Environmental Quality TFS Supplement

SAFETY and INJURY PREVENTION BACKGROUNDER

Introduction

Safety issues that are related to the school environment include trip and fall hazards in and around the building, hazards involving the playground and playground equipment, accidents associated with loading/unloading and transportation, other life safety conditions, and sun exposure during outdoor activities. Many schools, school districts, and state education departments already have established safety programs to monitor these conditions.

Student injuries at school can be prevented by making changes to improve physical surroundings, developing and enforcing safety regulations, and training students and school staff on preventive measures. Some examples include:

- Remove physical hazards such as breakable glass in doors, old high-elevation playground equipment, and concrete or asphalt under playground equipment.
- Implement an annual safety checklist for school premises and regularly maintain equipment and facilities.
- Develop a protocol for school staff to follow in the event of student injury, with procedures varying depending on the nature of the injury.
- Train coaches, gym teachers, and other school staff on emergency first aid procedures.

General Issues

Following are safety situations that may be found at many locations throughout a building, and should be evaluated for all schools.

Secure Storage Chemicals, cleaning products, and cleaning equipment that are used as part of routine custodial and maintenance activities should be stored in a locked room with exhaust ventilation.

- 20 fc in the cafeteria, reception rooms, swimming area, gymnasiums, laundry rooms and toilet rooms

Non-Skid Floor Surfaces To reduce falls and moisture retention (and mold growth), non-skid and non-absorbent floor surfaces should be used in areas such as lavatories, locker and shower rooms, laundries, janitorial closets, and food service areas.

Hot Water Temperature To prevent scalding, the temperature of hot water provided to hand sinks and showers should not exceed 120⑤ to 125⑤F. Where water at higher temperatures is required at other locations in the building (e.g., laundry facilities), tempering valves and pressure/flow balancing valves may need to be used at the sinks and showers.

Utility Shut-Off Rooms (usually science laboratories) utilizing multiple gas outlets must have a master shutoff valve that is readily accessible to the instructor(s) in charge. A master electrical shut-off should also be accessible in laboratories and shops, where electrically operated instruction equipment can present a significant safety hazard.

Trip and Fall Hazards Trash, broken or poorly maintained equipment, on-going maintenance activities or renovation projects can present potential trip and fall hazards for students and staff. These conditions can be found indoors and outdoors around the building. It should be the responsibility of all staff members to avoid creating hazardous situations, and to be alert to conditions that need to be corrected.

Lighting Poor lighting, due to insufficient illumination or to glare from windows or artificial sources, can create safety hazards and degrade the educational environment. Consult with a qualified lighting professional for a lighting assessment and recommendations. Some examples of adequate illumination for different areas of a school include:

- 10 foot candles (fc) required in hallways, storage rooms, shower rooms and auditoriums
- 50 fc in classrooms, study halls, lecture rooms art rooms and library
- 100 fc required in shop, lab, drafting and

typing (a minimum of 100 foot candles should be maintained on machinery or equipment while in use.)

Playground Safety

About 148,000 children each year are treated in U.S. emergency rooms with injuries associated with public playground equipment. Children 10 years of age, or younger, suffer approximately 80% of the injuries. About 70% of the injuries are the result of falls. Most of the approximately 15 deaths per year that are related to playground equipment are due to strangulations or falls.

To create and maintain safe school playgrounds, the U.S. Consumer Product Safety Commission (CPSC) offers these playground safety tips from its ***Handbook for Public Playground Safety***.

1. ***Protective Surfacing*** - Use of the proper impact-absorbing surface under and around all playground equipment is the most critical safety factor on playgrounds. Certain loose-fill surfacing materials are acceptable, such as the types and depths shown in the following table.

Fall Height In Feet From Which A Life Threatening Head Injury Would Not Be Expected

Type of Material	6" Depth	9" Depth	12" Depth
Double Shredded Bark Mulch	6	10	11
Wood Chips	7	10	11
Fine Sand	5	5	9
Fine Gravel	6	7	10

2. ***Use Zones*** - A use zone, covered with a protective surfacing material, is essential under and around equipment where a child might fall. This area should also be free of other equipment and obstacles onto which a child might fall, and should extend a minimum of 6 feet in all directions from the perimeter of the equipment. The use zone in front and back of swings is often greater.
3. ***Swing Spacing*** - To prevent injuries from impact with moving swings, swings should not be too close together (at least 24 inches) or too close to support structures (more than 30 inches). No more than two swing seats or one tire swing should be suspended in the same section or bay of the support structure. In addition, swings should not be attached to multi-activity equipment, nor should heavy animal swings with rigid metal framework be permitted.
4. ***Elevated Surfaces*** - Platforms more than 30 inches above the ground should have guardrails to prevent falls.
5. ***Potential Head Entrapment Hazards*** - No equipment component or group of components should form angles or openings that could trap any part of a child's body or a child's head. In general, openings that are closed on all sides, should be less than 3 inches or greater than 9 inches. When children enter openings, such as exercise rings or horizontal climbing bars, feet first, they may become entrapped by the head and strangle.
6. ***Potential Entanglement Hazards*** - Accessible parts of moving apparatus and components next to sliding surfaces - ladders and uprights, protective barriers, handrails, etc., should be designed so they cannot catch a child's clothing. Open 'S' hooks, especially on swings, and any protrusions or equipment components/hardware may act as hooks or catch-points.
7. ***Pinch or Crush Points*** - Unprotected moving parts on gliders, merry-go-rounds, or seesaws, for example, could crush or pinch a child's fingers.
8. ***Playground Maintenance*** - Playgrounds should be inspected on a regular basis for missing, broken, or deteriorated parts and components, such as swing seats, hand holds, splintered wood, or rusty assemblies. At the same time, the play area should be checked for scattered debris, litter, rocks, or tree roots.
9. ***Set and Enforce Playground Safety Rules*** -

Common sense dictates that playground rules must be set, explained to the children, and enforced. Playgrounds should be supervised during play periods.

For playground guidelines and design specifications, obtain the CPSC ***Handbook for Public Playground Safety*** (publication #325) by calling 1-800-638-2772. The publication (text or .pdf) is also available through the CPSC website at www.cpsc.gov.

Student Loading/Unloading

The risk of accidents between pedestrians and vehicles is greatest before and after school when students are loading and unloading to and from buses and personal vehicles. In recent years, the increased number of personal vehicles transporting students requires that a careful plan for traffic flows be developed. This may necessitate that separate areas for loading/unloading buses and personal vehicles be designated. It may be desirable to seek professional assistance for creating a comprehensive plan for traffic, loading, and parking. General guidance includes:

- pedestrians stay on sidewalks and crosswalks, and out of traffic lanes
- signs be placed that clearly indicate the loading areas, and the direction of traffic flow
- loading and unloading be supervised by a staff member or responsible adult

Sun Exposure

It is estimated that 80% of lifetime sun exposure, due mostly to two types of ultraviolet (UV) radiation, occurs before the age of 18. Excessive sun exposure has been linked with various types of skin damage, such as skin cancer, including malignant melanoma, the most serious type of skin cancer. Malignant melanoma is often fatal and the number of cases is rising in the U.S.

Increased exposure to the sun boosts a person's risk of developing skin cancer, because the damage to the skin is cumulative. Unlike skin cancer, premature aging of the skin will occur in everyone who is repeatedly exposed to the sun over a long time, although the damage may be less apparent and take longer to show up in people with darker skin. As seen in the following table, people with skin types 1 and 2 are at greatest risk of premature aging of the skin and developing skin cancer, although these effects occur in persons of all skin types.

Skin Type	Sunburn and Tanning History According to Skin Type
1	Always burns; never tans; sensitive ("Celtic")
2	Burns easily; tans minimally
3	Burns moderately; tans gradually to light brown (Average Caucasian)
4	Burns minimally; always tans well to moderately brown (Olive Skin)
5	Rarely burns; tans profusely to dark (Brown Skin)
6	Never burns; deeply pigmented; not sensitive (Black Skin)

Children who participate in outdoor activities while at school may need to use sun protection measures. If possible, avoid these activities during periods when the sun angle is highest (from March through September, between the hours of 10 a.m. to 4 p.m.). If unavoidable, teachers and staff should recommend that these children:

- Wear protective covering such as broad-brimmed hats, long pants and long-sleeved shirts to reduce exposure.
- Wear sunglasses that provide 98-100% UV ray protection.
- Always wear a broad spectrum sunscreen, with a sun protection factor (SPF) of 15 or more, that blocks both types of UV. Reapply it according to manufacturer's directions. Research indicated that regular use of sunscreen with a SPF of 15 or higher during the first 18 years of life can lower the risk of certain skin cancers by over 70%.

Prompt medical attention is recommended if a child has received skin or eye damage from the sun, if they experience an allergic reaction to the sun, or if they have developed an unusual mole, scaly patch, or a sore that doesn't heal.

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