



Children's Safety
Network



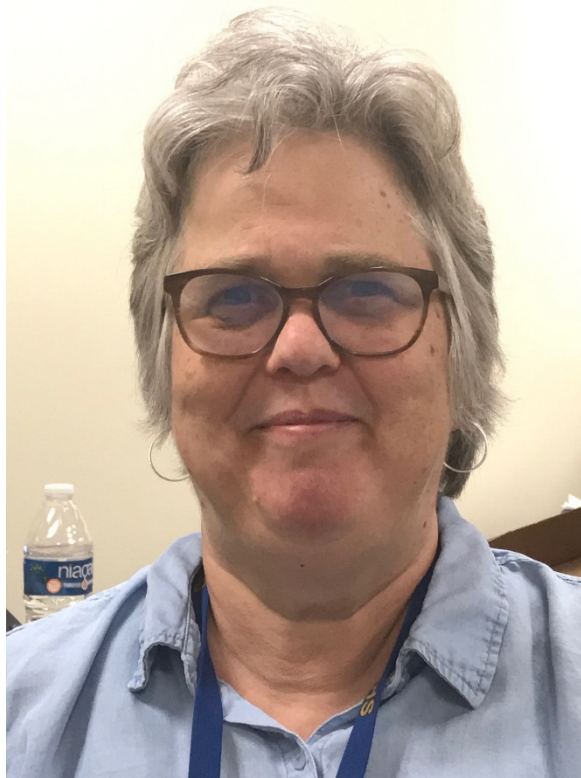
Education
Development
Center

May 26, 2020 2:30 p.m.- 3:30p.m. ET

Playground Safety



Moderator



Rhonda Siegel

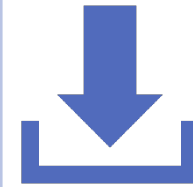
Funding Sponsor

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Presenters



Eric Kennedy



Heather Olsen



Jennifer Vanos



Play it S.A.F.E.™
Playground Safety for Everyone

Play it S.A.F.E.™

Playground Safety for Everyone

May 26, 2020
for Children's Safety Network

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National Program for Playground Safety



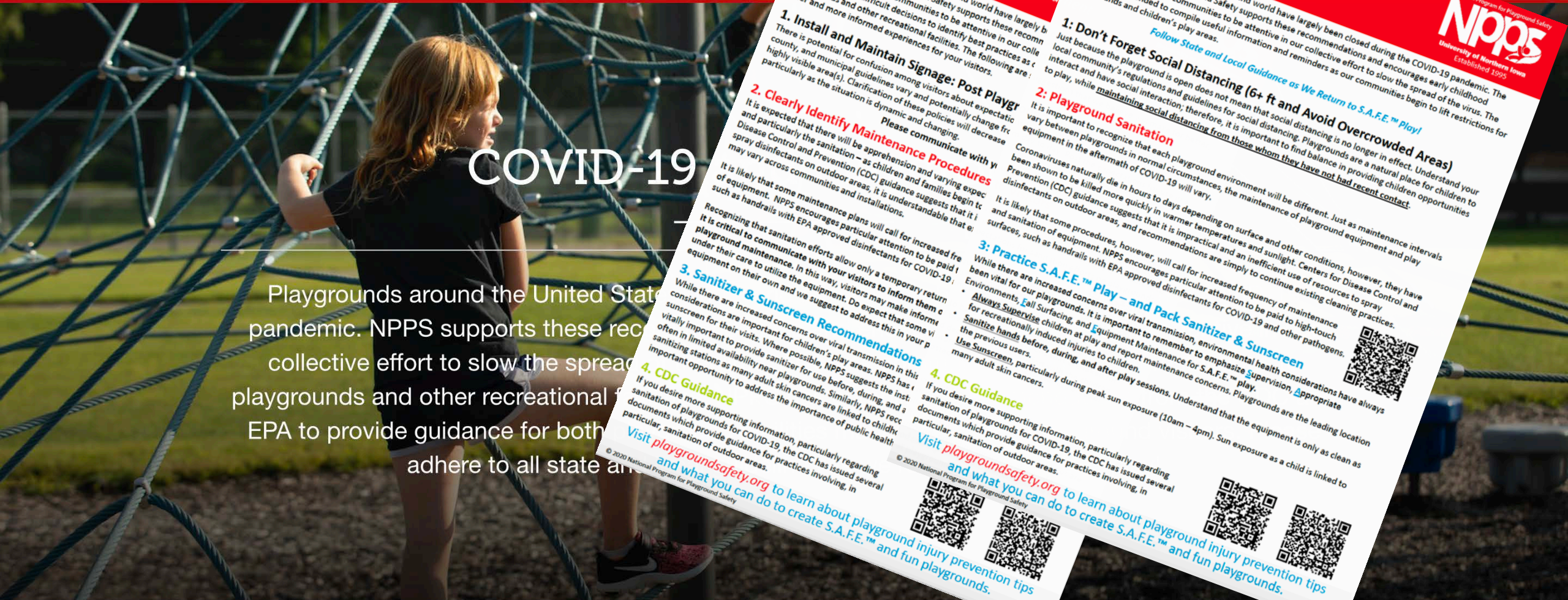
www.playgroundsafety.org

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COVID19 and Playgrounds: NPPS Recommends Staying Off of Playground Equipment

While a vacated playground may not threaten the social distancing restrictions that our communities are facing, NPPS suggests staying off the playground equipment because the virus has been shown to survive on surfaces for extended periods of time. As we all wait on more information, NPPS believes it is better to spend time looking forward to our next playground experience as we still are waiting on this crisis to turn the corner.



COVID-19

Playgrounds around the United States have largely been closed during the COVID-19 pandemic. NPPS supports these recommendations and encourages early childhood programs, schools, and communities to be attentive in our collective effort to slow the spread of the virus. The following is intended to compile useful information and reminders as our communities begin to lift restrictions for playgrounds and children's play areas.

Playgrounds around the United States and world have largely been closed during the COVID-19 pandemic. The National Program for Playground Safety supports these recommendations and encourages early childhood programs, schools, and communities to be attentive in our collective effort to slow the spread of the virus. The following is intended to compile useful information and reminders as our communities begin to lift restrictions for playgrounds and children's play areas.

Playground & COVID-19 Facilities Management Guidance Document

Playgrounds around the United States and world have largely been closed during the COVID-19 pandemic. The National Program for Playground Safety supports these recommendations and encourages early childhood programs, schools, and communities to be attentive in our collective effort to slow the spread of the virus. The following is intended to compile useful information and reminders as our communities begin to lift restrictions for playgrounds and children's play areas.

- 1. Install and Maintain Signage: Post Playground**
There is potential for confusion among visitors about expectations and potentially change frequently. Clarification of these policies will decrease confusion and increase safety. Please communicate with your visitors about expectations and varying expectations. It is expected that there will be apprehension and varying expectations as children and families begin to return to play. CDC guidance suggests that it is important to find balance in providing children opportunities to play, while maintaining social distancing from those whom they have not had recent contact.
- 2. Clearly Identify Maintenance Procedures**
It is likely that some maintenance plans will call for increased frequency of disinfectants for COVID-19. Recognizing that sanitation efforts allow only a temporary return to normalcy, NPPS encourages particular attention to be paid to playground maintenance. In this way, visitors may make informed decisions about when to return to play. Do expect that some visitors may not have the resources to utilize the equipment. Do expect that some visitors may not have the resources to utilize the equipment. Do expect that some visitors may not have the resources to utilize the equipment.

- 3. Sanitizer & Sunscreen Recommendations**
While there are increased concerns over viral transmission in this environment, NPPS suggests the installation of hand sanitizer stations near playgrounds. Similarly, NPPS recommends that sunscreen be used before, during, and after play sessions. Understand that the equipment is only as clean as the hands of the users. Sanitize hands before, during, and after play sessions. Understand that the equipment is only as clean as the hands of the users.
- 4. CDC Guidance**
If you desire more supporting information, particularly regarding sanitation of playgrounds for COVID-19, the CDC has issued several documents which provide guidance for practices involving, in particular, sanitation of outdoor areas.

Visit playgroundsafety.org to learn about playground injury prevention tips and what you can do to create S.A.F.E.™ and fun playgrounds.



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Playground & COVID-19 Visitor & User Guidance Document

Playgrounds around the United States and world have largely been closed during the COVID-19 pandemic. The National Program for Playground Safety supports these recommendations and encourages early childhood programs, schools, and communities to be attentive in our collective effort to slow the spread of the virus. The following is intended to compile useful information and reminders as our communities begin to lift restrictions for playgrounds and children's play areas.

- 1: Don't Forget Social Distancing (6+ ft and Avoid Overcrowded Areas)**
Just because the playground is open does not mean that social distancing is no longer in effect. Understand your local community's regulations and guidelines for social distancing. Playgrounds are a natural place for children to interact and have social interaction; therefore, it is important to find balance in providing children opportunities to play, while maintaining social distancing from those whom they have not had recent contact.
- 2: Playground Sanitation**
It is important to recognize that each playground environment will be different. Just as maintenance intervals vary between playgrounds in normal circumstances, the maintenance of playground equipment and play equipment in the aftermath of COVID-19 will vary. Coronaviruses naturally die in hours to days depending on surface and other conditions, however, they have been shown to be killed more quickly in warmer temperatures and sunlight. Centers for Disease Control and Prevention (CDC) guidance suggests that it is impractical and an inefficient use of resources to spray disinfectants on outdoor areas, and recommendations are simply to continue existing cleaning practices.

- 3: Practice S.A.F.E.™ Play – and Pack Sanitizer & Sunscreen**
While there are increased concerns over viral transmission, environmental health considerations have always been vital for our playgrounds. It is important to remember to emphasize supervision, appropriate environments, fall surfacing, and equipment maintenance for S.A.F.E.™ play.
 - **Always Supervise** children at play and report maintenance concerns. Playgrounds are the leading location for recreationally induced injuries to children.
 - **Sanitize hands** before, during, and after play sessions.
 - **Use Sunscreen**, particularly during peak sun exposure (10am – 4pm). Sun exposure as a child is linked to many adult skin cancers.
- 4. CDC Guidance**
If you desire more supporting information, particularly regarding sanitation of playgrounds for COVID-19, the CDC has issued several documents which provide guidance for practices involving, in particular, sanitation of outdoor areas.

Visit playgroundsafety.org to learn about playground injury prevention tips and what you can do to create S.A.F.E.™ and fun playgrounds.




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Overall Purpose of Our Webinar

1. Importance of Playgrounds to Communities
2. Playground Injuries Remain a Concern
3. Recent Projects in Playground Safety
4. Keeping Children S.A.F.E.™
 - Supervision
 - Appropriate Environments
 - Fall Surfacing
 - Equipment Maintenance
5. Resources and Information



Playgrounds are a central hub for child play, fun for families, and spaces for vibrant cities.

An aerial photograph of a city neighborhood. In the foreground, a large green field is visible. To the right, a residential area with many houses and trees is circled in red. In the background, there are several tall office buildings and a street with a 'CS' sign. Two blue location pins are visible on the right side of the image.

Where do the children in the neighborhood play?

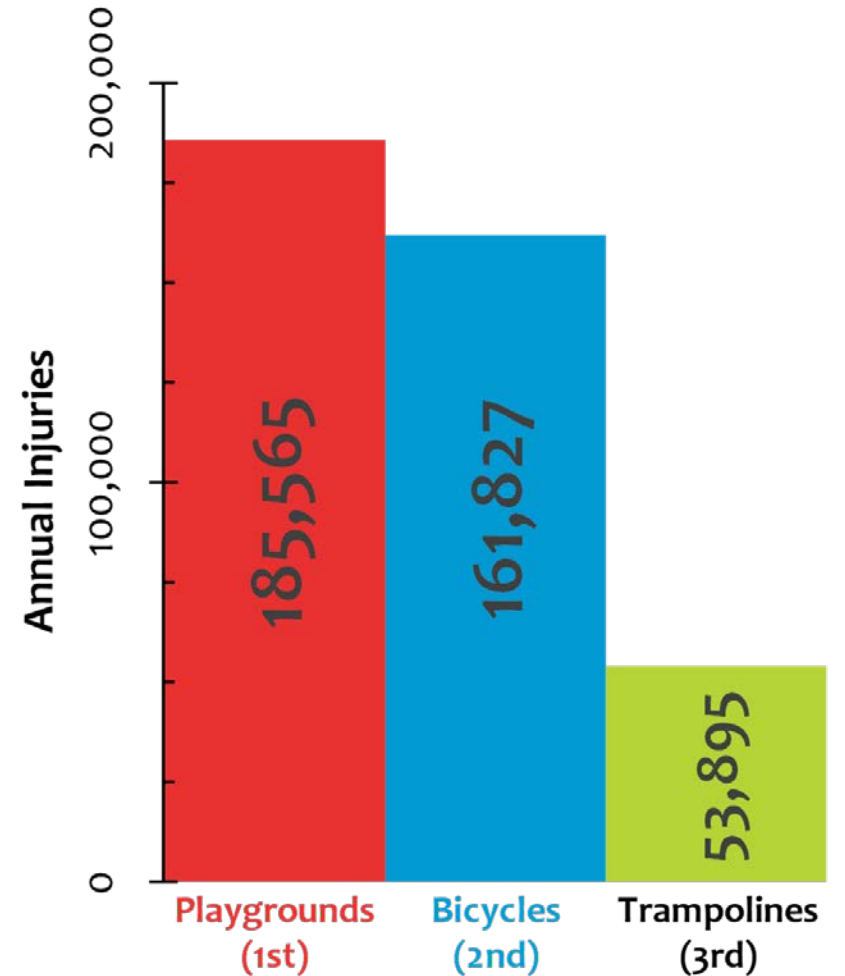
Where can parents, grandparents, friends, and children meet neighbors?

**Playgrounds Are
An Investment Towards
Healthy and Livable
Communities**

Are Playground Injuries A Problem?

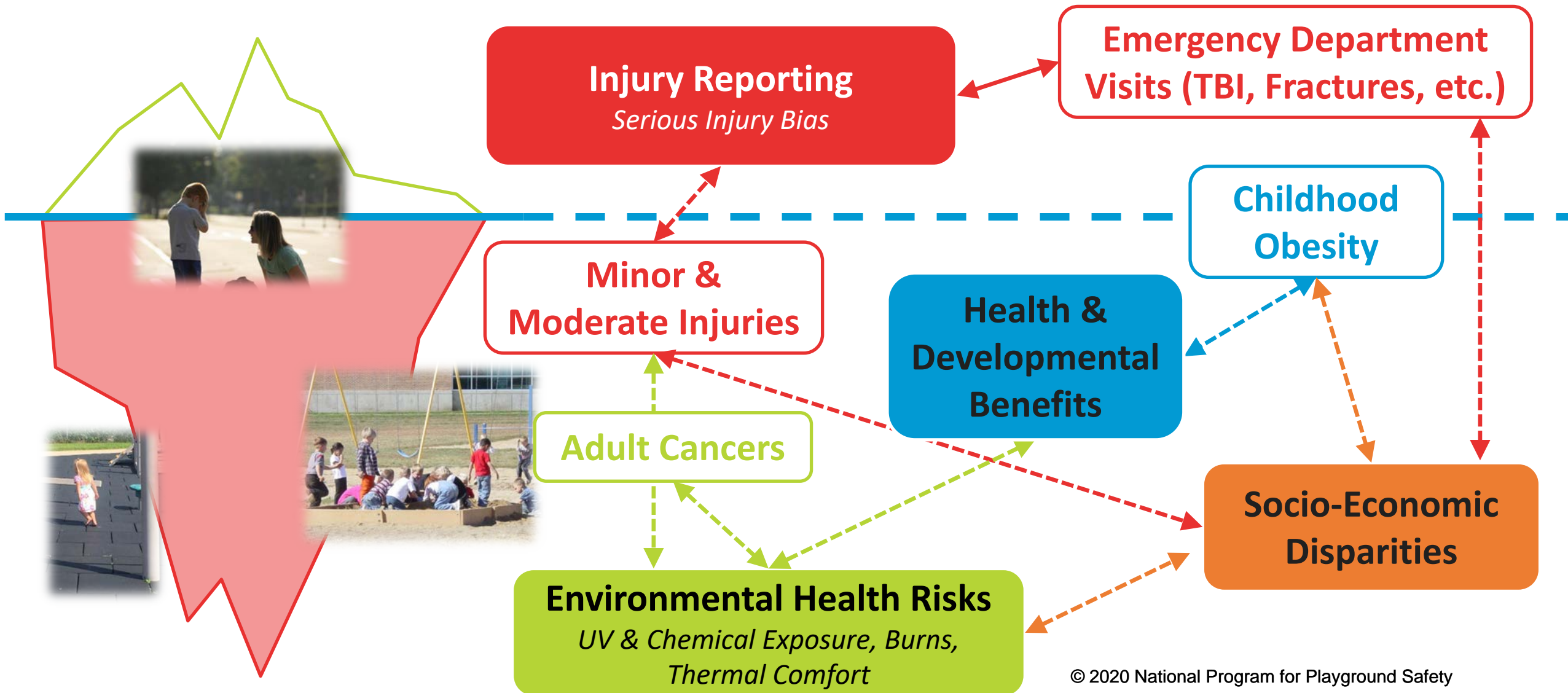
The Problem: Playground Injuries Remain Stagnant

- Each year in the United States, over 200,000 children are injured on playgrounds seriously enough to seek emergency room treatment (Hanway 2016; Tuckel et al. 2017).
- Upper extremity and head and neck injuries are a concern. Fractures of an upper limb account for approximately half of medically treated injuries, while head and neck injuries account for one third of all injuries (Adelson et al. 2018; Tuckel et al. 2017; Loder 2008).
- Annually 20,000 children visit U.S. emergency departments for traumatic brain injuries on playgrounds (Cheng et al. 2016).



(Schwebel & Brezausek 2014)

Our Reporting is NOT a Full Picture



National Program for Playground Safety

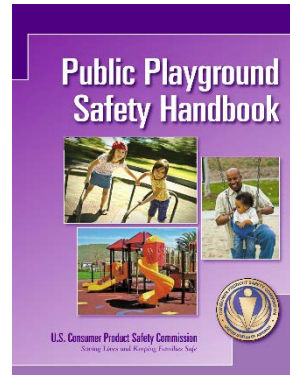


- **Established in 1995** with a grant from the Centers for Disease Control and Prevention until 2005 to raise awareness of playground safety.
- **2005 to present** operates a mission to help make play areas S.A.F.E. through research, outreach projects, and advocacy efforts.

Public Agencies



U.S. Consumer Product Safety Commission



Americans with Disabilities Act



2010 ADA Standards for Accessible Design

Introduction

The Department of Justice published revised regulations for Titles II and III of the Americans with Disabilities Act of 1990 "ADA" in the *Federal Register* on September 15, 2010. These regulations adopted revised, enforceable accessibility standards called the 2010 ADA Standards for Accessible Design "2010 Standards" or "Standards." The 2010 Standards set minimum requirements – both scoping and technical – for newly designed and constructed or altered State and local government facilities, public accommodations, and commercial facilities to be readily accessible to and usable by individuals with disabilities.

Adoption of the 2010 Standards also establishes a revised reference point for Title II entities that choose to make structural changes to existing facilities to meet their program accessibility requirements; and it establishes a similar reference for Title III entities undertaking readily achievable barrier removal.

The Department has assembled this online version of the official 2010 Standards to increase its ease of use. This version includes:

[2010 Standards for State and Local Government Facilities Title II](#)

[2010 Standards for Public Accommodations and Commercial Facilities Title III](#)

The Department has assembled into a separate publication the revised regulation guidance that applies to the Standards. The Department included guidance in its revised ADA regulations published on September 15, 2010. This guidance provides detailed information about the Department's adoption of the 2010 Standards including changes to the Standards, the reasoning behind



ASTM INTERNATIONAL
Helping our world work better

Designation: F1487 – 07a¹

Standard Consumer Safety Performance Specification for Playground Equipment for Public Use¹

¹This standard is used under the label designation F1487. The number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last approval. A superscript letter indicates a numbered revision of the standard or a technical corrigendum.

²See the following paragraphs and figures for content originally in June 2007, 1, 4.5, 4.4.4, 5.3.4, 5.4.4.1, 6.4.2.2, 9.1.2, 9.2.2, 9.3.2, 9.4.2, 9.5.2, 9.6.2, 9.7.2, 9.8.2, 9.9.2, 9.10.2.

INTRODUCTION

This consumer safety performance specification establishes nationally recognized safety standards for public playground equipment to address injuries identified by the U.S. Consumer Product Safety Commission (CPSC).

During 1999 the CPSC estimated that about 150 000 injuries were treated in U.S. hospital emergency rooms for injuries associated with public playground equipment, about three-fourths of these injuries involved falls from the surface on which the equipment was located. Other hazard patterns involved impact by swings and other moving equipment and contact with protrusions, cracks or sharp points, and sharp edges. Fatalities reported to the CPSC resulted from falls, contact with or falling on another person on equipment, contact with protrusions, contact with equipment, lead entrapment, impact by equipment that tipped over or otherwise failed, and impact by moving swings. This consumer safety performance specification does not eliminate the need for improvement of children on public playground equipment. It is intended to minimize the likelihood of entrapment or choking injuries, such as those identified by the CPSC.

There has been significant harmonization of this performance specification and CAN/CSA Z814.

1. Scope
- 1.1 This consumer safety performance specification provides safety and performance standards for various types of public playground equipment. Its purpose is to reduce life-threatening and debilitating injuries.
- 1.2 The range of uses encompassed by this consumer safety performance specification is for the 30 percent 2-year-old through the 95th percentile 12-year-old.
- 1.3 Home playground equipment, toys, amusement devices, equipment, fitness equipment intended for areas over the age of 12, public use play equipment for children 6 to 24 months, and soft contained play equipment are not included in this specification.
- 1.4 Products or materials only (embellishments) that are installed outside the equipment use zone, such as benches, tables, and benches, used to contain protective surfacing, are not considered playground equipment and are not included in this specification.
- 1.5 This specification does not address accessibility, except as it pertains to safety issues and covered in the Americans with Disabilities Act Accessibility Guidelines (ADAAG).²
- 1.6 This consumer safety performance specification includes the following sections:

Section	Title	Section Number
1	Scope	1
2	Reference Documents	2
3	Nomenclature	3
4	Use and Requirements	4
5	Performance Requirements	5
6	Performance Requirements	6
7	Performance Requirements	7
8	Performance Requirements	8
9	Performance Requirements	9
10	Performance Requirements	10
11	Performance Requirements	11
12	Performance Requirements	12
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99	Performance Requirements	99
100	Performance Requirements	100

Designation: F1292 – 13

Standard Specification for Impact Attenuation of Surfacing Materials Within the Use Zone of Playground Equipment¹

¹This standard is used under the label designation F1292. The number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last approval. A superscript letter indicates a numbered revision of the standard or a technical corrigendum.

INTRODUCTION

Surfaces by the United States Consumer Product Safety Commission (CPSC)² and others have shown that falls from playground equipment onto the underlying surface are a significant cause of injuries to children. Serious head injuries are the most frequently reported cause of death in playground equipment-related falls. Use of appropriate impact-attenuating surfacing materials in the use zone of playground equipment can reduce the risk of fall-related injury. In particular, as believed, the risk of life-threatening head injuries is reduced when appropriate surfacing materials are installed.

This specification specifies impact attenuation performance requirements for playground surfacing and surfacing materials and provides a means of determining impact attenuation performance using a test method that simulates the impact of a child's head with the surface. The test method quantifies impact in terms of peak and head injury criterion (HIC) values. Factors in the accuracy of the maximum acceleration (shock) produced by an impact, the head injury criterion or HIC, are an expected measure of impact severity based on published research regarding the relationship between the magnitude and duration of impact accelerations and the risk of head trauma. The standard includes provisions allowing surfacing materials to be performance tested for installation and for installed surfacing materials to be used for confirmation with the specification.

The purpose of this specification is to reduce the frequency and severity of fall-related head injuries to children by establishing a uniform and reliable means of comparing and specifying the impact attenuation of playground surfaces. It is not intended for designers, manufacturers, installers, purchasers, owners, and operators of playgrounds. It is intended for designers, manufacturers, installers, purchasers, owners, and operators of playgrounds. It is intended for designers, manufacturers, installers, purchasers, owners, and operators of playgrounds. It is intended for designers, manufacturers, installers, purchasers, owners, and operators of playgrounds.

1. Scope
- 1.1 This specification establishes minimum performance requirements for the impact attenuation of playground surfacing materials installed within the use zone of playground equipment.
- 1.2 This specification is specific to surfacing used in conjunction with playground equipment, as defined in this specification in Sections F1165, F1197, F1201, F1205, and F2070.
- 1.3 The laboratory use required by this specification addresses the performance of dry surfacing materials.
- 1.4 The critical fall height of a playground surfacing material is defined as the maximum height from which a child's head would strike the surfacing material under laboratory conditions. The laboratory test is mandatory for surfacing materials that do not meet the requirements of this specification.
- 1.5 The laboratory use required by this specification addresses the performance of dry surfacing materials.
- 1.6 The critical fall height of a playground surfacing material is defined as the maximum height from which a child's head would strike the surfacing material under laboratory conditions. The laboratory test is mandatory for surfacing materials that do not meet the requirements of this specification.
- 1.7 The laboratory use required by this specification addresses the performance of dry surfacing materials.
- 1.8 The critical fall height of a playground surfacing material is defined as the maximum height from which a child's head would strike the surfacing material under laboratory conditions. The laboratory test is mandatory for surfacing materials that do not meet the requirements of this specification.
- 1.9 The laboratory use required by this specification addresses the performance of dry surfacing materials.
- 1.10 The critical fall height of a playground surfacing material is defined as the maximum height from which a child's head would strike the surfacing material under laboratory conditions. The laboratory test is mandatory for surfacing materials that do not meet the requirements of this specification.



Standards Council of Canada Conseil canadien des normes

CSA GROUP
National Standard of Canada



Children's playground equipment and surfacing



Standards Council of Canada
Conseil canadien des normes

Consumer Product Safety Commission Technical Report (Released Nov. 2019)

Final Report for CPSC on the National Study of
Public Playground Equipment and Surfacing

February 2018

Heather Olsen, Ed.D., & Eric Kennedy, Ph.D.²³⁴
The National Program for Playground Safety
University of Northern Iowa

²³ This report was produced under Contract #CPSC-S-16-0061 and has not been reviewed or approved by, and does not necessarily reflect the views of, the Commission.

²⁴ Robin Lund, Ph.D., & Jacob Reed, Ph.D. contributed to data analysis

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Appendix B: Playground Safety and Surfacing Field-Testing Checklist
Checklist for Playground Safety Equipment and Surfacing (4/19/2017)

Field tester(s): _____ Date: _____ State: _____ Start time (AM/PM): _____
City: _____

1. Is the playground located in a Public School Public Park Other (Specify) _____
2. How many separate playgrounds are located at this site? (Enter numeral) Yes No
3. Was one or more pictures of each playground taken? Full view Partial shade
4. From 10am to 2pm, the playground would be in... Full shade Partial shade
5. Are age recommendations posted on playground or equipment? (Check all that apply) Yes No
6. Age signs posted Yes, labels on equipment Yes, labels on equipment No
7. Is a name or phone number posted for the owner/operator? Yes No
8. Is there one or more play safety sign(s) posted? Yes No
9. What is the estimated age of equipment? (If multiple pieces of equipment, check all ages that apply) ages 5-12 ages 2-5 ages <2 ages <3

Part I: General Upkeep of Playgrounds

10. Is the playground clean and free from debris and litter? Yes No
11. Are trash receptacles present and not full? Yes No
12. Is there graffiti, spray paint, burn marks, or other damage to equipment? Yes No
13. Is the playground free from uses unaffiliated to equipment (e.g., swing and ropes)? Yes No
14. Are there signs of equipment damage? Yes No
15. Are there signs of equipment damage? Yes No
16. Are there signs of equipment damage? Yes No
17. Are there signs of equipment damage? Yes No
18. Are there signs of equipment damage? Yes No

Part II: Surfacing

14. What surfacing materials are present? (Check all that apply) Loose fill Sand Pea gravel Particulate rubber padding Wood product (Specify) Wood chips Engineered wood fiber Other (Specify) _____
15. Have surfacing materials detached? Yes No
16. Are rubber mats present under heavy use equipment, such as swing and slide exits? Yes No
17. If loose-fill surfacing is present, is the loose-fill free of foreign debris and trash? Yes No
18. Have loose-fill surfacing materials been displaced under heavy use areas such as under swings or at slide exits? Yes No
19. Are there signs of inadequate drainage? (Check all that apply) Yes No
20. Are there signs of inadequate drainage? (Check all that apply) Yes No
21. Are there signs of inadequate drainage? (Check all that apply) Yes No
22. Are there signs of inadequate drainage? (Check all that apply) Yes No

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Appendix D: Impact Attenuation Data Collection Sheet
NOTE: The following information should be recorded at the time of the impact test. ID: _____

Start time: _____ AM/PM Yes No

Was the test apparatus checked for proper operation for the system integrity check following Section 8.6 and 8.7 ASTM F1292-13 completed? Yes No

Was the Instrumentation Check following Section 10 ASTM F1292-13 completed before testing? Yes No

Structure number	Structure #	Structure #
Play structure?	<input type="checkbox"/> Composite <input type="checkbox"/> Stand-Alone	<input type="checkbox"/> Composite <input type="checkbox"/> Stand-Alone
Age of intended user?	<input type="checkbox"/> <2 <input type="checkbox"/> 2-5 <input type="checkbox"/> 5-12	<input type="checkbox"/> <2 <input type="checkbox"/> 2.5 <input type="checkbox"/> 3-12
How many types of surface materials in use zone of this structure?	<input type="checkbox"/> Metal <input type="checkbox"/> Plastic <input type="checkbox"/> Wood	<input type="checkbox"/> Metal <input type="checkbox"/> Plastic <input type="checkbox"/> Wood
Equipment material?	<input type="checkbox"/> Metal <input type="checkbox"/> Plastic <input type="checkbox"/> Wood	<input type="checkbox"/> Metal <input type="checkbox"/> Plastic <input type="checkbox"/> Wood
Test surface material? (If multiple surface under a structure, indicate using letters (e.g., 1a, 1b...))	<input type="checkbox"/> Loose Fill <input type="checkbox"/> Particulate Rubber <input type="checkbox"/> Sand <input type="checkbox"/> Pea Gravel <input type="checkbox"/> Wood Products <input type="checkbox"/> Other: _____	<input type="checkbox"/> Loose Fill <input type="checkbox"/> Particulate Rubber <input type="checkbox"/> Sand <input type="checkbox"/> Pea Gravel <input type="checkbox"/> Wood Products <input type="checkbox"/> Other: _____
Comments		

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CAN/CSA Z614 Standard 6th Edition

Available March 2020



CSA Z614:20
National Standard of Canada



Children's playground equipment and surfacing



APPENDIX K

RECOMMENDED GUIDELINES FOR DEVELOPING THERMALLY SAFE AND COMFORTABLE PLAYGROUNDS

Introduction

The microclimate of a playground has a significant influence on children's use of play areas and levels of physical activity (Semenzato et al., 2011). Sun exposure, air movement, humidity, and temperature combine to affect what is known as "thermal comfort", a description of the condition of being satisfied with current environmental conditions. Each playground has its own distinct micro-climate, with unique patterns of temperature, wind, and radiation.

Studies have shown that when thermal conditions become uncomfortable in the summer, the use of the playgrounds by children decreases. Some design elements of parks and playgrounds can also increase heat-related health risks to children (Vanos et al., 2016).

Children are particularly vulnerable to hot ambient environments and heat stress compared to adults (Berry et al., 2014). They are also more susceptible to sunburns and burn injuries on playgrounds because of their more sensitive skin (Volkmer and Greinert, 2011). Making playground equipment and spaces thermally comfortable in summer helps ensure that children can go outdoors, play, be active and remain at a play area for a longer period of time.

Designing thermally comfortable outdoor spaces is an important adaptation in the context of climate change. As a result of climate change, the numbers of very hot days ($\geq 30^{\circ}\text{C}$) in many parts of Canada is expected to become much more common, with significant impacts on human health (Berry et al., 2014). For example, in the City of Windsor, Canada's southernmost city, the number of very hot days is expected to double from 24 days annually to over 40 days by 2050 (Malik 2018). In summary, in the context of climate change, understanding how to design for thermal comfort is increasingly essential for Canadian playgrounds.

Purpose of Guidelines

The purpose of these guidelines is to provide practical advice for the management of thermal comfort in the design (or retrofit) and maintenance of both new and existing playgrounds in the context of Canadian climates. While focused on improvements to thermal comfort in the summer season, the guidelines touch on how to design for thermal comfort in all seasons, given that many parts of the country experience four distinct seasons, including long and cold winters. Canada is a vast country characterized by large variations in regional climate. These guidelines are designed to not be limited to one geography, but instead provide high-level considerations that could apply across various geographic and climatic zones. Thermally comfortable playgrounds and play areas can help achieve the important benefits children gain through active outdoor play. Additionally, thermally comfortable play areas can help create cool and vegetated spaces within towns and cities (i.e. "park cooling islands"). This is increasingly important given the growing "urban heat island" effects in Canadian cities.

Four Components of Thermal Comfort

Table A.1 discusses the four environmental components that are the principal factors related to thermal comfort. These thermal comfort factors are provided in the order of those most easily changed, to those more challenging to manage through design. Further, radiation and sun exposure reduction have the greatest potential influence on health benefits.

Partnership of Advocacy, Research, and Education



NPPS works to ensure playground research supports academic literature, best practice at the front lines, and is data-driven to improve **S.A.F.E.™** child play.

Consumer Product Safety Commission – Centers for Disease Control and Prevention

NPPS is invested in educating early childhood programs, schools, community park and recreation programs, governmental programs, and state Departments of Public Health for relevant and accurate information to support S.A.F.E.™ child play.

US Department of Defense – Head Start – Early Head Start – IA Dept of Public Health – MS Department of ChildCare Licensing – AL Dept of Early Childhood Education- CCR&R GA- FL Child Care Licensing & Enforcement – OH Child Care Resource Center – WY Child Care – Lutheran Services of FL – IN FSSA Bureau of Child Care

S.A.F.E.™ Injury Prevention Framework





S.A.F.E.™ Framework for Playground Safety

Playgrounds are inherently safe spaces for children. They are a hub for child play, fun for families, enjoyment with friends, and places for communities to come together. However, these places are also locations where unintentional injuries occur and recent research has shown playgrounds are places where children are exposed to hazards.

More than 200,000 children are injured and require medical attention from playground injuries each year across the US. That is equivalent to more than 500 children per day. Playgrounds are also common locations where equipment and surfacing get hot which lead to children being exposed to UV radiation, intense sun, pesticides, and other harmful chemicals.

Unsafe equipment and surfacing along with hot playground temperatures are uncomfortable and unsafe. This can discourage children from being active which causes long term health consequences, such as obesity and depression. Continuous exposure to unsafe environmental conditions has led to long-term injuries, such as sunburns, hyperthermia, thermal burns, and asthmatic complications.

We believe playground injury prevention includes a broad perspective of maintenance, materials, environmental factors, and safe user behavior. **Keeping playgrounds S.A.F.E.™ involves a comprehensive understanding involving the child and the environment.**

The Playground Injury Prevention framework consists of four elements that lay the foundation for safe play areas:

© 2020 National Program for Playground Safety



Supervision



- Adults Present
- Safe & Active Play
- Anticipate Unsafe Actions
- Anticipate Unsafe Conditions

NPPS offers
Supervision Training
and Supervision Kit



Photo courtesy of BCI Burke

© 2020 National Program for Playground Safety



This kit will give administrators, teachers, support staff, health and safety professionals, youth leaders, and others the tools needed to save lives, prevent injuries, avoid litigation, comply with professional guidelines and stand. create a safe and fun environment for children in the school setting.

Playground Supervision Kit — School-Age Edition

Supervisors are essential to safe and inclusive outdoor play areas and playgrounds. Proper supervision minimizes major injuries, reduces behavioral referral issues, and assists in reducing minor injuries.

The School-Age Supervision Kit will equip playground and outdoor play supervisors with the knowledge to properly supervise with the ABC's of Supervision — Anticipation, Behavior, and Consideration — within the **S.A.F.E.™** Playground Injury Prevention framework.



Videos

NPPPS has produced a series of videos that highlight tips and techniques of the ABC's of Playground Supervision. These videos are available as part of NPPPS's Playground Supervision Kit — School-Age Edition, which is available through the NPPPS Store.

ABC's of supervision trailer



Appropriate Environments



Benefits of Play

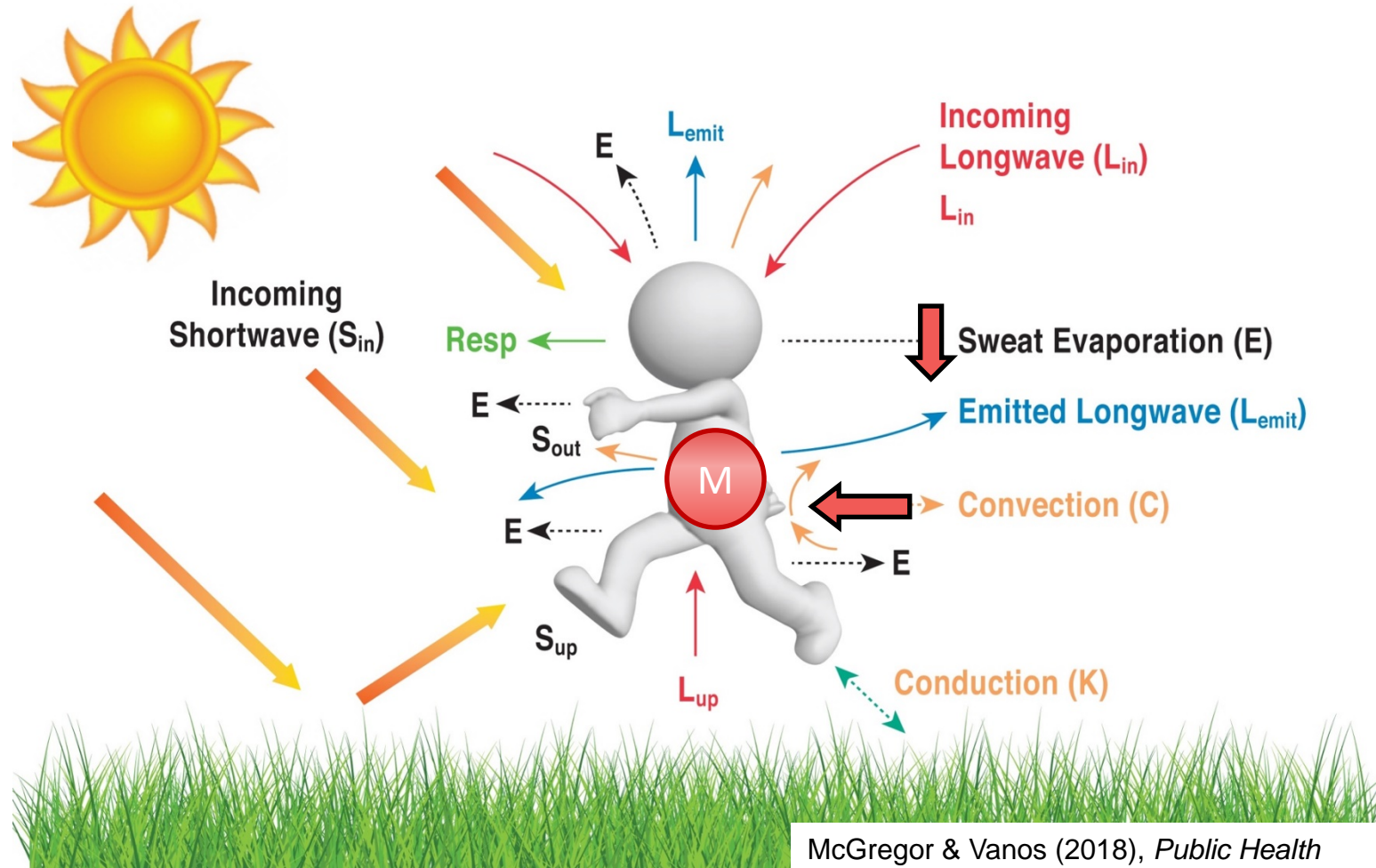
- children gain one-third of their daily physical activity during recess at school or childcare centers¹ (up to **780** play periods)
- **PLAY**... is considered so vital to a child's development that it is included in the U.N. Convention on the Rights of the Child.
 - *any concerns that may impact children's play—such as unsafe environmental conditions, polluted air, persistent heat and sunlight, or chemicals—may hinder children's health.*

GOAL SHOULD BE

to create spaces that are environmentally safe and thermally comfortable and **conducive** to actively play safely for longer periods of time throughout the year.

¹Stratton (1999)

Are Thermal Comfort Parameters (Temperature, Radiation, Wind, Humidity) Part of the Playspace Design Process?



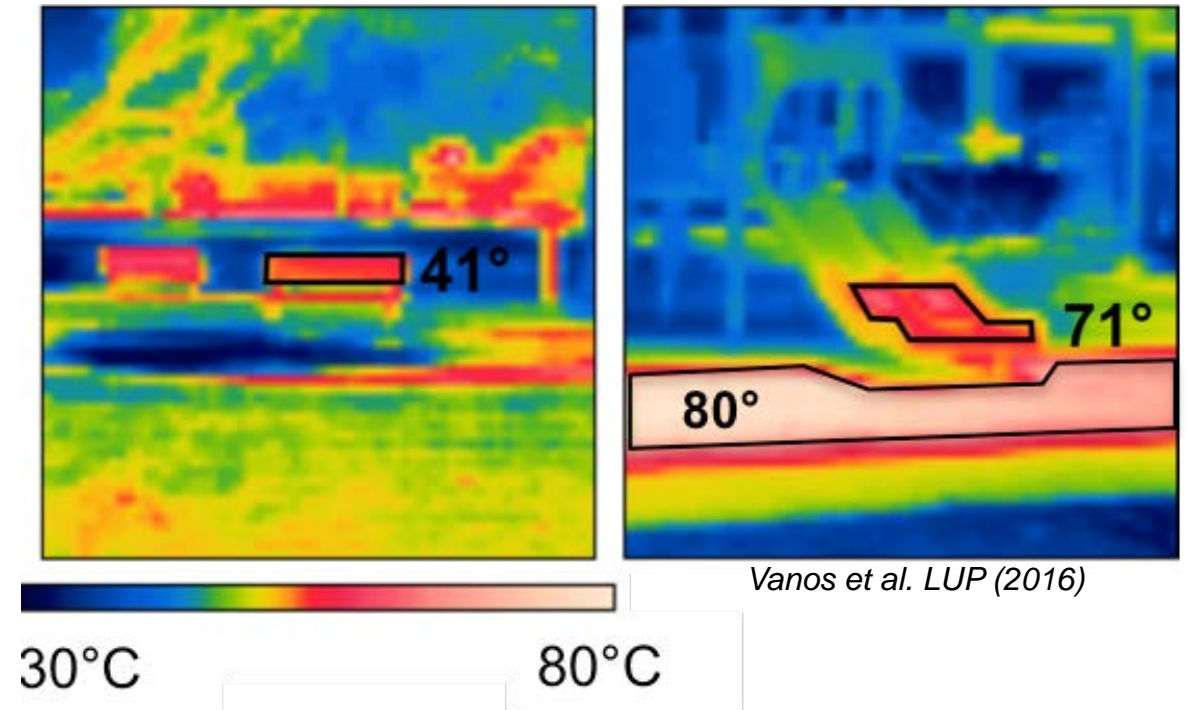
Environmental Dangers: Equal Importance

1) UV exposure & sunburns during childhood are linked to adult skin cancers and melanoma (Dennis et al., 2008; American Cancer Society, 2013).

- most playgrounds lack adequate shade (Olsen, Kennedy, & Vanos, 2019; Bloch, 2019).

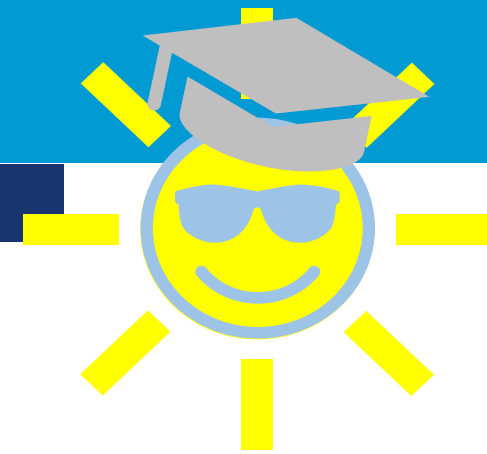
2) High surface temperatures in contemporary playground materials can expose children to unsafe equipment and surface temperature (Vanos, 2016).

3) Hyperthermia & heat illness affect play, behavior, learning, and can result in missed class



Illness or effects of these exposures are completely avoidable.

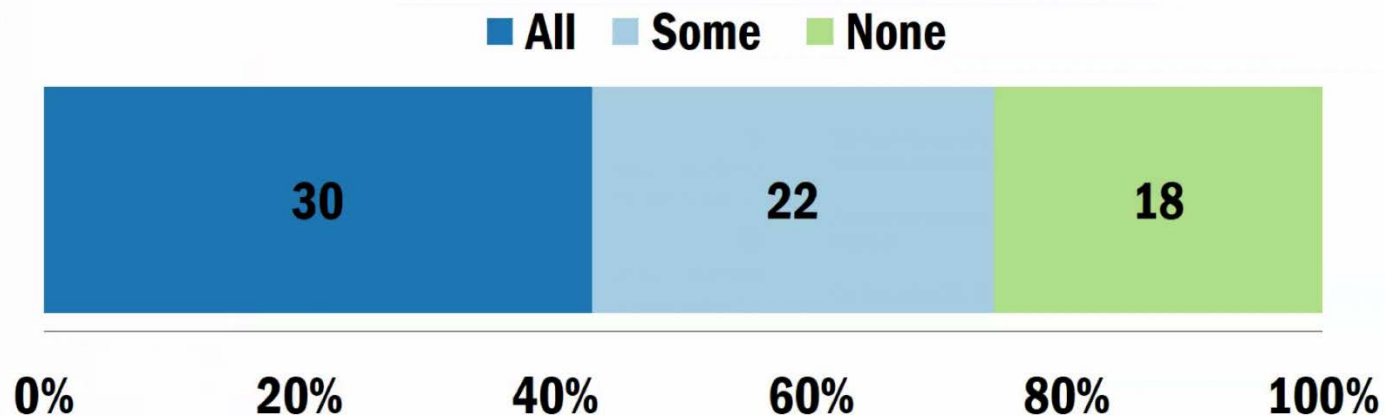
1) Shade, UV Radiation, and Health



Arizona Dept of Public Health – 2019 Survey – Heat Policies

Less than half of school districts have shaded play spaces available in all schools (n = 70)

Schools in the district with shaded play spaces

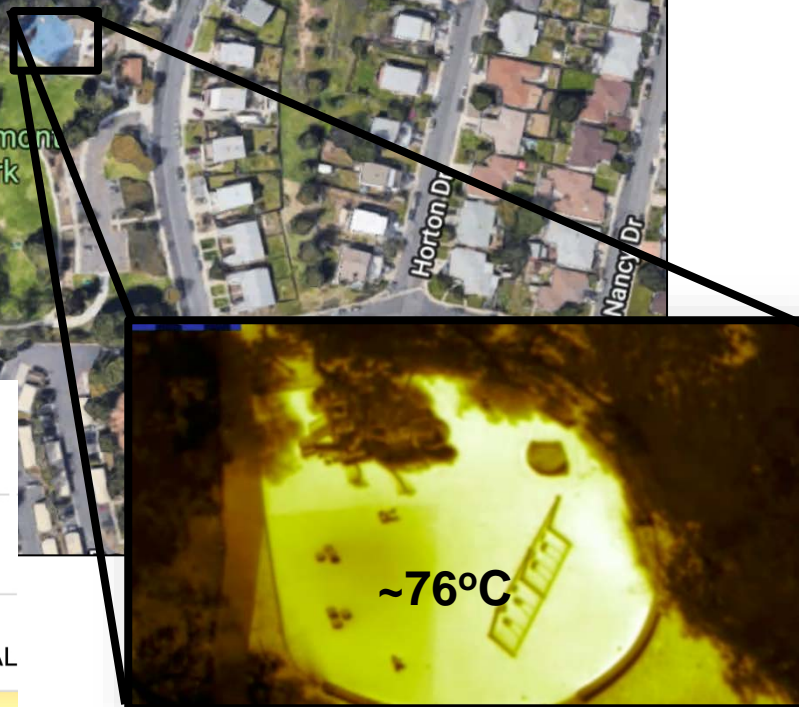
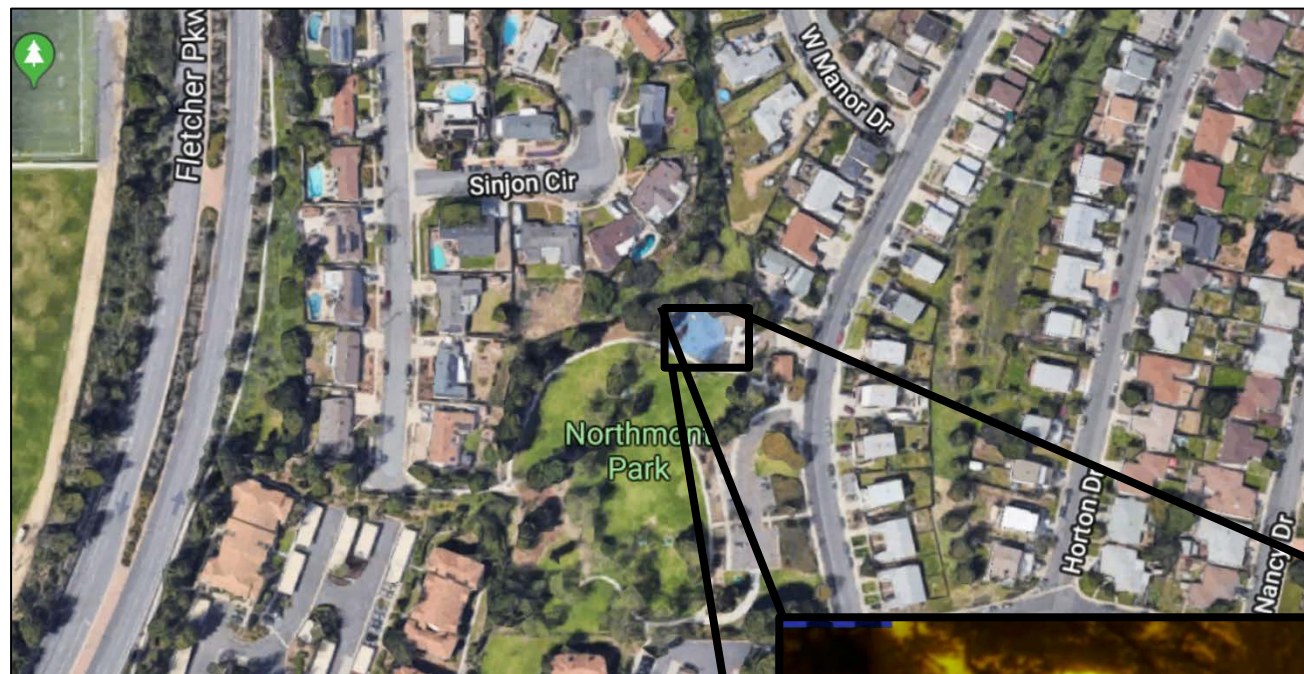


ARIZONA DEPARTMENT
OF HEALTH SERVICES

- NPPS study of >100 playgrounds found minimal shade (<67% shaded midday)
Olsen, Kennedy, Vanos, 2019; Landscape & Urban Planning

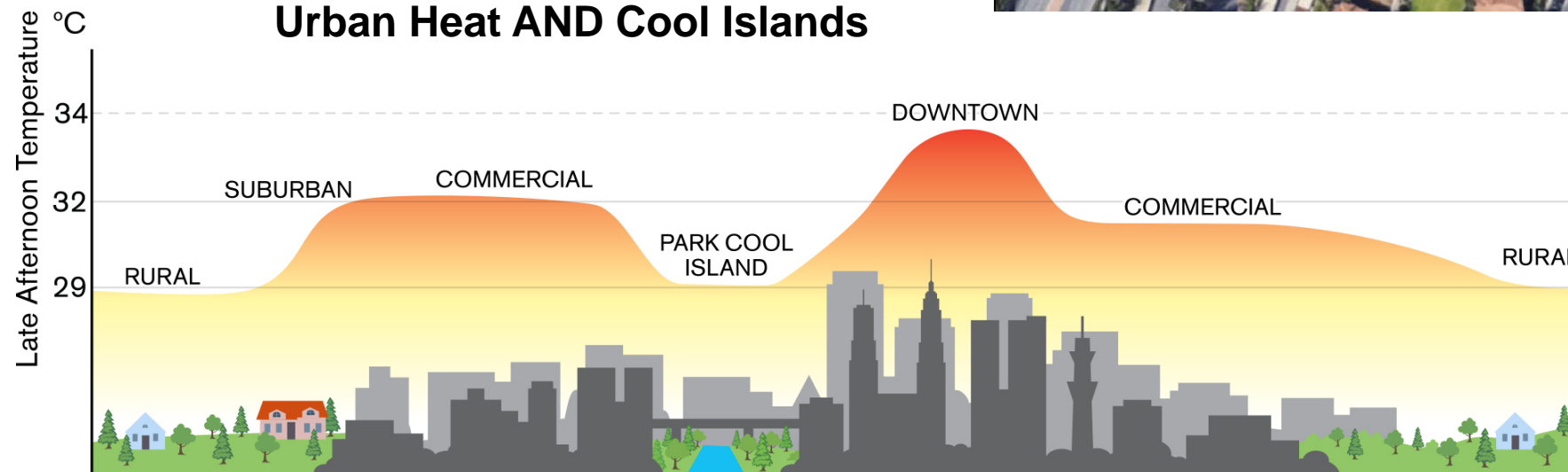
2) Surface Temperatures: Material (& What's Above It) Matters!

Problem: Playgrounds often present some of **the highest temperatures within an urban area**, amplifying heat extremes – and **most** playgrounds lack adequate shade (*Olsen, Kennedy, & Vanos, 2019; Vanos et al., 2016*)



Good Morning America, ABC (July, 2017)

Urban Heat AND Cool Islands



Health Canada Report – Kennedy et al. (2020)

Thermal Burn Thresholds – Heat-scape or Play-scape?

Table 1

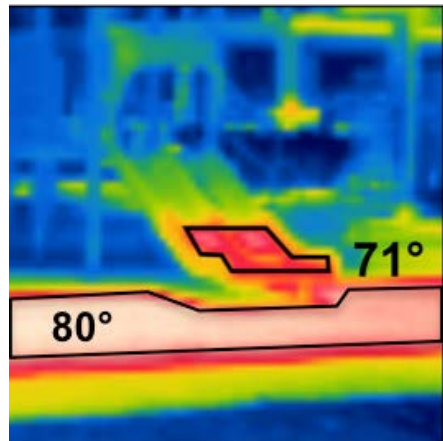
Burn thresholds when skin is in contact for short periods of time (3 s, 5 s, 1 min) with hot surfaces made of materials commonly found within playgrounds. Thresholds of materials with similar heat conductivity are combined to represent one value.

Material	Material characteristics	Burn threshold (°C)			
		Contact time	3 s	5 s	1 min
Metal Coated metal ^a	Uncoated		60 °C	57 °C	51 °C
	Lacquer coat: 100 μm		68 °C	61 °C	51 °C
	Powder: 90 μm		65 °C	60 °C	51 °C
	Enamel: 160 μm		63 °C	59 °C	51 °C
	Polyamid 11 or 12: 400 μm		77 °C	70 °C	51 °C
Stone material	Concrete, granite, asphalt		73 °C	60 °C	56 °C
Plastic ^b	Polyamide, acrylicglass, polytetrafluorethylene, duroplastic		77 °C	74 °C	60 °C
Wood	Bare, low moisture		99 °C	93 °C	60 °C

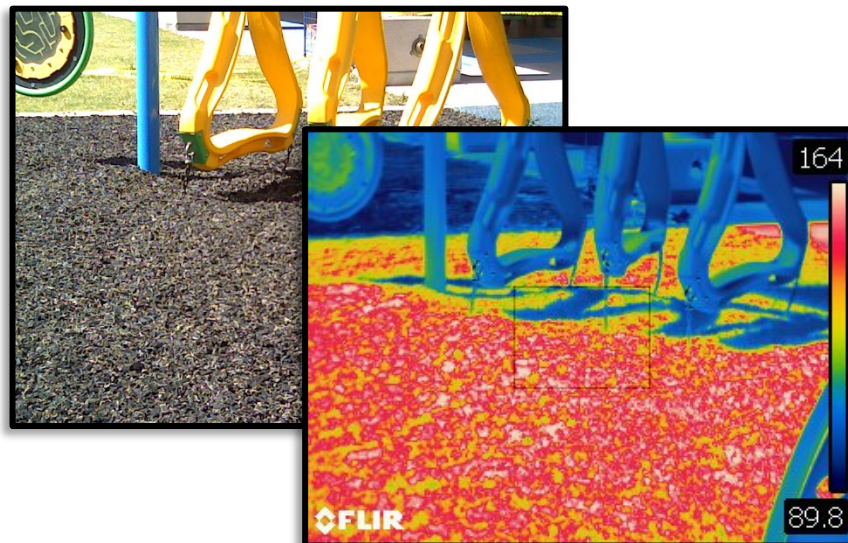
Source: ISO 13732 (2010).

^a Polyurethane enamel-coated steel is used predominantly in the study site playgrounds for hold/touch surfaces, and powder coated steel for walking surfaces.

^b UV stabilized high-density polyethylene (HDPE) used in playgrounds is similar in material properties to polyamide.



Vanos et al. (2016)



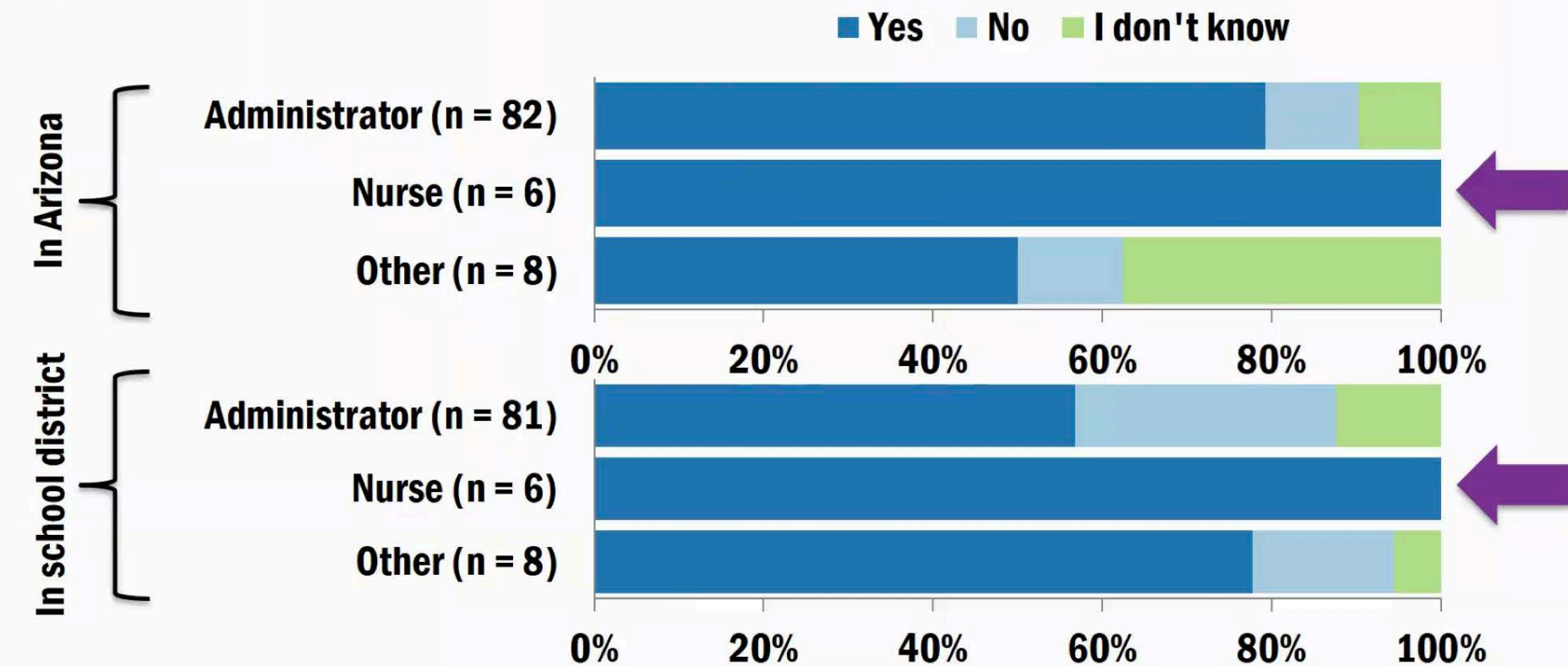
<http://wabc.typepad.com/freezefront/2012/>



3) Extreme Heat & Health

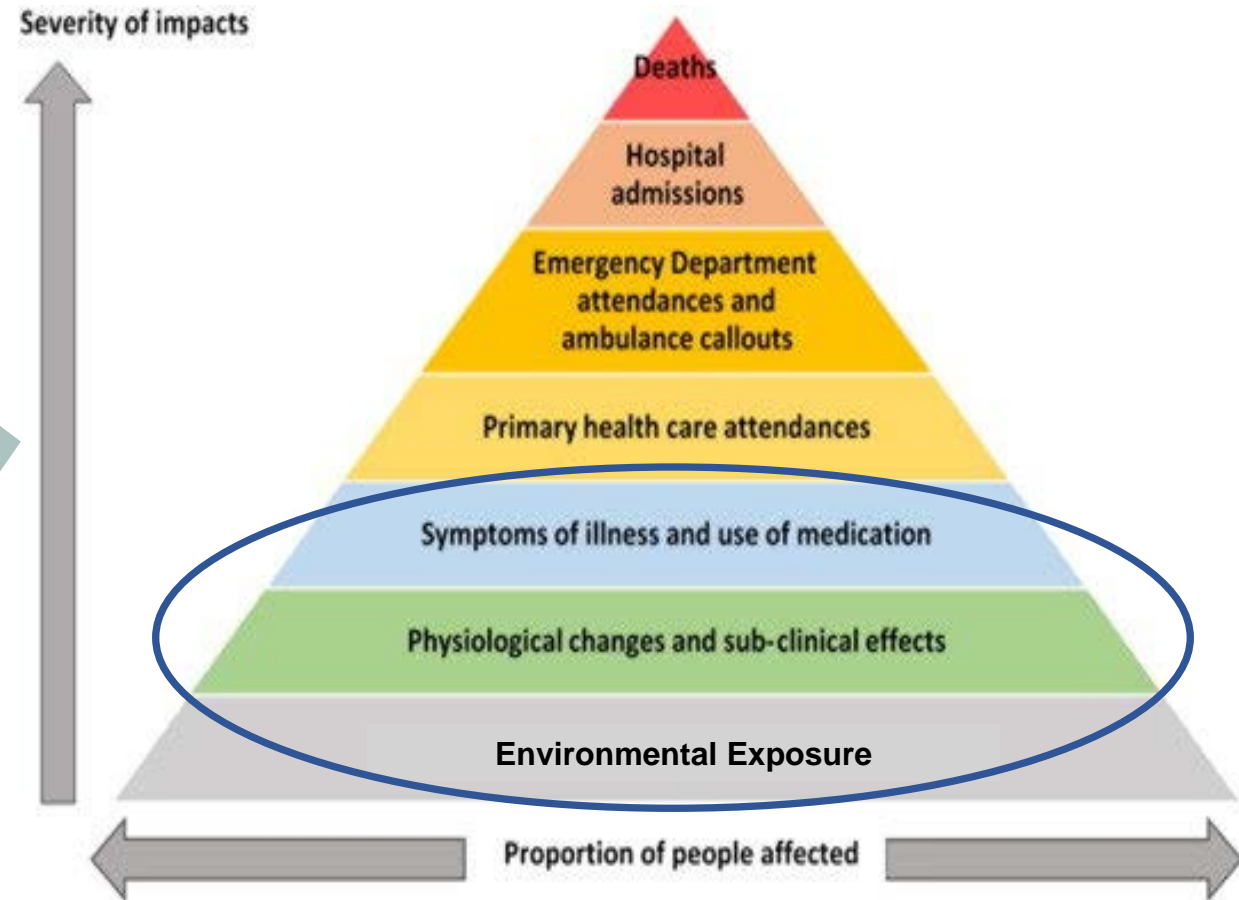
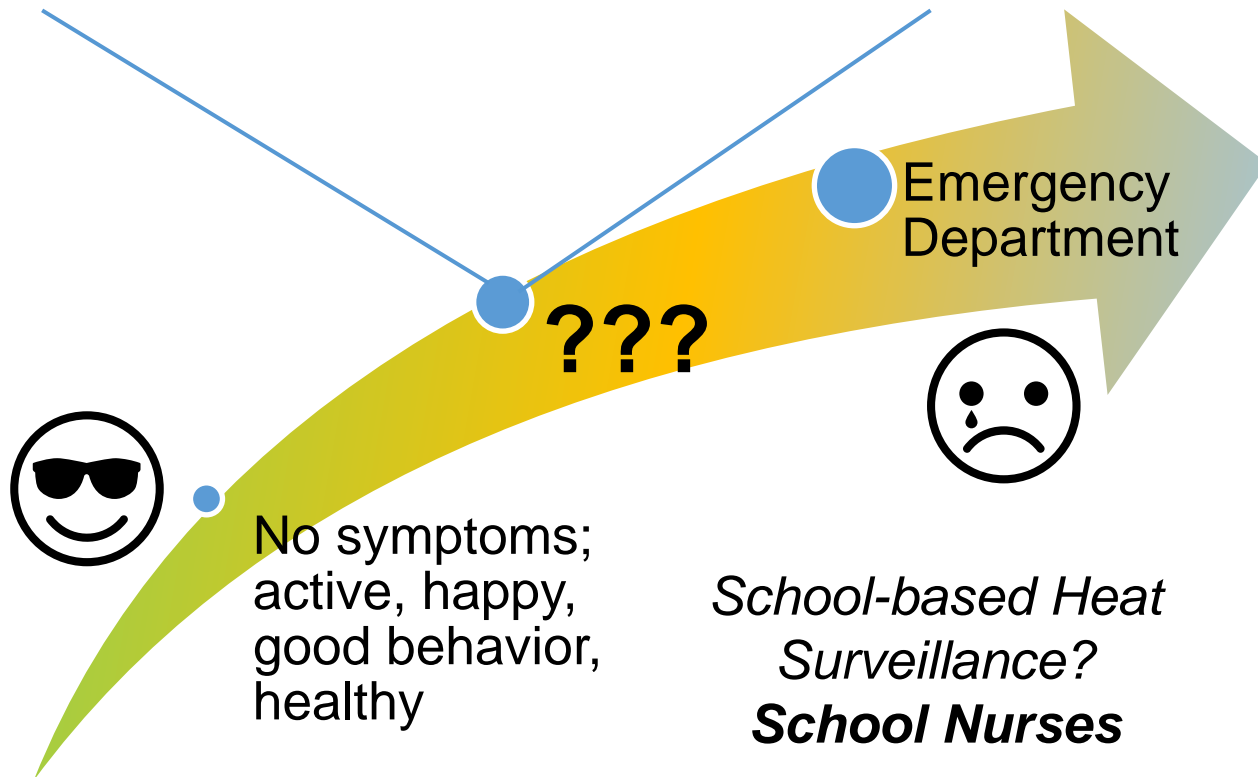
Arizona Dept of Public Health – 2019 Survey – Heat Policies

Regardless of climate zone, responding nurses always considered heat to be a public health issue for school children.



Wide Ranging & Cascading Impacts to Health

- heat syncope
- heat cramps
- heat exhaustion
- heatstroke
- missed class
- mood
- behavior
- cognitive ability
- engagement
- low physical activity



Adapted from Melody & Johnston, 2015

Collaborative Work & Messaging



MESSAGING

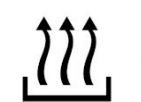
- NPPS - Incorporating new information into playground safety concerning heat, radiation, and burns
- Exposed slides, rubber, and artificial turf are the leading culprits of these burns (CPSC, NPPS)
- Connected to shade, thermal comfort, heat stress, & sensible heat

Good Morning America, ABC (July, 2017)

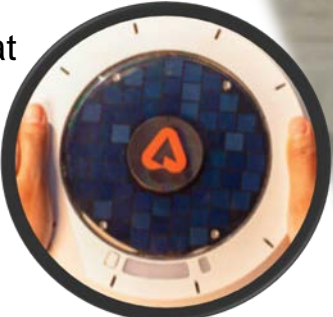
America's Playgrounds Safety Report Card



Example: A Pilot Project in South Phoenix at Paideia Academies



Heat



<https://www.youtube.com/watch?v=jp1Wm9otTsQ&feature=youtu.be>



Current

Input from students, parents, teachers!

- Water Path
- lot of plants
- Shade

*I like Nature play as well. :)

Future



Water – EPA Award
CAMPUS RAINWORKS CHALLENGE



ASU Julie Ann Wrigley
Global Institute of Sustainability
Arizona State University

ASU Knowledge Exchange
for Resilience
Arizona State University



Socially-embedded, collaborative, responsive – Play & Learning Environments

- Connections
- Collaborations Data
- Data access
- Advice

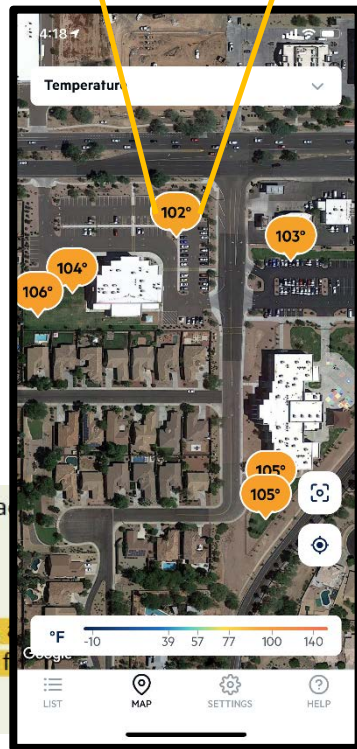
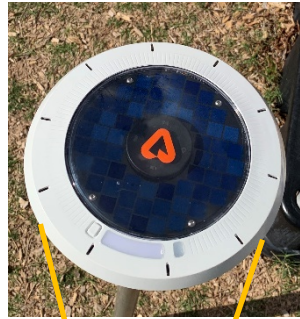


Avoid eating food or drinking beverages while directly on playground surface before handling food.

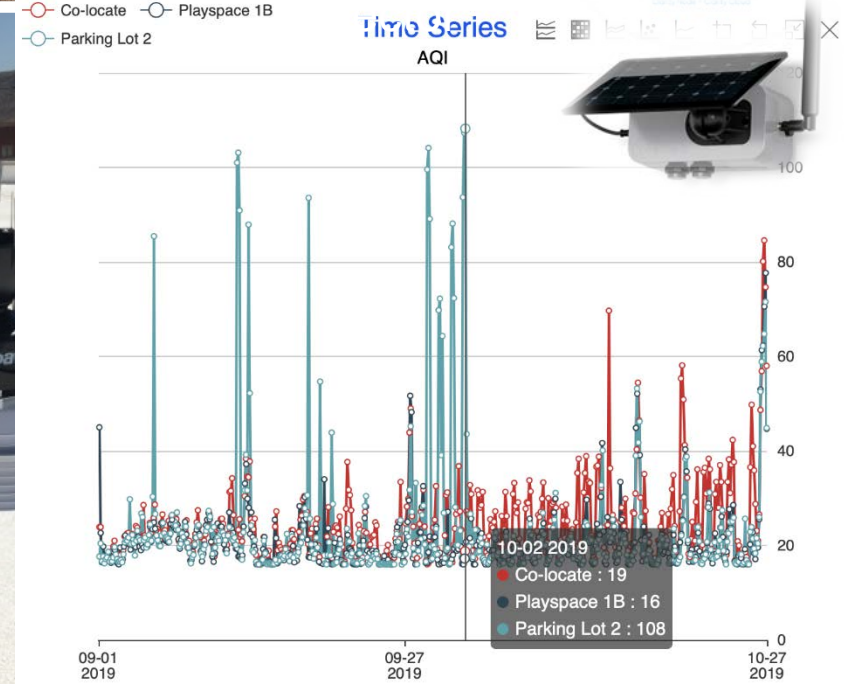
Limit the time at a playground on extremely hot days.

Clean hands and other areas of exposed skin after visiting the playground, clothes if evidence of tire materials (e.g., black marks or dust) is visible on them.

Clean any toys that were used on a playground after the visit.



Dr. Brian Winsor, Paideia Academies



A close-up photograph of a child's hand touching a teal-colored metal playground structure. The background is slightly blurred, showing other parts of the playground and a chain-link fence. The overall tone is soft and focused on the tactile interaction.

Our Charge:

Environmental conditions at playgrounds warrant further attention.

Our charge has been to vision a more holistic view of playground design and safety to promote short and long-term health.

Children deserve safe places to live. Today children need more places for active play and opportunities to socially and emotionally develop.

In order to achieve comfortable environments we must manage and design children's spaces to be thermally comfortable for safe and active play.

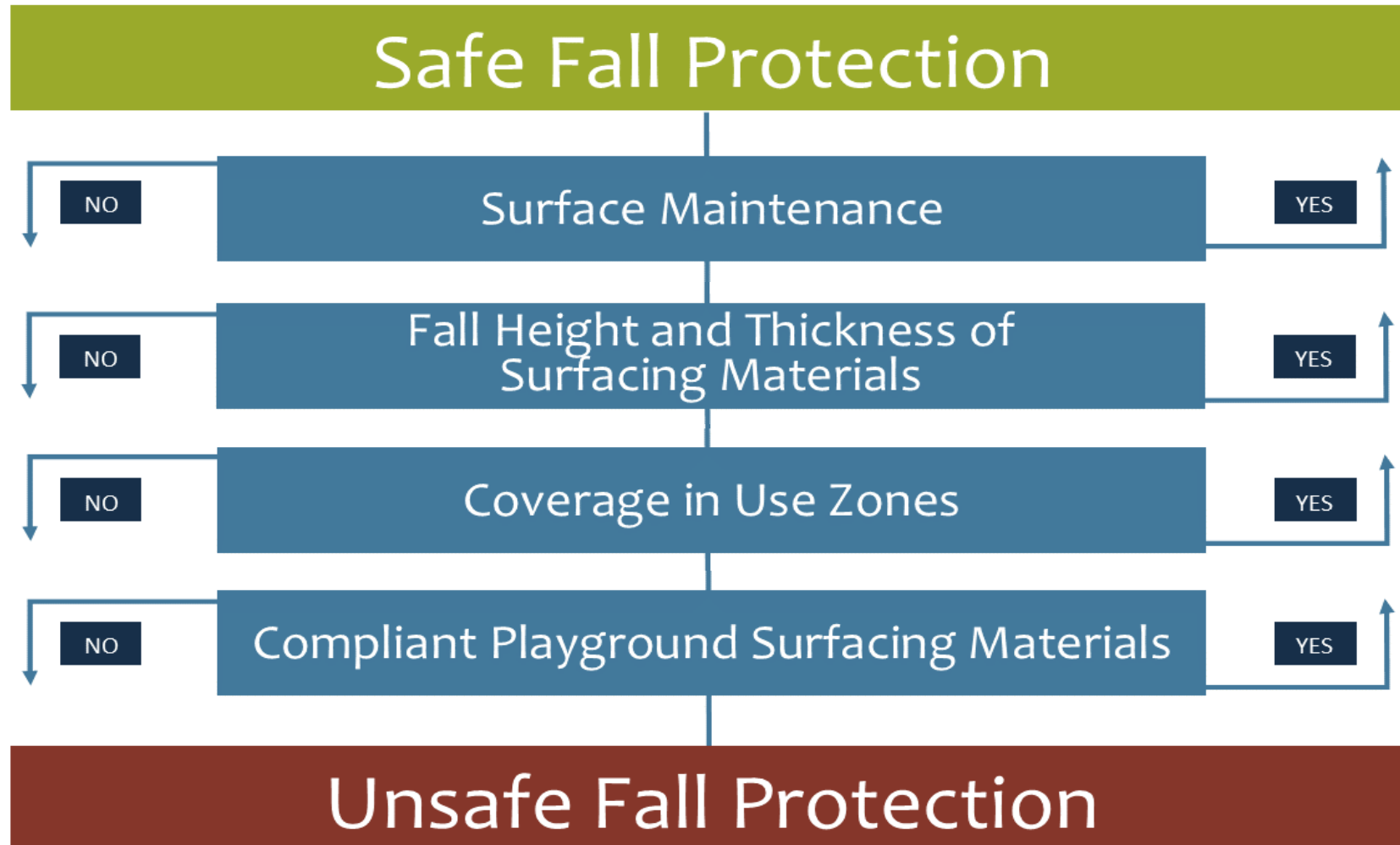
Fall Surfacing





Installation over a hard surface such as asphalt, concrete, or packed earth may result in serious injury or death from falls (ASTM & CPSC).

NPPS's SAFE™ Surfacing Decision Making Model



Reprinted, by permission, from S. Hudson, D. Thompson, & M. Mack (1999), *Selecting playground surface materials*.

Compliant Playground Surfacing Materials

LOOSE-FILL SURFACING



Engineered Wood
Fiber



Shredded Rubber



Pea Gravel



Sand

UNITARY SURFACING



Poured in Place



Tiles



Synthetic Grass

Coverage in Use Zones

Introduction

Use Zone is an area under and around the equipment where protective surfacing is required.



(Evaluation of) Fall Height & Thickness of Material



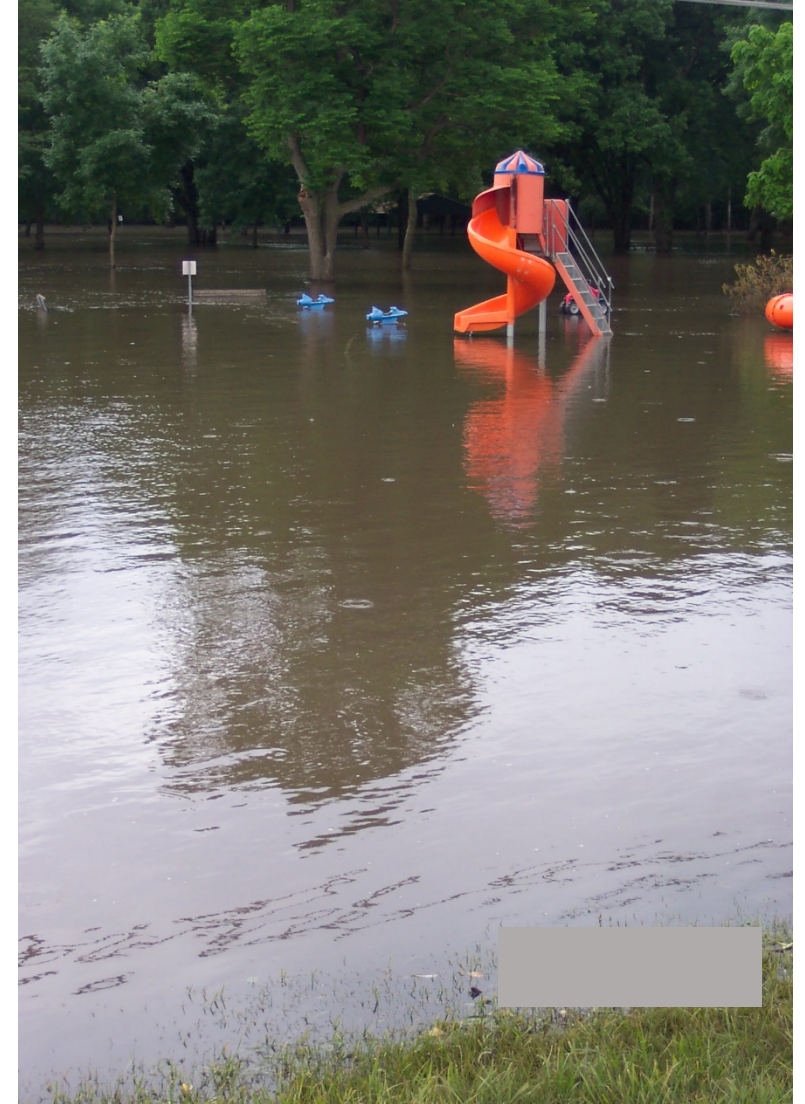
Impact Attenuation Testing (ASTM F1292):

Developed for prevention of **serious or life-threatening head injury**

Established limits for **200 g and 1000 HIC** (Head Injury Criterion) at the equipment fall height

F1292 is a lab test – NPPS recommends performance verification at the installation

Surface Maintenance



Surface Maintenance





A Note on Wearmats:

Wearmats (or “Kickmats”) are commonly used to prevent dispersion of loose-fill surfacing.

They must be tested in to verify impact attenuation!

Equipment Maintenance



Prevention = Good Maintenance Practices



You are the *Mechanic* of the Play Environment

Maintenance is More Than Fixing Something



A well-designed maintenance program is proactive, responding to needs before a crisis occur.

Photo courtesy of BCI Burke

© 2020 National Program for Playground Safety

Maintenance Is More Than Fixing Something



Consumer Product Safety Commission (CPSC) *Public Playground Safety Handbook*

Public Playground Safety Handbook




U.S. Consumer Product Safety Commission
Saving Lives and Keeping Families Safe



Playground Safety Checks and Playground Safety Inspection Manuals

America's Playgrounds SAFETY REPORT CARD



DOES YOUR PLAYGROUND MAKE THE GRADE?

Evaluate the risk factors in your playground by using the following format. A complete explanation of the criteria is on the back of the sheet.

	YES	NO
SUPERVISION		
Adults present when children are on equipment		
Children can be easily viewed when on equipment		
Children can be viewed in crawl spaces		
Rules posted regarding expected behavior		
AGE-APPROPRIATE DESIGN		
Playgrounds have separate areas for ages 2-5 and 5-12		
Signage indicating age group for equipment provided		
Platforms allow change of directions to get on/off structure		
Platforms have appropriate guardrails		
Equipment design prevents climbing outside the structure		
Supporting structure prevents climbing on it		
Fall SURFACING		
Appropriate surfacing provided		
Six foot use zone has appropriate surface		
Appropriate depth of loose fill provided		
Concrete footings are covered		
Surface free of foreign objects		
EQUIPMENT MAINTENANCE		
Equipment is free of broken parts		
Equipment is free of missing parts		
Equipment is free of protruding bolts		
Equipment is free of noticeable gaps		
Equipment is free of head entrapments		
Equipment is free of rust		
Equipment is free of splinters		
Equipment is free of cracks/holes		

Scoring system
For every 'Yes' your playground receives one point. Total up the number of points for each section.

Supervision _____
Age appropriate _____
Fall Surfacing _____
Equipment Main. _____
Total

23-20 = A Congratulations on having a SAFE playground. Make sure you maintain this level of excellence.


19-16 = B Your playground is on its way to providing a safe environment for children. Work on the areas checked 'No'

15-12 = C Your playground has potential for being hazardous for children. Take corrective measures.

11-8 = D Children are at risk on this playground. Start today to make improvements!


7 and below Do not allow children on the playground. Call 1-800-554-PLAY

Copyright © 1999 National Program for Playground Safety 1-800-554-PLAY



COMMUNITY AND SCHOOL-AGE INSPECTION MANUAL FOR

PLAYGROUNDS AND OUTDOOR FACILITIES




National Program for Playground Safety
NPPPS
University of Northern Iowa



EARLY CHILDHOOD INSPECTION MANUAL FOR

PLAYGROUNDS AND OUTDOOR ENVIRONMENTS



National Program for Playground Safety
NPPPS
University of Northern Iowa

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“E” -- Equipment and Environment Maintenance



“E” -- Equipment and Environment Maintenance

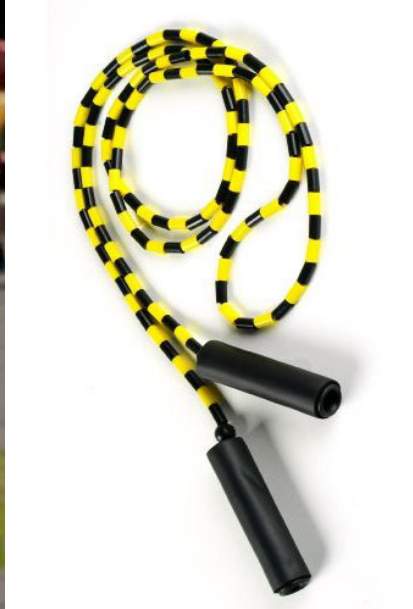
- 1. Clean and Sanitize Safely**
- 2. Check for Strangulations and Head Entrapments**
- 3. Pay Close Attention to Sharp Points and Crush and Shearing Points**
- 4. Aging Playgrounds Demonstrate More Maintenance**



Strangulations - Head Entrapments

S-hooks should be completely closed so a dime can not pass through the opening.

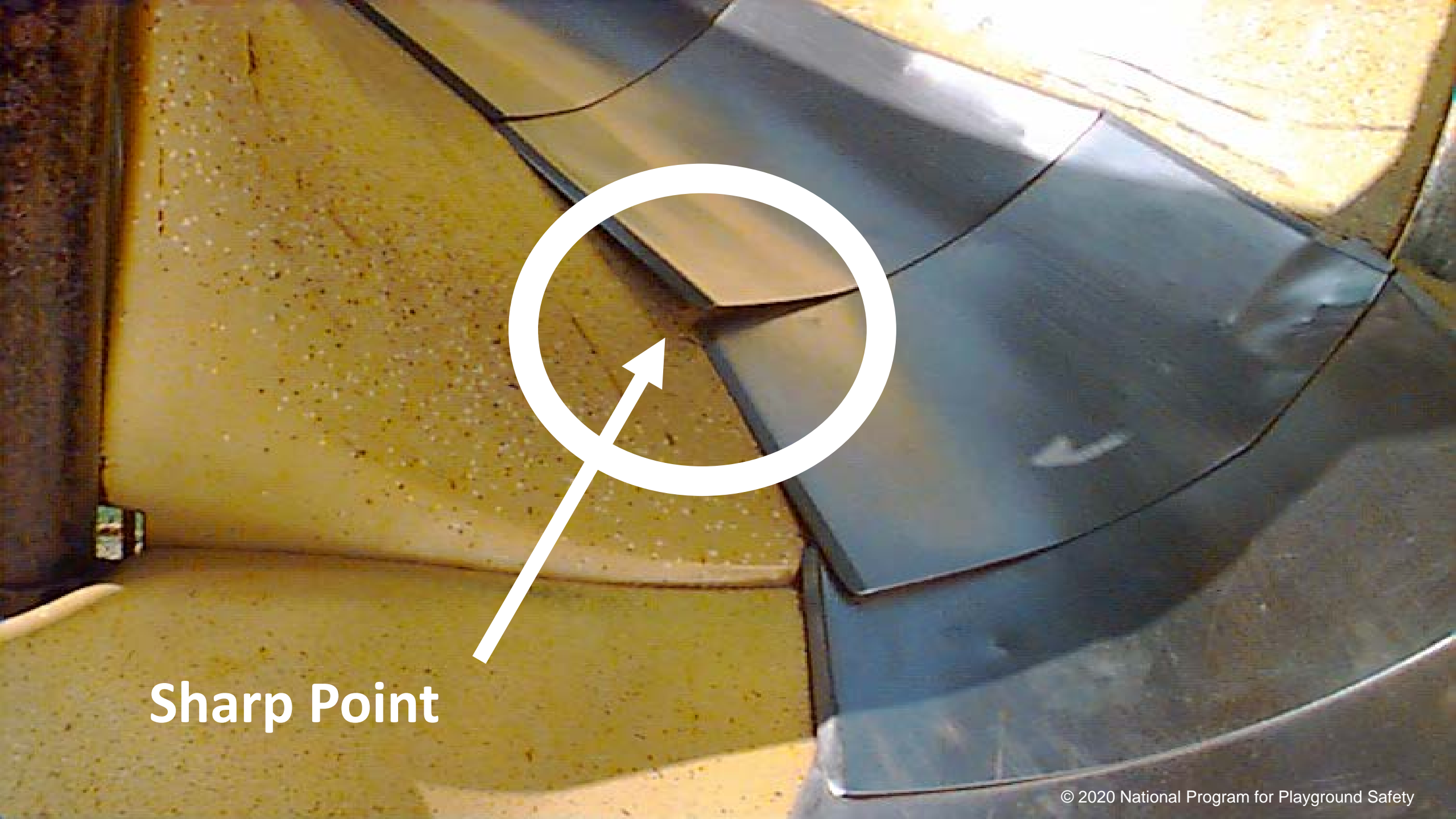




Remove all loose ropes, jump ropes, etc.

“E” -- Equipment and Environment Maintenance

1. Clean and Sanitize Safely –
2. Check for Strangulations and Head Entrapments
3. **Pay Close Attention to Sharp Points and Crush and Shearing points**
4. Aging Playgrounds Demonstrate More Maintenance



Sharp Point



Crush & Shearing Points

- Moving parts
- Loose parts
- Riding toys

“E” -- Equipment and Environment Maintenance

1. Clean and Sanitize Safely –
2. Check for Strangulations and Head Entrapments
3. Pay Close Attention to Sharp Points and Crush and Shearing Points
4. **Aging Playgrounds Demonstrate More Maintenance**

Playgrounds Over The Age of 10 Years Demonstrate Maintenance-Related Safety Concerns



Final Report for CPSC on the National Study of Public Playground Equipment and Surfacing

February 2018

Heather Olsen, Ed.D., & Eric Kennedy, Ph.D.^{2,3,4}
The National Program for Playground Safety
University of Northern Iowa

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6

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eatability Considerations

Vapors, Part 4 (0118)

Vapors, Part 3 (0118)

is (0118)

² This report was produced under Contract #CPSC-S-16-0061 and has not been reviewed or approved by, and does not necessarily reflect the views of, the Commission.

³ Robin Lund, Ph.D., & Jacob Reed, Ph.D. contributed to data analysis

⁴ Copyright © 2018 University of Northern Iowa

Playground Safety 2019 Report

Playgrounds		View all reports and statistics
10/01/2019	CPSC Staff Statement on the University of Northern Iowa (UNI)'s "Report for National Study of Public Playground Equipment and Surfacing"	
12/01/2005	Surfacing Materials for Indoor Play Areas - Impact Attenuation Test Report	
05/01/2002	Soft Contained Play Equipment	
02/15/2002	CCA Pressure-Treated Wood in Playground Equipment	
04/24/1990	Development of Human Factors Criteria for Playground Equipment Safety Part 4	
04/24/1990	Development of Human Factors Criteria for Playground Equipment Safety Part 5	
04/24/1990	Development of Human Factors Criteria for Playground Equipment Safety Part 1	
04/24/1990	Development of Human Factors Criteria for Playground Equipment Safety Part 6	
04/24/1990	Development of Human Factors Criteria for Playground Equipment Safety Part 2	
04/24/1990	Development of Human Factors Criteria for Playground Equipment Safety Part 3	

Pools and Spas		View all reports and statistics
09/11/2013	Contract Report on Safety Vacuum Release Systems (SVRS) Modeling Interim Report	
09/11/2013	Contract Report on Safety Vacuum Release Systems (SVRS) Modeling Final Report	
12/01/2003	Draft Guidelines for Entrapment Hazards: Making Pools and Spas Safer	

Portable Generators		View all reports and statistics
03/17/2016	CPSC Staff Technical Research to Address the Carbon Monoxide Hazard for Portable Generators - PGMA Technology Summit	
10/13/2015	Incidents, Deaths, and In-Depth Investigations Associated with Non-Fire Carbon Monoxide from Engine-Driven Generators and Other Engine-Driven Tools, 2004-2014	
11/06/2014	CPSC Staff Presentation to NIOSH Construction Sector Council Meeting	
09/19/2014	CPSC Staff Statement and on the Toxicology Excellence for Risk Assessment Report, "Exposure Assessment: Composition, Production, and Use of Phthalates" August 2015 and the report	

Report
Unsafe
Products

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Thermally Comfortable Playgrounds – Technical Report

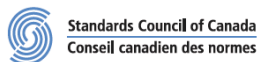
Release Coming Soon

THERMALLY COMFORTABLE PLAYGROUNDS:

A review of literature and survey of experts



PREPARED FOR



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Gender and Standardization Strategy

Action plan for gender responsive standards and gender balance in standards development Globally, there is a growing recognition that standards may be experienced differently by women and men. This prompted the United Nations Economic Commission for Europe to author a Declaration for Gender...

Published on 2019/09/12



Standards to Support Climate Resilience in Infrastructure: Taking stock and mapping the future

Ensuring Canada's infrastructure is climate-resilient Interim Report 2016-2019 In the 2016 federal budget, SCC received \$11.7 million over five years to support the Government of Canada's climate change agenda. Through the creation of the Standards to Support Resilience in Infrastructure Program...

Published on 2019/09/05

SCC Technical Report

www.scc.ca/en/publications

CAN/CSA Z614 Standard 6th Edition

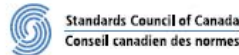
Appendix K- Thermally Safe and Comfortable Playgrounds



CSA Z614:20
National Standard of Canada



Children's playground equipment and surfacing



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Children's playspaces and equipment

Standards development organization:

[Canadian Standards Association \(operating as CSA Group\)](#)



Contact info:

[Contact information](#)

Work Program:

[View the CSA work program](#)

Designation Number:

CSA Z614

Standard Type:

National Standard of Canada - Domestic

A photograph of a playground with a large green slide structure. Several children are visible, some on the slide and others nearby. A person in a yellow safety vest is standing on the right side of the frame. The background shows trees and a clear sky.

Playground Topics

Choose from the list of topics below for an overview of playground-related safety issues, along with ideas, tips and current research on each topic:

- [ADA and Playground Accessibility](#)
- [Developmentally Appropriate Outdoor Learning Environments](#)
- [Emergency Planning](#)
- [Fall Height](#)
- [Inclusive Outdoor Environments](#)
- [Kickmats](#)
- [Loose-Fill Surface Depth](#)
- [Maintenance Plans](#)

National Program for Playground Safety

Play Together. Play Smart. Play S.A.F.E.™

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TOPICS

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Training that is meaningful for you, children, and environments!

The National Program for Playground Safety offers training on a wide variety of topics, focusing on **S.A.F.E.™** and healthy playgrounds and outdoor environments for children. All of our training are interactive, valuing the importance of outdoor play and child health and wellness, while respecting the important role of the adults who offer safe and fun playgrounds.

Participants can practical application and knowledge of the material, which we hope will inspire improvement in overall practice.



Take Action

Playgrounds and outdoor play spaces are meant to be safe places for exploration and free play. Unfortunately, that isn't always the case.

Playground injuries are one of the leading causes of unintentional injury to children:

- 75% of playground injuries require an emergency room visit for children ages 5-12.
- 154,292 children ages 5 to 12 made trips to the emergency room each year because of playground injuries.
- 8 children die in playground-related injuries each year. (CPSC, 2018)

By using our tips and tools — like our Kid Checker Worksheet and Playground Report Card — built from the SAFE Model for Playground Safety, these injuries can be eliminated.

Acknowledgements

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Daniel Vecillio; Texas A&M University
Khalisa Phillips, PhD; US Consumer Product Safety Commission
Kevin Lee; US Consumer Product Safety Commission

Scott Burton; President, Safety Play, Inc.
Lisa Clifford; Child Care Licensing Director, Office of Indiana Early Childhood and Out of School Learning
Scott Liebelt, Engineering and Product Development Manager, BCI Burke Company
Amy Hill; Project Manager, Injury Free Coalition of Kids of Chicago
Luke Riexinger, Research Engineer; Center for Injury Biomechanics, Virginia Tech
Elaine Sherman, SMARTE Playground Safety Surface Systems
Troy Wilkinson; Risk & Benefits Management, School District of Palm Beach County



Questions?



Please enter your questions in the Q & A pod

Thank you!

Please fill out our evaluation: <https://www.surveymonkey.com/r/LFCL9VV>



Visit our website:
www.ChildrensSafetyNetwork.org