



U.S. CONSUMER PRODUCT SAFETY COMMISSION  
5 Research Place, Rockville MD 20850

March 11, 2019

TRANSMITTED VIA EMAIL

Sandy Russell  
ASTM International  
100 Barr Harbor Dr.  
West Conshohocken, PA 19428-2959

Re: ASTM Ballot F15 (19-01), Item 4, Proposed Ballot Item for Acute Angles

Dear Ms. Russell:

Ballot Item 4 is a proposal to modify section 6.2 of ASTM F1148-18, *Standard Consumer Safety Performance Specification for Home Playground Equipment* as indicated below:

Motion: Make the following modification noted in red to section 6.2

6.2 Acute Angles—There shall be no acute angles, or group of acute angles, **within an accessible opening as defined by 6.1.1. These angles are** formed by two or more members in which the legs point upward from the apex so that the configuration approximates a “V” with an interior angle less than 55° (0.96 rad)

CPSC staff is concerned that the proposed modification could result in an unintended hazard for partially bound openings with a V shape (Figure 1). CPSC staff understood the intent of this proposed ballot was to address the out of reach enclosed acute angles. The proposed modification limits the acute angles within a completely bounded opening that is accessible to the torso test. However, this would exempt any angle that was not completely bound, rather than address the reach or other factors contributing to inaccessibility. CPSC staff acknowledges that there are limited incident data regarding acute angles and partially bound openings on playgrounds. There is one case from many years ago that involved a head-first entrapment in a home swing set. However, the recommendation to avoid angles less than 55 degrees on playgrounds is in the ASTM’s public playground standard. In addition, the recommendation to avoid angles less than 55 degrees on playgrounds has been in existence since CPSC first published its *Handbook for Public Playground Safety*, almost 40 years ago and has never been limited to completely bound openings. Therefore, the lack of incident data may be an artifact of no play equipment, home or public, with such an angle. The head-first entrapment in angles is a recognized hazard pattern with other products encompassing young children, such as baby gates.<sup>1</sup> The home playground standard addresses play equipment to children 18 months to 10 years old, an age range that overlaps with baby gates (6 to 23 months).

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<sup>1</sup> <https://www.cpsc.gov/content/some-baby-gates-are-dangerous-others-are-safer>

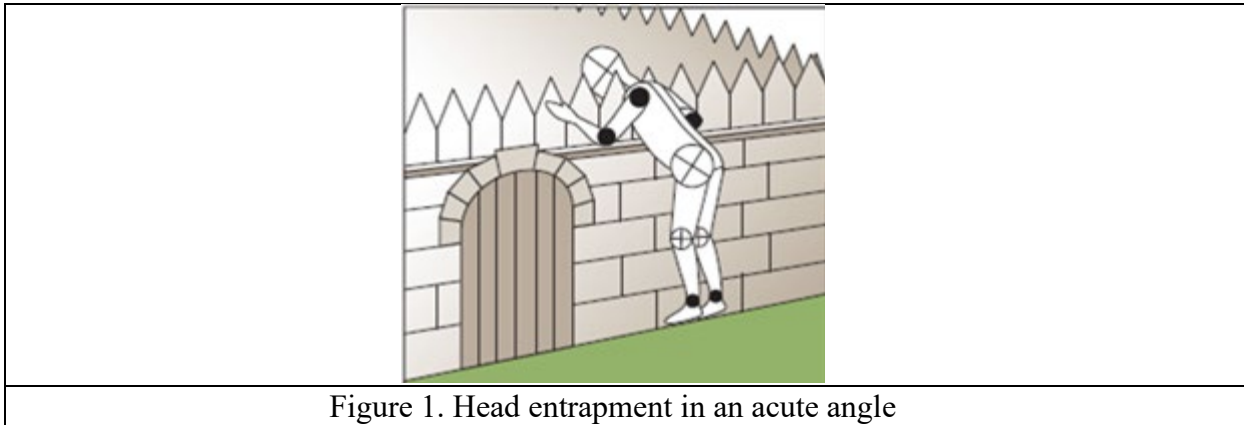


Figure 1. Head entrapment in an acute angle

CPSC staff recommends that the subcommittee consider alternative definitions of “accessible openings” for acute angles that would encompass more entrapment scenarios (e.g., feet first or head first entrapment in both partially or completely bound openings) than the one definition proposed in the ballot item. Alternatively, the subcommittee could consider the partially bounded opening probe used in ASTM F1487-17, *Standard Consumer Safety Performance Specification for Playground Equipment for Public Use* and the CPSC’s *Handbook for Public Playground Safety*.

Sincerely,

Kevin K. Lee  
Mechanical Engineer  
Division of Mechanical and Combustion

CC: Patricia L. Edwards, CPSC Voluntary Standards Coordinator  
Len Morrissey, ASTM International  
Molly Lynyek, ASTM International