with the requirements of the school's *Playground Safety Management System*. The playground coordinator would normally be the person responsible for ensuring that accurate records (in the Register of playground equipment) are kept and that playground areas and equipment are functional and in a safe condition.

### **2.2 Injury levels in playgrounds**

Although injuries cannot be totally avoided in school playgrounds, much can be done to minimise their frequency and severity.

Monash University Accident Research Centre has estimated that each year roughly 120,000 Australian children seek medical care as the result of playground injury. Many of these injuries are predictable and preventable.

Falls from play equipment are the leading cause of injury in playgrounds (accounting for at least 75 per cent of injuries). Arm fractures and head injuries are the most common significant injuries (with about a third of hospital presentations associated with play equipment).

NSW and Victorian hospital data show that while one to four year olds and ten to fourteen year olds have high rates of admission, children aged from five to nine years account for three times as many admissions as those in the other groups.

## **2.3 Key risk factors**

The main risks of injury are associated with:

- fall-height—including measurement and places from which children fall
- fall-zones—the measure of where children fall and the adequacy of impact-absorbing surfaces in these areas
- guarding—its adequacy in preventing or inhibiting falls and other injury events
- entrapment—spaces and pinch points, particularly those posing risk of entrapment of head, hands and feet
- poor functional design (relative to the needs of the users)
- poor layout (the location and design of various pieces of equipment with respect to internal walkways and barriers and the juxtaposition of incompatible activities)
- the size and ability of the children who use the playground
- structural failure
- failure to decommission and prevent students gaining access to defective equipment (for example, by enclosing it with an orange plastic fence, not simply relying on a directive that it is out of bounds)
- use of second-hand equipment that is clearly defective
- the siting of play equipment
- crowding on equipment.

Systematic, structured ongoing assessment of the condition and safe function of play areas and equipment is the critical basis of a safety management approach that ensures that risks are eliminated or minimised.

## **3. Creating safe play areas**

### **3.1 Play in school grounds**

Play complements the ‘formal’ curriculum in schools and quality play opportunities are an integral part of a stimulating learning environment. Through play, children interact and make friends, engage in role-play and extend their creativity; they test themselves physically and master skills, improve their fitness and health, and engage in self-directed activities that aid individual development towards independent adulthood.

Where there is a satisfying range of play settings for children of different ages and interests, students' behaviour is likely to be easier to manage, conflicts and vandalism may also be reduced, and staff may be able to transfer some physical activities out of doors. There may also be benefits to students' self-image and to the image of the school in general.

## **3.2 Choosing sites**

Select one or more potential locations after seeking advice on layout and siting, then check that the selected site(s) fulfil the requirements set out below.

### **3.2.1 Location**

Play areas should be positioned where they:

- can be supervised by staff on yard duty
- are reasonably accessible from the school's entry/exit doors
- do not obstruct pedestrian access across the school grounds
- are away from vehicle traffic and other hazards
- are out of range of active ball-play areas and other potential conflicts
- are reasonably protected from direct entry by unauthorised persons
- are well lit, eg for evening or night use and to protect from vandalism.

### **3.2.2 Disabled access**

A wide range of activities should be made accessible to disabled students so that they can play alongside their peers. The school grounds should be assessed for barriers that prevent this.

### **3.2.3 Future buildings and site works**

Sometimes major alterations to buildings or grounds mean a playground needs to be relocated. If the playground equipment needs upgrading, this may be a good time to do it.

### **3.2.4 Drainage, slopes and mounds**

Poorly drained playground areas are ineffective as they can only be used during dry weather.

Sloping sites pose design problems and loose impact-absorbing material is difficult to retain. Mound surfaces commonly become compacted and difficult to maintain. Rows of used car tyres, partly embedded in the ground, can be used to reduce soil erosion. Check that students slipping or running down slopes are not likely to collide with equipment.

It is recommended that slopes be avoided in fall-zones. Terracing a sloping site (creating two or more level areas) can be a suitable solution and result in a more interesting play environment that is easier to maintain. However, the design of such areas is more complicated and requires a good understanding of fall-zone requirements. (See 3.6 *Fall-Zones* page 13)

### **3.2.5 Sun and wind**

The metal surfaces of equipment and dark-coloured synthetic/rubber impact-absorbing surfacing exposed to the sun can reach temperatures high enough to make the use of equipment uncomfortable or hazardous. Timber, light coloured plastics and plastic-coated surfaces may absorb less heat than constructions made from uncoated galvanised pipe or sheet.

Shade from buildings and trees is the most inexpensive way to prevent exposure, but this may not be adequate. Covered playground equipment can also create useful shade.

Selection of appropriate trees can provide shade in summer while allowing the sun to penetrate in winter. Specially designed roofs, shade structures, pergolas or sails (which can be taken down in Winter) can also be installed to provide shade. Deliberation of these structures should take into consideration the likelihood of them being climbed, walked on or vandalised. The ease of dismantling a shade structure in winter time could also be considered. The location of supporting posts for shade structures should be in accordance with the requirements for fall-zones.

## **3.3 Choice of activities, play areas and play equipment**

Well designed play equipment potentially caters for large groups of students while providing a wide range of activities. However, students have diverse interests and will want to play in different ways at different times. While this advice focuses on the safety of play equipment, schools should consider the total experience of play activities and potential hazards within their grounds when planning outdoor play areas.

Schools have limited space and most recreation areas need to be multi-functional. It is recommended that schools consider how well their grounds provide for the wide range of activities required by students and ensure that a good range of play settings is available.

Combinations of the following spaces are typical:

- large areas of hard surfaces (for a range of ball games, rebound walls etc. and for marbles, small cars and toys)
- smaller hard surfaced areas for hop-scotch, elastics and other small-group games

- a large grassed area for running, ball games, athletics and other activities
- sand-play areas, dirt, water (for planting/digging plus playing with loose materials)
- areas for dramatic play/role-play and/or imaginative games (might include decks, cubbies and a shaded area)
- shade and shelter, tables, seats and drinking water
- gathering spaces for assemblies, performances and community activities.

Some sporting equipment, such as goal posts and basketball rings, are associated with structural design or high-maintenance problems (see *Victorian Government Schools Reference Guide*, section 4.4.5.4.2 *Physical and sport education equipment*, for information about use of basketball rings, at: <http://www.eduweb.vic.gov.au/referenceguide>).

Areas around buildings, such as steps and stairs and doorways are valued play areas for primary students and will be used by students for a range of activities. These should be considered when assessing the range of play activities available and the related level of safety.

### **3.4 Choosing equipment**

School councils are encouraged to consult with their student body on their views and preferences of play equipment. Using this information, a school council can plan and design an attractive structure layout that is safe, realistically achievable and likely to retain the interest of students over the lifetime of the students' time at the school and the lifetime of the equipment.

School councils are also asked to consider whether the play experiences the equipment will provide are appropriate for the intended age group and how they contribute to the diversity of play experiences provided in the playground as a whole. Designs and diagrams are sometimes deceiving. School councils should consider what the students can and will do when the equipment is installed in the play area. For instance, spaces below platforms can be used for crawling and also as cubbies.

Diversity can also be achieved through the design of individual items of equipment. Slides can be straight, spiral, elbow or 'wave' types. Climbing can be catered for with rungs, steps, platforms, angled walls or nets. Moving equipment provides an alternative to fixed or rigid items. 'Upper body' equipment is popular with students and particularly contributes to physical development. Balance beams can also serve as seating.

### **3.4.1 Combination play structures**

Structures with a series of decks linked by bridges and climbing devices can provide a variety of play activities in a relatively small area. However, problems can arise if these structures are installed without consideration being given to the number of students that will use the area.

Overcrowding creates safety problems and may deny timid students access to popular equipment. The dimensions of the area, the variety of equipment types and how items are located relative to each other will determine how well an area provides for large groups and whether crowding becomes a safety issue. The management of the area, including supervision and possible limitations on the numbers using the area, will also affect the safety of students. Merging several under-utilised areas provided for a particular age group may save on maintenance and make supervision easier.

Before purchasing a combination structure, imagine how students will move through it. Items such as slides and slide poles provide 'flow through' activities that allow many students to take part, whereas items with a single seat or turnover bar mean students have to wait their turn. In the case of a turnover bar, placing two or more bars next to each other invites group play and social interaction. So do climbing frames that link activities and platforms, providing a natural flow of play and reducing congestion.

Play value and safety are generally improved when students can take different 'routes' through a structure to bypass any section that is too crowded or too challenging. Some strategic platforms low to the ground from which the user can make an easy escape are also advisable. Beware of platforms with too many equipment items and openings, and ones where it is difficult to prevent students from being pushed off.

### **3.4.2 Items for a single user and quiet sections**

Single-user items and less physically active play spaces are important to provide a break from the busy, active areas. Ideally, turnover bars, parallel bars, log rolls and track glides should be separated from a complex, but if attached, they should be able to be used without direct interference from students using other items in the complex.

### **3.4.3 Equipment items installed side by side in a complex**

Where items designed to enable students to hang by their hands are installed side by side in a complex, they should be spaced not less than 2.5 metres apart to prevent students falling from an item onto an adjacent item or another student.

Angled equipment items, such as nets and climbers, protruding from the same side of a complex should be spaced not less than 1.2 metres apart.

When it is possible to fall from one item onto the top of another item (that is, where one item is significantly higher than the other), the two items should be protected by guardrails or handrails, or spaced not less than 1.8 metres apart.

### **3.5 Height of fall**

The 'height of fall' is the greatest distance between a part of the equipment to which a child has reasonably foreseeable access and the playing surface of equipment beneath. This should not exceed 2.5 metres. It is appropriate to reduce the distance, particularly when younger children may be involved. A separate play area for students in Prep to Year 2 may be desirable where a maximum fall height of 1.5m is considered preferable.

### **3.6 Fall-Zones**

The distance from any part of equipment to any hard surface (borders, paths, tree trunks or adjacent equipment) is referred to as the 'fall zone' and should generally be a minimum of 2.5 metres. In the case of moving equipment, this distance is measured from the extremity of movement. Students falling, jumping or being pushed off equipment should land within the fall zone onto an impact-absorbing surface.

### **3.7 Impact-absorbing surfaces**

Impact-absorbing surfacing material used in areas where equipment is installed should be:

- of impact-tested quality
- installed at a compacted depth of 250 millimetres generally, and in areas of high use 300 millimetres or more, if such is indicated in the suppliers' test report.

Impact-absorbing material should be provided under play equipment with fall heights greater than 500 millimetres above ground level and should extend for a distance of 2.5 metres in all directions from places where a fall is possible.

#### **3.7.1 Loose impact-absorbing material**

Loose impact-absorbing material, such as mulch and bark, should be free of large and sharp pieces that could penetrate the skin or be thrown around by students. Sand and pea gravel should not have excessively fine particles and clay substances that may cause the material to set hard when wet.

Packing sand, brick sand, and fine wood fibres that allow fungi to grow or are fire-prone, must not be used as impact-absorbing material.

An efficient drainage system is needed to avoid waterlogging, especially when sand is used as the impact-absorbing surface.

Before being used in playgrounds, any recycled or unusual products that may have suitable impact-absorbing qualities should be checked for such hazards as flammability, skin irritation and toxicity, possible inhalation of particles, stability in wind, sharpness, soiling of clothing and ease of maintenance.

### **3.7.2 Rubber/synthetic impact-absorbing material**

Schools are advised to use rubber/synthetic pads or tiles in high use areas where the students' feet are likely to displace loose material.

Rubber/synthetic impact-absorbing materials need to be checked for hazards caused by tiles, sheets or edges separating from the base layer, damaged surfaces, poor joints and embedded foreign objects. Loose materials (such as sand, gravel or soil) should be removed from its surface.

Where tiles with openings that allow grass to grow through are used, check for any hard material or soil that has replaced the grass, reducing the impact absorption properties of the tiles.

Adequate impact absorption for the fall height of the equipment must be established. Where material of this kind is already installed, schools should check the date of supply or installation and look up the test information, which should have been provided by the supplier along with the material. If this information is untraceable, but the name of supplier is known, check whether the material was tested in accordance with AS/NZS 4422:1996, Amendment No. 1, 5 May 1999, and any published amendments after 1999. If this is confirmed, find out the maximum 'test drop height' for the installed product and make sure that the play equipment does not exceed that height.

### **3.7.3 Borders**

Loose impact-absorbing materials need to be retained effectively to prevent losses. Rubber/synthetic materials need to be retained by borders or wedge-shaped edges and should be laid to avoid tripping. Damaged or ineffective borders need to be repaired or replaced. When recycled timber is used, any sharp edges, splinters and unused protruding bolts and other hardware must be removed.

Where above-ground borders are used, trip hazards can be minimised by grading the surrounding soil and filling up to the level of the border.

### **3.7.4 Pooling of water and drainage**

Pools of water often form in intensively used areas under equipment. This problem may be temporarily solved by loosening compacted soil and impact-absorbing material and then backfilling the depressions.

A more permanent solution is to install a rubber/synthetic pad in areas of heavy wear, such as the base of a slide. Pads of this kind must be installed below the level of the loose impact-absorbing material and have bevelled rubber edges to minimise tripping if the pad becomes exposed.

Grated drainage pits should not be located in impact-absorbing areas. All open drains and pits serving the area should be checked and cleaned of rubbish and debris.

## **3.8 Preparing a design brief**

When a proposal for a playground is being considered, a ‘design brief’ needs to be approved by the school council. The design brief should include the following information:

- details of the selected site/alternative sites
- user age groups and numbers of students
- other existing play equipment areas and what they contain
- ideas from students, school staff, parents and school council, with some indication of priorities in the activities to be provided
- the kind of play equipment required
- the requirement for adherence to these Guidelines and the related Australian Standards
- the type of impact-absorbing material and sun shelter to be included
- preferred construction materials
- time lines for design and construction, including any requirement to carry out the development in stages
- budget
- installation and maintenance
- whether full working drawings and specifications are required
- the confirmed design fee or quotations
- any special requirements regarding the site, the users, or any other aspect of the brief
- how the school is likely to have the playground built (that is, by volunteers, the manufacturer, and/or specialist builders)

- the obligations of the builder (manufacturer) to provide the school with a maintenance schedule (as per AS/NZ 4486.1:1997 *Playgrounds and Playground Equipment Part 1–Development, Installation, Inspection, Maintenance and Operation*).

### **3.9 Design and construction**

There are various ways in which a school can acquire equipment or build a new play equipment area. These include:

- engaging a designer and a builder
- engaging a designer-builder
- engaging a manufacturer who will install their own standard products
- engaging a manufacturer and an assembler/installer
- purchasing equipment from a manufacturer/supplier and installing it using volunteer labour.

The location and circumstances, project size, funding, and the skills available in the school community will determine which of these options is appropriate.

Whichever method is used, it is critical that the responsibilities and warranties for the quality, design and safety of the installation are clearly defined, understood and recorded in a Register of playground equipment (see section 4.1.2 *Register of playground equipment* page 20). Disputes can be avoided by clearly stating the responsibilities of each party.

It is imperative that any purchase order placed with a manufacturer states that the equipment must conform to all Australian Standards applicable to playground equipment and that the standards are to be taken as a minimum standard for the equipment to be supplied.

A designer or manufacturer who has supplied equipment but not installed it could be invited to inspect the installation upon completion. The school should also inspect the installation for compliance with the Australian Standards. All reports from such inspections should be kept as part of the Register of playground equipment by the playground coordinator.

### **3.10 Selecting a supplier**

After the design is completed and accepted by the school, two or more manufacturers or building/landscape contractors competent in the construction of playgrounds should be invited to submit quotations in response to the design brief.

The tendering requirements of the Department of Education and Training to undertake building and construction works are:

Less than \$15,000 (GST exclusive)	Minimum of one written tender
\$15,000 to \$100,000 (GST exclusive)	Minimum of three written tenders
Over \$100,000 (GST exclusive)	Public advertisement or tenders called from at least three pre-qualified contractors

The school should:

- ensure the contractors inspect the site
- ask for detailed information about the products or constructions
- ask for warranties and query the availability of spare parts and compliance with the school's inspection sequence
- stipulate that the lowest quote/tender will not necessarily be accepted.

### **3.11 Insurance cover**

Following consideration of the quotations, the school proceeds with contractual arrangements in accordance with school council policy, which should require contractors to provide the school with copies of their current public liability cover of \$10 million and other relevant insurance before the contract is let.

### **3.12 Final payment**

Upon completion of construction and before the final payment is made, it is important to:

- ensure the designer/supplier conducts a final inspection
- check the finished installation against the plans and specifications that have been received
- check that the warranty, maintenance instructions and spare-parts lists have been received
- complete an audit of the area and equipment (see section 5. *Playground equipment* page 27)
- request the designer/contractor to modify any areas of non-compliance
- enter all relevant documents in the Register of playground equipment
- test it with a group of students and seek their views.

### **3.13 Inspection and maintenance**

Regular inspections and maintenance will not only ensure the safe use of the equipment but will also protect the school's capital investment.

There are three types of inspections that are recommended, regular visual inspections, regular maintenance inspections and comprehensive annual inspections.

### **3.13.1 Regular Visual Inspection**

This inspection detects anything unusual in the equipment or the area, such as anything broken or worn out, damage, loss or displacement of loose undersurfacing materials (perhaps caused by extreme weather or usage) and objects brought into fall zones by students eg old furniture, rocks. It is recommended that this visual inspection be carried out every school day or at intervals determined in the school's inspection frequency schedule of the school's *Playground Safety Management System*.

### **3.13.2 Regular Maintenance Inspection**

This inspection would also include the actual maintenance if carried out by a competent maintenance person. Any problems should be recorded as well as the work subsequently completed to rectify the problems. The record should show the area and equipment number, dates of inspection and completion of work. It should be signed and filed in the Register of playground equipment. It is recommended that these inspections be carried out every three months or at intervals determined in the school's inspection frequency schedule of the school's *Playground Safety Management System*.

### **3.13.3 Comprehensive Annual Inspections** (see section 4.1.3 *Audit* page 21)

These include:

- inspecting and checking the quality and effectiveness of the maintenance and upgrading carried out since the last comprehensive annual inspection
- inspecting and comparing the information in the Register of playground equipment with the actual situation, to see whether all prioritized work has been executed within the target dates
- setting new priorities and time lines for all outstanding upgrading work, if required
- deciding whether existing equipment is worth maintaining over the next 12 months.

## **4. Management of playground equipment**

### **4.1 Organisation**

#### **4.1.1 Keeping up to date**

Over time, increased community awareness of playground safety issues and the causes of injury leads to changes in the requirements for playgrounds. Schools are expected to keep informed of current requirements.

#### **4.1.2 Register of playground equipment**

A requirement of the Australian/New Zealand Standard 4486.1:1997 *Playgrounds and Playground Equipment—Part 1: Development, installation, inspection, maintenance and operation* is that operators of playgrounds are required to keep a Register of playground equipment. Clause 9 of this standard spells out the components of the Register of playground equipment and the safety management system that needs to be addressed by schools.

The following documents form part of the Register of playground equipment:

- site and area sketch plans
- equipment audit and task sheets
- maintenance instructions
- an inspection and maintenance schedule
- manufacturers' maintenance and operation instructions and warranties
- installation dates and details
- certificates of inspection and tests
- playground accident/injury details (see section 4.3 *Injury reporting, recording and analysis* page 23)
- all records of purchases, assessments and maintenance prior to the issue of this advice
- current advice from the Department of Education and Training
- time line set for the work to be done.

The above documents are to be kept as permanent records.

All audit reports of areas or equipment, including any relocation, all removals, and all contracts related to playground purchase and work performed by others, needs to be added to the Register of playground equipment.

Compensation claims for injuries can be made long after an injury occurs, so keeping accurate, dated records is essential.

### 4.1.3 Audit

A detailed examination (audit) of the entire playground, including all items of play equipment, should be conducted at least once annually.

This audit has three components: assessment, evaluation and rectification.

#### *Assessment*

The following aspects of playgrounds should be assessed.

General hazards of all play items, which include:

- damaged, broken, bent or missing components
- loose or poorly fitted components
- excessive wear of components
- damage to protective coating of components
- chipped or damaged paint
- exposed rail or accessory ends that should be protected with caps
- worn or deformed 'S' hooks
- lack of lubrication on moving parts
- loose fasteners, nuts or bolts
- sharp or dangerous edges or protruding bolt ends
- worn, squeaky or 'stiff motion' bearings
- perished or damaged rubber components
- worn swing bearings, swing chains, swing chain mounts, fasteners, or pins
- remnants of old equipment
- rust, rot and general deterioration.

Access and platforms, including:

- stairways and ladders
- stepped ladders
- rungs and handgrips
- handrails
- guardrails and protective barriers.

Site conditions, paying attention to:

- exposed cracked or loose concrete footings
- worn, scattered or compressed surface material
- exposed roots, rocks or other environmental obstacles that create potential trip hazards
- broken glass, refuse or foreign objects around and on play equipment
- poor drainage areas
- sloping surfaces
- trees
- sandpits.

Zones for equipment, which include:

- separate play areas by group, type of equipment, and active or passive play
- adequate spacing between items of equipment
- adequate space at exit points of slides
- fall zones.

### ***Evaluation***

The second component of the audit evaluates the results of the assessment with respect to each playground and item of play equipment. Criteria should be established for setting priorities for the rectification of any problems.

The following example of a hazard classification system rates problems as posing high, medium or low risks.

High level of hazard—life or limb threatening hazard, including:

- falls from heights
- inadequate impact-absorbing material
- head or neck entrapment points.

Medium level of hazard—potential injury, but not life threatening, such as:

- dynamic functions integrated with static items
- finger, toe and limb entrapment points
- irregular and extended step distances
- lack of grab bars on platforms
- lack of guardrails for dynamic equipment.

Low level of hazard—minor injury potential or does not comply with adopted standard of care, including ground-level activities that usually involve single users such as:

- rockers
- roll-over bars
- climbing apparatus
- tripping and blind spots
- unguarded tunnels.

### ***Rectification***

The third step of the audit is to renovate, repair or replace any equipment or area with identified hazards. All equipment posing a high level of hazard should be removed from play immediately and replaced or repaired as the first priority. Play equipment evaluated as posing a medium level of hazard should then be repaired or replaced.

## **4.2 Managing safe use**

Effective risk and safety management processes and procedures need to be implemented to ensure that all playground equipment and areas:

- are ‘safe to use’ (when the technical aspects related to site, layout, functional design and maintenance meet the requirements of these Guidelines)
- are ‘used safely’ (principals develop, implement and regularly review practices in relation to staff responsibilities and student behaviour).

Anticipated management practices would typically include those set out below.

### **4.2.1 Supervision roster (or yard-duty roster) and responsibilities**

The principal is under a duty of care to provide a roster and ensure that it is implemented.

Individual staff members are under a duty of care to implement the supervisory responsibilities allocated to them.

The school should also prepare guidelines so that all staff (including relief teachers) know their responsibilities when rostered for yard duty.

### **4.2.2 Rules for use of playground areas and equipment**

School rules would normally include:

- expected code of student behaviour (such as, no pushing, no jumping from specified high equipment)
- caring for the area and equipment
- use of equipment in wet weather
- any areas that are out of bounds
- rostering of students to use the equipment (may be needed if overcrowding occurs or if older students dominate its use)
- sun protection.

## **4.3 Injury reporting, recording and analysis**

Schools are reminded that an attempt should be made to contact the parents/guardians first before telephoning for medical attention, except in an extreme emergency. In serious cases, parents/guardians must always be informed as quickly as possible of their child’s condition and of the actions taken by the school. Parents/guardians should be informed of any first aid emergency treatment their child has received. (See *Victorian Government Schools Reference Guide* section 4.5.1.3 *First aid organisation*.)

Government schools are required to report all injuries and incidents to the Department of Education and Training. The procedures for doing so are described below, together with the reporting requirements of the Victorian WorkCover Authority and the AS/NZ Standard 4486.1:1997.

### **4.3.1 Reporting**

The following injuries must be recorded and reported to the Department of Education and Training using the school's computerised administrative reporting system (CASES21/CASES):

- all injuries that were serious enough to require parents to be notified irrespective of whether or not the student was sent home
- all injuries involving the head, eyes, teeth and genitals
- all injuries to visitors (parents, contractors and others) that were reported to school authorities.

Injuries should be designated according to the following categories:

- first aid (returned to class)
- first aid (sent home)
- doctor or dental treatment
- hospital outpatient (no admittance)
- hospital admittance
- fatality.

When an incident is considered serious, principals must obtain further information (such as witness statements) to retain on file.

**In all cases of serious injury or fatality (see section 4.3.2 *Victorian WorkCover Authority reporting*), the Department's Emergency and Security Management Branch should be notified immediately by telephone on 9589 6266 (twenty-four hour service). The Regional Director should also be notified.**

Further information on the management of incident reporting is included in the *Victorian Government Schools Reference Guide*, section 6.9 Employee health, at: <http://www.eduweb.vic.gov.au/referenceguide/pdf/6-9.pdf>

### **4.3.2 Victorian WorkCover Authority reporting**

*The Occupational Health and Safety (Incident Notification) Regulations 1997* oblige an employer to immediately notify the Victorian WorkCover Authority of certain specified types of incidents, and additionally do so in writing, within forty-eight hours of becoming aware of an incident occurring at a workplace.

In this instance the principal should assume the role of the employer and take responsibility for reporting incidents.

The written record of the incident is completed on the Incident Notification Form produced by the Victorian WorkCover Authority for this purpose, available at [www.workcover.vic.gov.au](http://www.workcover.vic.gov.au). Principals of government schools should fax a copy of the report to the Department's Emergency and Security Management Branch on fax (03) 9589 0543.

The specified incidents are:

- the death of a person
- a person requiring medical treatment within forty-eight hours of exposure to a substance
- a person requiring immediate treatment as an in-patient in a hospital
- a person requiring immediate medical treatment for:
  - the amputation of any part of their body
  - a serious head injury
  - a serious eye injury
  - the separation of his or her skin from underlying tissue (such as degloving or scalping)
  - electronic shock
  - spinal injury
  - the loss of a bodily function
  - serious lacerations.

The following information (to the extent that it is known at the time of writing) must be submitted in writing to the Victorian WorkCover Authority as a written record of the incident:

1. name of employer/self-employed person required to notify the Victorian WorkCover Authority under these Regulations
2. business address of employer/self-employed person required to notify
3. name of employer of deceased/injured person(s) [if any] [if different from answer to item 1]
4. details of deceased/injured person(s) [if any]—name, date of birth, sex, residential address and telephone number, occupation/job title (if applicable)
5. time and date of incident
6. place/location where incident occurred
7. work/activity being undertaken at time of incident
8. brief description of incident
9. person(s) who saw incident or first came on scene
10. action taken/intended, if any, to prevent recurrence of incident
11. name/position title/telephone of person submitting these details and date of submitting details'.

The school must keep a copy of the record at the school for at least 10 years and ensure that the copy of the record is made available for inspection by:

- ‘(a) an inspector
- (b) the health and safety representative, if any
- (c) a person assisting the health and safety representative, if any
- (d) the health and safety committee, if any
- (e) the injured person or a person authorised by the injured person or a representative of the deceased person’.

‘If an incident at a workplace results in the death of any person,’ the principal ‘must ensure that the site of the incident is not disturbed until:

- (a) an inspector arrives at the site of the incident
  - (b) an inspector directs otherwise at the time of notification
- unless the disturbance to the site is for the purpose of:
- (a) protecting the health and safety of any person
  - (b) aiding an injured person involved in an incident
  - (c) taking essential action to make the scene safe or to prevent a further occurrence of an incident’.

Refer to Circular 309/2000 *Reporting of serious incidents and injuries to the Victorian WorkCover Authority* for further information and a detailed list of dangerous incidents. This can be found on EduLibrary at Schools/Official Memoranda, Circulars & Notices/Departmental Circulars/2000.

Steps a school must also follow after any incident of a serious nature or dangerous occurrence are:

1. immediately notify the Emergency and Security Management Branch on telephone (03) 9589 6266 (24 hour emergency number). (The Emergency and Security Branch will then verbally notify the Victorian WorkCover Authority)
2. fax (03) 9589 0543 a hard copy of the incident report to the Emergency and Security Management Branch
3. retain the completed forms in the Register of Injuries for a period of 10 years
4. provide a written record to the Victorian WorkCover Authority **within 48 hours** of becoming aware of the incident.

The CASES21/CASES incident report form has been designed to meet Victorian WorkCover Authority incident notification requirements.

Schools using CASES21 should enter this information using program [SAD11001] *Record or Modify an Accident* and print this information using program [SAD21008] *Detailed Accident or Injury*.

Schools still using CASES Administration should enter this information using program [1,1,4] *Injury Data Add/Modify/Delete* and print this information using program [1,1,5] *Injury Management Reports*.

### **4.3.3 AS/NZ Standard 4486.1:1997 injury and incident report**

AS/NZ Standard 4486.1:1997 requires that the Register of playground equipment contains **specific** information about injuries and incidents occurring in playground areas. To comply with this Standard, schools are advised to record the following details in the relevant fields provided by CASES21/CASES:

- the injured person's details (name, age, gender, address)
- injury details
- person(s) notified and the time/date of notification
- treatment (if known)
- date and time of the incident
- weather conditions
- location of incident in the playground
- description of incident
- equipment involved (if any)
- contributing factors (if known)
- corrective action recommended
- date of corrective action completed
- other hazards.

Where suitable fields are currently not provided for schools using CASES21 (specifically 'weather conditions' and 'date of corrective action completed'), schools should ensure that this information is included in the 'description of the incident' which is entered through the 'Accident detail' field provided in CASES21.

Where suitable fields are not provided for schools still using CASES Administration, the requested information should be entered in the fields that are available and the rest of the required information will need to be manually added to the printed report.

#### **4.3.4 Action following playground incidents**

Following an incident or injury, it is important that the circumstances be reviewed to establish whether action can be taken to improve the safety of the playground area and/or equipment. Such a review would typically include:

- a detailed investigation, including discussion with those involved in the incident and any witnesses
- an examination of the playground area and equipment to determine whether they meet requirements and whether any problems contributed to the incident
- in the case of falls, measurement of the depth of the impact-absorbing material in the landing zone where the incident occurred
- the weather conditions prevailing at the time of the incident
- other factors that may have affected the incident, such as supervision, the skill level of those involved in the incident, the behaviour of those involved in the incident and those nearby, and the rules for the use of the area or equipment.

Following the review, decisions may need to be made about action to be taken to improve safety, for instance:

- alterations or maintenance to the area or the equipment (such as additional impact-absorbing material to meet Australian Standards requirements)
- further instruction of students in the appropriate use of playground equipment
- a change to the school rules for using playground areas and equipment
- adjustments to the supervision provided for the playground area and equipment.

#### **4.3.5 Manufacturing defects**

If playground equipment shows any manufacturer's faults and defects, the matter should immediately be taken up with the manufacturer. It is also advisable to inform the Regional Director of the steps taken to resolve such matters.

## **5. Playground equipment**

### **5.1 Standards for specific items of equipment**

For information on specific items of play equipment the relevant playground standards apply.

### **5.2 Equipment not approved**

The following play items **are not approved** for use in school playgrounds:

- swings of any kind, including:
  - single seats, multiple seats, plank seats or platform seats
  - trapeze bars or rings
  - unrestrained tyres moving in a pendulum motion
  - log swings

Note: Specialist schools may seek the approval of the appropriate regional director for the use of swings.
- see-saws, including items that are supported on a central pivot, springs or rubber eg. skales, spring see-saws or spring riders
- flying foxes, including items on cables or ropes. This does not include track glides using a fixed horizontal track, which are acceptable
- rotating apparatus with a vertical axis, including:
  - merry-go-rounds and joy wheels
  - maypoles (with seats, ropes or handgrips)
  - roundabouts
- roller slides, including slides where the student descends on the upper surface of a number of parallel rollers
- climbing poles (free standing) with protruding rungs eg. Totem Poles.

### **5.3 Entrapment**

All equipment should be tested to ensure it complies with the prescribed standard tests for head and neck entrapment:

- all accessible spaces 600 millimetres above ground level on the play structure should be free of possible head and neck entrapment hazards
- fully enclosed spaces must be less than 125 millimetres or greater than 230 millimetres to avoid head entrapment
- when open in their upper-most section, spaces must be less than 45 millimetres or greater than 230 millimetres to avoid neck or head entrapment.

Accessible spaces or holes that may result in finger, foot, limb, or torso entrapment should be avoided in any accessible portion of the equipment.

## **5.4 Construction and assembly details**

Following is advice about construction and assembly details that should be followed:

- Materials should not be abrasive or contain finger entrapment points, shear or crush points.
- Concrete foundations should be a minimum of 200 millimetres below ground level.
- All timber should be straight and smooth and free of gaps that allow for finger entrapment or the like. All pipe ends should be closed to avoid finger entrapment.
- All metal supporting members should be embedded in concrete as the process of corrosion is accelerated when metal is in contact with soil.
- All steel joints and edges should be ground smooth.
- All steel should be galvanised or similarly protected against rust.
- Chain should be joined with bolts and locknuts in preference to split links.
- Plastic coatings on chain, if present, should be regularly surveyed to ensure that damaged coverings are replaced or removed.
- All bolt heads are to be countersunk, or cup-head bolts are to be used. Protruding bolt threads are to be sawn off or filed flush with their nut. Nuts should be countersunk.
- The equipment should be free of sharp or rough edges that may present a hazard to the user.

## **5.5 Construction materials**

### **5.5.1 Timber**

Timber should be of durability Grade 1 or 2 unless preservative-treated to a level appropriate for in-ground use.

Timber treated with pentachlorophenol or chlorinated hydrocarbon pesticides must not be used.

When assessing timber quality for structural purposes, avoid plantation timber with widely spaced growth rings and timber with knot holes. Consider the ability of the timber to shed water and make sure that the placement of fasteners does not weaken the timber.

Copper-chromium-arsenate ('CCA') treated timber should not be used in new playground equipment. See further discussion on CCA at 1.2 (pages 5 and 6).

## **5.5.2 Steel**

All steel tubing and sheet material used for the manufacturing of equipment should be hot-dipped galvanised, zinc coated or aluminium/zinc coated according to AS 1397:1993. Painting, plastic coating or powder coating are not considered acceptable alternative rust protection systems for construction materials such as steel tubing or sheet steel.

Welded joints on large and/or irregular structures must be thoroughly cleaned and coated with a zinc-rich organic priming paint. Where it is necessary to use springs or special fasteners that cannot be hot-dipped galvanised, an alternative protective coating may be used.

## **5.5.3 Steel chain**

Steel chain should comply with the requirements of AS 2321:1979. Certified proof coil chain may be used.

Designers should be aware that the dangers of finger entrapment and amputation of the top digit can be reduced by using regular or short-link chain, but cannot be entirely eliminated since the use of chain links sufficiently small to prevent entrapment may introduce two potentially more serious problems:

- reducing the link size reduces the surface contact area for any associated fittings with the potential to increase the wear rate on the points of contact
- fasteners of adequate strength become difficult to connect as chain link dimensions are reduced.

However, this does not relieve designers of the need to address and, where possible, eliminate finger entrapment potential caused by the connection between chain and other components in accessible places.

## **5.5.4 Tyres**

Tyres with textile fabric reinforcing are preferred. Steel belted tyres may be used when the casing is intact and undamaged and the tread is worn not more than 50 per cent of its original thickness.

Where drain holes need to be provided, the boundary of such holes must be permanently protected to prevent fingers contacting any exposed wire.

Where tyres are fastened with bolts, galvanised washers with a diameter of not less than 30 millimetres should be used. The rim wires should be unbroken and the rim edges free of fractures.

### **5.5.5 Other requirements**

For further information on the general requirements for playground equipment refer to Australian Standard AS4685 (Set) – 2004 *Playground Equipment*.