When selecting a site, consideration should be given to slope and drainage, especially if loose-fill surfacing materials are going to be installed. While a gentle slope may aid in drainage, steep slopes could result in loose fill materials becoming washed away during periods of heavy rain. Such sites may require re-grading.

### 6.2 Locating Equipment

The playground should be organized into different areas to prevent injuries caused by conflicting activities and children running between activities. Active, physical activities should be separate from more passive or quiet activities. Areas for play equipment, open fields, and sand boxes should be located in different sections of the playground.

In addition, popular, heavy-use pieces of equipment or activities should be dispersed to avoid crowding in any one area. The layout of equipment and activity areas should be without visual barriers so that there are clear sight lines everywhere on the playground to facilitate supervision.

Moving equipment, such as swings and merry-go-rounds should be located toward a corner, side or edge of the play area. Slides exits should also be located in an uncongested area of the playground. Fall zones for moving equipment and at slide exits should never overlap the fall zone of other equipment, regardless of height.

Composite ~~equipment has~~ play structures have become increasingly popular on public playgrounds. Care should be taken to ensure that the play and traffic patterns of children using adjacent components on composite structures ~~equipment~~ are complementary.

### 6.3 Age Separation of Equipment

It is recommended that playgrounds have separate areas for younger children with appropriately sized equipment and materials to serve their less advanced developmental levels. The following items of playground equipment are not recommended for pre-school age children (2 to 5 years):

Chain or Cable Walks
Free Standing Arch Climbers
Free Standing Climbing Events with Flexible Components
Fulcrum Seesaws
Log Rolls
Long Spiral Slides
Overhead Rings
Parallel Bars
Swinging Gates
Track Rides
Vertical Sliding Poles

Add Horizontal ladders

# 44

American Academy of Pediatrics

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June 25, 1997

Mr. John Preston, P.E.
Directorate for Engineering Services
U.S. Consumer Product Safety Commission
4330 East West Highway
Bethesda, MD 20814-4408

Dear ~~Mr. Preston~~: John

Thank you for the opportunity to comment on the proposed revisions to the CPSC Handbook for Public Playground Safety. The Early Childhood Education Linkage System (ECELS) of the Pennsylvania Chapter, American Academy of Pediatrics provides health and safety materials, technical assistance and training to child care facilities and child care licensing staff in Pennsylvania and we use the CPSC Handbook regularly as a resource.

Comments on proposed revisions:

Section 4.3.1 Recommended Maximum Accessible Height

As defined in the *National Health and Safety Performance Standards: Guidelines for Out-of-Home Child Care Programs*, a preschool child is 36-59 months of age and a school age child is 5-12 years of age. Standard FA 251 in the *National Health and Safety Performance Standards: Guidelines for Out-of-Home Child Care Programs* states "The maximum height of any piece of playground equipment shall be no greater than 5 ½ feet if children up to the age of 6 have access to it and no higher than 3 feet if the maximum age of children is 3 years." Using CPSC age guidelines and the proposed revisions, a preschool age child (2 year old) could use equipment 4 feet high and a school-age child (6 year old) could use equipment 8 feet high. We encourage reducing height of equipment whenever possible and refer to the prospective study by Sacks JJ, Smith JD, Kaplan KM, et al cited in the *National Health and Safety Performance Standards: Guidelines for Out-of-Home Child Care Programs,* (see attached reference.)

Page 7, Table 1-Critical Heights of Tested Materials

Although the table is not identified as a proposed revision, based on our use of the chart and comments from the child care community, we suggest modifying the table so that it is easier to read and interpret. The chart could be improved if it was presented in a format that identified the height of the equipment and the amount of surfacing needed, e.g. "If your equipment is X feet high, you need X inches of the surfacing material." (See attached adapted chart.) Consumers are likely to use the height of equipment as the determining factor for selecting surfacing material. Consumers are unlikely to use the amount and type of surfacing material as the basis for choosing height of equipment they use.

*"Advocates For Children"*

Section 5.1.1 Stationary Equipment
Although playground injury data have not identified insufficient spacing as a common cause of injury, reducing the spacing requirements for fall zones does not incorporate child development principles. Children need ample space to explore the areas in which they play. Children can be expected to wander into fall zones of other pieces of equipment unintentionally. Also, the current guideline limits the amount of equipment within a play area and as a result, prevents overcrowding. Therefore, we suggest keeping the 12-foot spacing guideline.

Section 9.4 Protrusions that Project Upwards and Protrusions on Slides
Based on the injury data related to entanglement, we suggest including the more stringent protrusion recommendation.

We appreciate the opportunity to comment on revisions to the Handbook and look forward to the updated version. Please call Libby Ungvary (610/520-9125) if you have any questions about our comments.

Sincerely,

Susan S. Aronson, MD, FAAP
ECELS Director

Libby Ungvary, M.Ed.
ECELS Administrator & T/TA Coordinator

enc.

# National Health and Safety Performance Standards: Guidelines for Out-of-Home Child Care Programs

A Joint Collaborative Project of the

American Public Health Association
1015 Fifteenth Street, N.W.
Washington, DC 20005

and the

American Academy of Pediatrics
141 Northwest Point Blvd.
P.O. Box 927
Elk Grove Village, IL 60009

Support for this project was provided by the
Maternal and Child Health Bureau,
Health Resources and Services Administration,
Department of Health and Human Services
(Grant # MCJ 113001)

| STANDARDS | RATIONALE | COMMENTS |
|---|---|---|
| Sharp edges in wood, metal, or concrete shall be rounded to a minimum of ½ inch wide on all edges. Wood materials shall be sanded smooth and shall be inspected regularly for splintering. | | |
| **FA248.** All pieces of playground equipment shall be designed to guard against entrapment or situations that may cause strangulation by being made too large for a child's head to get stuck or too small for a child's head to fit into. Openings in exercise rings shall be smaller than 4¼ inches or larger than 9 inches in diameter. There shall be no openings in a play structure with a dimension between 4⅝ inches and 9⅛ inches. In particular, side railings, stairs, and other locations where a child might slip or try to climb through shall be checked for appropriate dimensions. Protrusions such as pipes or wood ends that may catch a child's clothing are prohibited. Distances between vertical infill, where used, must be 4⅝ inches or less to prevent entrapment of a child's head. No opening shall have a vertical angle of less than 55 degrees. To prevent finger entrapment, no opening larger than ⅜ inch and smaller than 1 inch shall be present. | Any equipment opening between 4-⅝ inches and 9⅛ inches in diameter presents the potential for head entrapment. Similarly, small openings can cause entrapment of the child's fingers. | See Appendices O–1 and O–2, on pp. 360–361, for guidelines on anthropometry and children's body dimensions in playground equipment. |
| **FA249.** All bolts, hooks, eyes, shackles, rungs, and other connecting and linking devices of all pieces of playground equipment shall be designed and secured to prevent loosening or unfastening except by authorized individuals with special tools. | These devices must be securely installed in order to avoid physical injury to children. | |
| **FA250.** Crawl spaces of all pieces of playground equipment, such as pipes or tunnels, shall be securely anchored to the ground to prevent movement, and shall have a minimum diameter that permits easy access to the space by adults in an emergency or for maintenance. | Playground equipment components must be secure to prevent sudden falls by children. Adequate access space permits adult assistance and first aid measures. | |
| **FA251.** The maximum height of any piece of playground equipment shall be no greater than 5½ feet if children up to the age of 6 are given access to it, and no higher than 3 feet if the maximum age of children is 3 years. | The greater the height, the greater the potential for serious injury. In a recent prospective study in Georgia, falls from equipment higher than 6 feet were associated with more serious injuries.[66] | |
| **FA252.** All paved surfaces shall be well drained to avoid water accumulation and ice formation. | This standard prevents both injury and deterioration of the surface. | |

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# CARING FOR

## National Health and Safety Performance Standards: Guidelines for Out-of-Home Child Care Programs

## Video Series

## Handout Masters

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# Loose-Fill Playground Surfacing Materials: Depth Needed

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| Height of Equipment | Type and Minimum Uncompressed (Not Packed Down) Depth at Point of Impact (More Must Be Installed to Account for Scatter) |
|---|---|
| 5 feet | 6 inches of fine sand<br>6 inches of coarse sand<br>6 inches of medium gravel |
| 6 feet | 6 inches of double shredded bark mulch<br>6 inches of uniform wood chips<br>6 inches fine gravel |
| 7 feet | 6 inches of wood mulch<br>9 inches of uniform wood chips<br>9 inches of fine gravel |
| 9 feet | 12 inches of fine sand |
| 10 feet | 9 inches of wood mulch<br>9 inches of double shredded bark mulch<br>12 inches of fine gravel |
| 11 feet | 12 inches of wood mulch<br>12 inches of double shredded bark mulch |

Adapted from "Critical Heights (in feet) of Tested Materials" Table 2, page 21. For characteristics (fall absorbing characteristics, installation/maintenance, advantages and disadvantages) of organic and inorganic loose-fill materials and of unitary synthetic materials, see Appendix C, pp. 29-31. Loose-fill surfacing materials in list above are described in Appendix D, p. 31. Handbook for Public Playground Safety, Pub. No. 325, U.S. Consumer Product Safety Commission, Washington, DC, 1994.

#45

Theodora Briggs Sweeney
262C Middlebury Lane
Jamesburg, NJ 08831-1703
Phone: 609/860-9408
Fax. 609/860-9459

July 6, 1997

Dear John:

Thanks for forwarding a copy of the draft of the 1997 edition of the CPSC Handbook for Public Playground Safety. Following are my comments on this proposed edition, section by section.

1. Introduction - Suggested Change

Although the focus of this Handbook is public playground equipment, the fact is that some of the same principles do apply to other types of play equipment, even if they are beyond the scope of the present standard. The Handbook for Public Playground equipment represents the most successful effort to date to integrate information culled from injury data, anthropometry, behavioral science, and biomechanical engineering, all of which has resulted in the most comprehensive standard of its kind. Therefore, any "disclaimer," as it were, should only be for the purpose of clarification (e.g., components modified for the handicapped), and should not imply that the same principles don't apply elsewhere. In many cases they do apply, and in some instances (such as the Soft Contained Play Equipment standard), the Handbook is specifically referred to.

Following the first sentence in paragraph 3 of this section, I suggest the following wording as being a more accurate statement of the relationship between these different efforts:

Guidelines for amusement park equipment, equipment normally intended for sports use, soft contained play equipment, equipment found in water play facilities and home playground equipment are not addressed in this Handbook. Adult fitness trail equipment is also not addressed in this Handbook, provided that it is not located on, or adjacent to, a children's playground.

2. Playground Injuries - Suggested Restoration

As written, this section mentions that the Handbook addresses hazards related to impact, surfacing, entrapment, etc., but, once again, as with the 1991 and subsequent revisions, makes no mention of the lack of slip-resistance as a safety problem. While the need for slip-resistant finishes

was addressed in several places in the 1981 Handbook, the subject was subsequently dropped—despite ongoing evidence of injuries which are directly due to children's slipping from equipment.

Recommendation: Re-affirm the need for a slip-resistant finish on climbing components.

Rationale: Serious injuries are occurring as the result of children's slipping from equipment. I personally know of cases in which slippery playground equipment has resulted in children's sustaining severed facial nerve channels, loss of a kidney, and severe groin injuries. The fact that there are diverse ways to achieve slip-resistance is not a good enough reason to do nothing at all.

3. Definitions - Suggested Editorial Change:

Critical Height - Current wording is confusing. I suggest:

The fall height below which a life-threatening head injury would not be expected to occur.

4.3.1 Recommended Maximum Accessible Heights - Comment:

Given the difficulty of ensuring that the surfacing material underneath playground equipment will be adequate to prevent serious injury in case of falls, it is essential to limit the accessible part of any equipment to a maximum of 8 feet for school-age children, and 5 feet (for horizontal ladders) for pre-school children.

6.3 Age Separation of Equipment - Suggested Change:

I recommend revising the final sentence in this section to read as follows:

Signs should be posted in the posted in the playground area to give some guidance to adults as to the age appropriateness of the equipment.

Rationale: In my experience, most parents really don't understand that their child's eagerness to use a particular piece of equipment doesn't necessarily mean that they're developmentally ready for it. In a significant number of the playground injury cases with which I've been involved, the children were using equipment which was clearly beyond their developmental level. Parents really do need guidance here, and clear signs as to the age level of intended users could help provide it.

10.2 Stairways and Ladders - Comment:

It is important to retain 35 degrees as the maximum slope for stairways on playground equipment for the reason cited in your letter, namely, this is the slope that children are accustomed to from stairways in their own homes. The challenges that playground equipment poses are quite enough without requiring children to re-learn the proper body angle for climbing stairways. In this as in other areas, it is essential that the principles of safety, carefully and laboriously arrived at, not be sacrificed in the name of a harmonized standard, lest we end up with a wishy-washy, lowest common denominator. If the ASTM committee and the Canadian standard want to differ, that's their problem. I would urge the CPSC to hold its ground where safety is concerned.

12.1.3 Climbers With Non-Rigid Components - Suggested Editorial Change:

As written, paragraph 2 of this section is ambiguous. It needs to be brought into conformity with Section 9.7, "Tripping Hazards," which states that "all anchoring devices...should be installed below the protective surfacing material..."

I suggest revising sentence 2 of paragraph 2 to read:

When one end is connected to the ground, the anchoring devices should be below the protective surfacing material.

12.1.6 Sliding Poles - Negative Vote on Proposed Revision

If the proposed MINIMUM(!) height of a sliding pole is 60 inches above the access platform, this means that the platform itself can only be 3 feet high in order for the pole not to exceed the 8' maximum allowable height of a designated playing surface. Since it is essential to maintain an 8 foot maximum height for a designated playing surface, and there is no demonstrated safety reason to raise sliding poles to 60 inches, (conformity with the Canadian standard is not a safety reason) to make such a revision makes no sense. Just say no.

12.4.1 Slides - Suggested Editorial Change:

Since Section I, "Introduction," has already stated that water play facilities are not addressed in this Handbook, to insert it here is redundant.

Recommendation: Delete last sentence in this section as redundant.

12.4.8 Tube Slides - Suggested Change

As written, this section specifies that "The minimum internal diameter of the the tube slide should be no less than 23 inches." No maximum allowable diameter is specified, nor is any mention made of different size requirements for the younger age group. Since injuries have been reported when small children have ended up turned around inside large slide chutes, this whole area needs to be addressed. If is not feasible to reduce the diameter of tube slides, then this is another reason to post signs as to the age-appropriateness of playground equipment.

Recommendation: Develop age-appropriate guidelines for tube slides.

12.6.3 Tot Swings - Suggested Change

No maximum distance between the underside of the swing and the protective surface is specified, nor is any explanation given for the minimum figure of 24".

Recommendation: Specify the maximum recommended height of a tot swing.

I will look forward to seeing the results of this canvass, as well as the staff's comments on these recommendations.

Very truly yours,

Theodora Briggs Sweeney

PLAYGROUNDS INC.

July 2, 1997

Mr. Andy Stadnick
Consumer Product Safety Commission
4550 East West Highway
Bethesda, MD 20814

Dear Mr. Stadnick,

Thank you for the opportunity to comment on the proposed revisions to the CPSC Handbook for Public Playground Safety.

5.1.3. Second Paragraph- When a playground is originally designed, the purpose of a swing structure may be solely for use by tots- future managers of a play site may not have the design history of the site and subsequently change the tot swings to sling swings without adequate fall zones. (trees may encroach enough as well as the containment method posing a hazard as well do to the relationship to the sling swing user.)

Suggestion- Tot swings could be labeled to warn consumers to only replace swings with like types of swings.

12.1.1. Recommend consistent terminology section 6.3 refers to "vertical" sliding poles; suggest "vertical" be inserted before sliding poles in this list as well.

12.1.7 We currently design and install several climbing components using a 1" diameter nylon rope as a hand griping component. We do not find that this is a hazard as the rope is securely fastened at the top and bottom, our rope is short so that it only allows children enough slack for the intended climbing activity and therefore is not long enough for children to form a noose. If this is changed as suggested, we will be unable to continue constructing our most challenging access components.

2735 Dorr Avenue Fairfax, VA 22031 703-698-4334 Fax 703-698-8610

WOODSET. LION'S PRIDE.

Mr. Andy Stadnick
CPSC
July 2, 1997

12.3, particularly the figure 16 showing the automobile tire at the contact point of each end of the seesaw.

Suggestion: Show the tire beneath the surfacing in the diagram. Many people have not understood that you must bury half of the tire and leave the other half exposed to provide the cushion.

Thank you for the opportunity to submit our comments. If you have any further questions or need clarification, please feel free to have you or the CPSC staff contact us.

Sincerely,

Jean Schappet, CPSI
Founder & Chief Designer

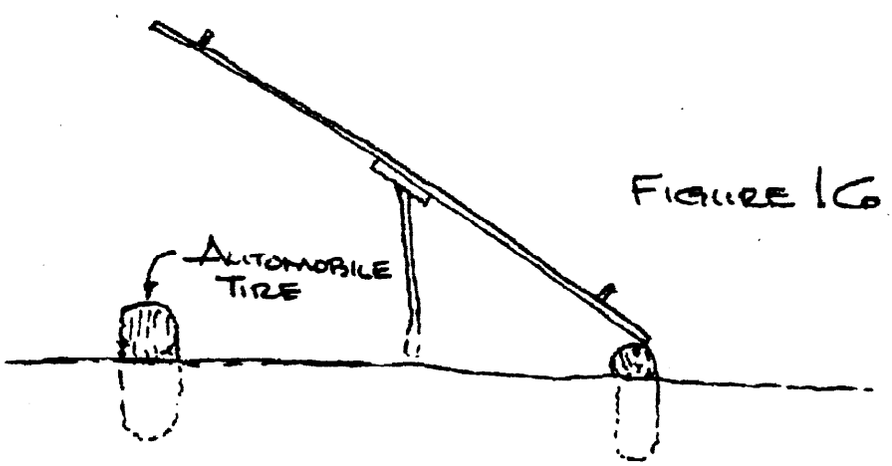


FIGURE 16

#47

**Spokane Regional Health District**
**Environmental Health Division**
**Memorandum**

**Date:** July 3, 1997

**To:** John Preston, CPSC

**From:** Julie Awbrey, Living Environment Program Supervisor

**Subject:** Comments on Proposed Revisions to CPSC Handbook for Public Playground Safety

---

Several of our staff members have reviewed the proposed revisions to the above handbook. As background information, our staff has jurisdiction over K-12 schools within Spokane County, Washington. We inspect school playgrounds on a routine basis, review plans when new equipment is proposed in schools, and provide consultation to our local parks departments. Our staff is NPSI certified and has also participated in training provided by our state Department of Health. Our comments reflect experiences we have had in the field.

| Section | Comment |
|---|---|
| 1, 2nd Paragraph | We suggest you add "state and local health officials" as intended users |
| 1, 5th Paragraph | Add "trained" to the recommendation for adult supervision |
| [illegible] Paragraph, Page 2 | The definitions of preschool and school-age are somewhat confusing since 5 year olds are in kindergarten, not preschool. |
| 4.3, [illegible] | Be consistent with the verbiage, either "above the ground", or "above the protective surfacing". |
| 4.3.1, Page 5, 1st Paragraph | The revised wording states that the recommended maximum height for horizontal ladders for preschool children is 5 feet. The 1994 version of CPSC states in section 9.3.5 that four year olds are the youngest children capable of using upper body devices. That should be referenced in this new wording. |
| 4.3.1, Page [illegible] | We would like to see "accessible height" more defined. In section 4.5, the highest accessible part of a climber is the maximum height of the structure, yet 4.3.1 suggests that a roof is not included in the maximum height. In our experience, we have observed children climbing onto equipment roofs. We do not think that a roof |

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over a platform is a good example of being "totally enclosed" unless the protective barrier extends from the platform to the roof, with no openings large enough for the small torso template to pass through.

| | |
|---|---|
| 4.5, Paragraph 4 | How does one guarantee daily inspection of loose-fill materials? Lack of maintenance seems to be a universal finding; a guarantee is unrealistic. |
| Table 1, Page 7 | Is there an error in the table? The 1994 printing of CPSC shows a critical height of 7 feet for 9 inches of compressed double shredded bark mulch.<br><br>Will table 1 list shredded tires? They are listed as an example of loose fill material in the text. |
| Page 7, Last Paragraph | Note: we have observed playgrounds where the fabric liners have been pulled up during the rototilling/raking of the resilient surfacing. |
| 5, Page 8 | Thank you for removing the no encroachment zone. It was very difficult to determine. |
| 5.1.6, Page 10 | Is the "maximum height" of the spring rockers the same as the "highest accessible part" (i.e., seat or designated play surface) in section 4.3? This should be consistent. |
| 5.1.7, Page 10 | We strongly disagree with this section. It makes absolutely no sense that two stand alone pieces of equipment must have adequate fall zones, yet if a deck is installed between the pieces of equipment, they now become "events" on a composite structure and must not comply with the fall zone guidelines. Does the hazard disappear when the equipment is connected? Of course not. In fact, a greater hazard my occur with the increased traffic flow. Is there sufficient injury data to support the "watering down" of this section by the proposed wording changes? There should be design requirements for composite structures to separate activities and fall zones. |
| 6.3, Page 11 | Add horizontal ladders to list of equipment not recommended for pre-schoolers; define long spiral slides to ≥ 1 turn. |
| 8.1, Page 15 | In reference to creosote: the recommendation should also apply to loose-fill containment barriers, i.e., railroad ties, which children sit on , play on, lie on, etc. |
| 8.2, Page 15 | In reference to "S" hooks: the phrase "as tightly as possible" is too ambiguous. We recommend using a specific dimension (e.g., ≤ 0.04 inches, from ASTM 6.3.1). Also add: "open "C" and "E" hooks should not be used. |
| 9.6, Page 18 | We feel CPSC should also address partially bound openings to be in line with ASTM 6.1.4. |
| 11.1, Page 22 | We have observed rounded log platforms which are very difficult to maintain balance on; verbiage to state that platforms should be made of flat materials may be helpful. |

# 47

| | |
|---|---|
| 11.6, Page 24 | We strongly support the addition of the 15 inch opening width. |
| 12.1.2, Page 25 | We strongly oppose the deletion of the section referring to interior bars. Many old jungle gyms and climbers have interior bars onto which a child could fall more than 18 inches and suffer a severe injury. Why has this wording been removed? |
| 12.1.3, Page 23 | In reference to connections between ropes, etc., add a specific dimension to the "S" hooks, e.g., ≤ 0.04 inches. |
| 12.1.5, Page 27 | The section on horizontal ladders is again contradictory, as horizontal ladders/upper body equipment is not recommended for 2-4 year olds. |
| 12.4.9, Page 33 | Why are roller slides no longer on the "not recommended" list? |
| 12.6.3, Page 35 | Should the larger tot-style disabled swings be included in the recommendation to separate them from other swings? |
| 12.6.5, Page 36 | Add gliders/sky riders to the list of swings not recommended for public playgrounds. |
| Appendix A, Page 38 | Add to Surfacing:<br>____ Fabric liners have not been pulled to surface, posing a trip hazard<br><br>Add to General Hazards:<br>____ Ball field (e.g., soccer, softball) boundaries do not overlap into play area<br><br>____ There are no poisonous plants (or with seasonal poisonous berries) growing within the play area or accessible to children |

Thank you for the opportunity to comment on the proposed revisions. If you have questions regarding the nature of our comments, please contact us at (509) 324-1560, ext. 4.

c: Sandy Phillips, Spokane Regional Health District
Diane Nebel, Spokane Regional Health District

#48

L.A. STEELCRAFT PRODUCTS, INC.
P.O. Box 90365
Pasadena, Ca. 91109-0365
626-798-7401
Fax: 626-798-1482

# PRIORITY

July 3, 1997

FAXED 7-7-97

Mr. John Preston
Directorate for Engineering Science
U.S.C.P.S.C.
4330 East West Highway
Washington, D. C. 20207

RE: C.P.S.C. Guidelines / ASTM Standards

Dear Mr. Preston:

First of all I want to thank you for your many years of service ensuring that we have had some good guidelines for our Industry to follow. We can only imagine the number of hours that you have dedicated to this matter. We have been manufacturers of playground equipment for over fifty years in the Southern California area any have used the CPSC Guidelines since 1981 as our "bible" and "blueprint" for our equipment. Of course when the Indusrty decided that we needed a Standard, we were involved with the ASTM movement from the first meeting and continue to have one of our engineers on one of the committee.

We have received a draft copy of a letter that will be forth coming to you from IPEMA, which agree with. We wholeheartedly urge you to contemplate this letter calling for working towards a harmonized Guidelines/Standards. We feel that it is imperative that our guidelines be harmonious and uniform throughout the country. We can not survive with each state adopting either the CPSC Guidelines or the ASTM Standard as their states code.

I believe that we have made great strides and only need to work a little longer and harder and we can accomplish our goal of a unified standard for the entire country. I would urge you to contact me if you have any questions or if I can be of any assistance.

Sincerely,

James D. Holt

James D. Holt
President

#49

FIBAR SYSTEMS®

Office of the President

FAXED
June 30, 1997
(Dictated June 20th)

Mr. John Preston
CPSC
4330 East West Highway
Bethesda, Maryland
(Fax: 1-301-504-0588)

Dear John:

I appreciate the opportunity to comment on the draft of the revisions to the CPSC Handbook. I would respectfully suggest that you include Engineered Wood Fibre as one of the surfaces available for use in commercial playgrounds. We estimate that over 30,000 have been surfaced with various commercial Engineered Wood Fibre materials as well as many more using locally-available Engineered Wood Fibres. The Department of the Interior uses the term Engineered Wood Fibre pointing out the special differences between this product and wood chips, etc. I have enclosed a copy of this letter for your review. The Access Board also uses the term Engineered Wood Fibre. There is considerable data available regarding impact attenuation of Engineered Wood Fibre that could be added to your table.

1. Recent Round Robin testing by ASTM 1292 comparing the free-fall tri-axial headform be with the Guidewire headform C.
In this report you can see drop heights from six different test sites. In addition, Detroit Testing Laboratories recently tested eight Engineered Wood Fibre samples as part of the IPEMA certification process. Those test results are also included and you are free to use them without further permission.

2. Compressed Depth of Materials
Since immediately after installation, once children have started to play on any loose-fill surface it becomes naturally compacted, any tests to validate various generic surfaces should be tested at compacted depths. The Round Robin test procedure referred to in No. 1 outlines the method

(More)

Fibar, Inc., Suite 300, 80 Business Park Drive, Armonk, NY 10504-1705 (914) 273-8770 800 342-2721 Fax (914) 273-8659
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used to compact the material and, in the absence of a more sophisticated method, we think that this method of compaction is acceptable. We know that 12" of loose material will compact approximately 4" to 8" and that 10" of material will compact to 6".

3. Wear Mats under swings, slide exits, sliding (fireman's) poles, and other hard-use areas.
We have found it necessary to advise customers to use a wear mat in all heavy-use areas such as those listed above. We use a mat no smaller than 40" x 40" which, we believe to be adequate to protect the heavy-wear area. Several other commercial companies have a similar device as part of the installation instructions for their system. I know that you have a concern, which I share, for installing loose-fill material over a hard sub-base. These wear mats, in most instances, prevent craters occurring in these hard-use areas. If placed on top of the surface, these mats ensure that no excessive wear or cratering occurs in these hard-use areas; therefore, were there a hard sub-base the chance of that hard sub-base be exposed and being, therefore, hazardous, is eliminated.

4. Wood mulch/double shredded bark mulch.
Since you have carefully provided readers of the Guidelines with a sieve analysis for sand and fine gravel, I think it is equally appropriate to provide a sieve analysis for hardwood mulch and double ground shredded bark mulch. The wide range of quality of materials that would be considered responsive to either of these categories means that the consumer could receive material that often contains very large pieces of wood up to 8" in length. These pieces of wood are both hazardous if a child fell upon them but also could be used by a child as a "weapon." A sieve analysis requiring that 100% passed a 3/4" screen as well as not greater than 15% passing a #16 sieve would effectively eliminate materials that contained "overs" and "fines." Whilst these are my major concerns regarding wood mulch and double-shredded bark mulch, you already know my opinion that both of these products deteriorate rapidly immediately after installation and can provide a false sense of security within six to twelve months after installation were they not topped off on a very regular basis. It is our experience that bark mulches attract worms and other living organisms. It is also our experience that bark mulch, once compacted and having started natural organic breakdown, does not drain adequately and can leave the consumer with a surface similar to good-quality topsoil!

(More)

I hope that my comments are taken as constructive and not as representing the special interest of a manufacturer of Engineered Wood Fibre. Engineered wood fibre is probably the largest single playground surface in the United States; therefore, I sincerely believe it deserves a rightful place in your new handbook.

I am always available to answer questions. Thank you for all of the hard work you have done at the CPSC; your contribution has been a significant factor in improving the safety of children's playgrounds throughout the U.S.

Yours very sincerely,

Robert G. Heath
President

RGH:mld
Enclosures

2/commcpsc.sam/1.2

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# 49

United States Department of the Interior

TAKE PRIDE IN AMERICA

NATIONAL PARK SERVICE
P.O. Box 37127
Washington, D.C. 20013-7127

IN REPLY REFER TO:

JUN 2 1994

P4217(010)
010-15-93

COPY

Ms. Judith Schmidt-Lehman
Assistant City Attorney
Room 300-City Hall
Green Bay, Wisconsin 54301

Dear Ms. Schmidt-Lehman:

Thank you for your letter of February 28, 1994, indicating your agreement to provide accessible surfacing at the Wilder playground. You have also requested us to approve, as accessible, certain types of surface materials. While we believe that a determination as to whether or not a particular site's surface is firm, stable, and slip resistant depends on many factors, we have taken a closer look at the properties of the wood fiber and the rubber matting materials, which you are considering.

After reviewing the materials you have forwarded, making several onsite inspections of the various materials, and holding discussions with various representatives from manufacturers and users, we have concluded that both wood fiber and rubber matting materials may be accessible under certain conditions. During our review, we observed both wood fiber and rubber matting as an accessible surface and as an inaccessible surface in play settings.

Our review disclosed that not only did each of these materials need to be firm, stable, and slip resistant after installation, but that permanent accessibility depended on proper installation, drainage, and regular maintenance. In addition, as you have indicated with respect to the Wilder playground, a web of accessible pathways to and from the various pieces of equipment may be impractical. The most ideal situation may be an accessible surface for the entire "use zone", as defined by the ASTM, under and surrounding all play equipment. However, we believe that only accessible routes to the various transfer stations at the play equipment and the accessible swing are required.

We have distinguished between wood fiber and wood chips by defining wood chips as being of such size and proportions as to never be able to mat or knit together to form a firm, stable, or slip resistant surface. Wood chips have so much space between them that they are easily displaced when stepped on or rolled over. This produces an inaccessible surface for an individual using crutches, a walker, or wheelchair. However, we have observed that a wood

fiber surface of smaller elongated pieces of wood can mat or knit together to form an accessible surface.

Problems encountered with wood fiber relate to the amount of time to settle into this matted or knitted state, displacement due to users digging and jumping, looseness due to dampness, and loss of standard reach distances at transfer points due to settling and displacement. Proper installation with adequate drainage and regular maintenance, including replenishment of the displaced wood fiber material, are necessary to maintain it as an accessible surface.

Rubber matting materials, either poured or in tiles, are accessible almost immediately after installation but must have adequate drainage and be inspected regularly to ensure that the surface has not been cut up or come loose.

In conclusion, we believe that either the wood fiber (as opposed to woodchips) or rubber matting may be an accessible surface. However, these materials may also become an inaccessible surface without proper installation, drainage, and maintenance. If these surfaces become inaccessible, users may file further complaints against the responsible entity. Also, an initial settling period for wood fiber of thirty days or more is considered unreasonable. Thus, additional steps in the installation process may need to be taken to ensure a firm, stable, and slip resistant surface before the play area is open to users.

In regards to the resiliency of these materials, each are subject to freezing depending on the amount of water being held by the material. This again relates to the need for adequate drainage. Although, at Green Bay's extreme cold temperatures, rain and snow may freeze immediately on the surface effectively rendering drainage capabilities as nonexistent. In such instances due to natural circumstances, public entities may have no control over the resiliency or slip resistance of the surface.

With respect to the resiliency of rubber matting under extreme cold temperatures without the added factor of rain or snow, we have found that the CPSC has only tested materials at 30 degrees fahrenheit. We have also found that Mr. Frank Congemi of American Rubber Tech (718 520-0401) and Mr. Alfredo Apollini of the Detroit Testing Laboratory, Inc. (313 754-9000) have information related to the testing of rubber materials at 0 degrees and 58 degrees below 0, respectively, without detriment to resiliency. You may want to contact them directly for further information. You may also want to assess your long term costs, in addition to your initial costs, for both wood fiber and rubber surfaces. Procurement specifications could also provide for the testing of materials to meet temperature and resiliency requirements for your area.

At this time, we believe that we have provided the necessary information for you to make your decision relating to the use of wood fiber or rubber matting. We also expect Green Bay to take action and provide an accessible surface to the Wilder Playground by July 1, 1994. This should allow for an adequate climate for proper installation.

Please feel free to contact Jack Andre of this Office at (202) 208-6275, if you have further questions.

Sincerely,

Sandra McCrary
Director, Equal Opportunity Program

CC: Gary Schott
Honorable Harris Wofford
United States Senate
Michael A. Kulis
Office of the Honorable Arlen R. Specter
United States Senate
Theodore F. Illjes
Zeager Brothers, Inc.
Director, Office for Equal Opportunity
Chief, Recreation Grants Division
MWRO, Recreation Assistance Program