United States
Consumer Product Safety Commission

August 18, 2023

TRANSMITTED VIA EMAIL

Chris Gulbrandsen,
Chair, F15.21 ASTM Subcommittee Infant Loungers Performance Requirements Task Group
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Dear Mr. Gulbrandsen,

The U.S. Consumer Product Safety Commission (CPSC) staff[1] appreciates the opportunity to provide comments on the ASTM Infant Loungers subcommittee's draft standard.

In preparation for the May 2, 2023, subcommittee meeting, the performance requirements task group provided a preliminary draft of the infant loungers voluntary standard and requested feedback from task group members. Among its comments on the draft voluntary standard, CPSC staff included a comment on the proposed side height requirement. The draft standard's side height requirement states: "When measured from the top surface according to section 7.11, the height of the sidewall shall be less than 4.0 in (10.2 cm)." CPSC staff expressed concern that a side height of up to 4 inches may give the impression to consumers that the product can safely contain a child without supervision, regardless of what the product warnings might say. Staff recommended that the subcommittee consider adding a performance requirement to the draft standard for infant loungers that would not allow for any distinct, raised perimeter surrounding the occupant support surface, thereby providing a visual cue to consumers that the infant is not contained, but merely supported by the product. Per your request during the June 6, 2023, performance requirements task group meeting, CPSC staff is providing additional rationale and support for this recommendation to add a performance standard addressing the side height concern.

Infant loungers that would fall under the scope of the draft standard come in a variety of shapes, sizes, surfaces, and side heights, and it is important to address hazard patterns such as positional asphyxia and suffocation in performance requirements applicable to all lounger products. The Infant Sleep Product Rule (ISP Rule) (16 C.F.R. part 1236) requires that the surface of the infant sleep product have a maximum incline angle of 10 degrees or less to address positional asphyxia and suffocation hazards. To address the variety of styles and surface heights in lounger products, CPSC staff proposes the lounger standard use the ISP Rule maximum incline angle requirement with modifications (Figure 1).

[1] The views or opinions expressed in this letter are solely those of the staff, and do not necessarily represent those of the Commission.

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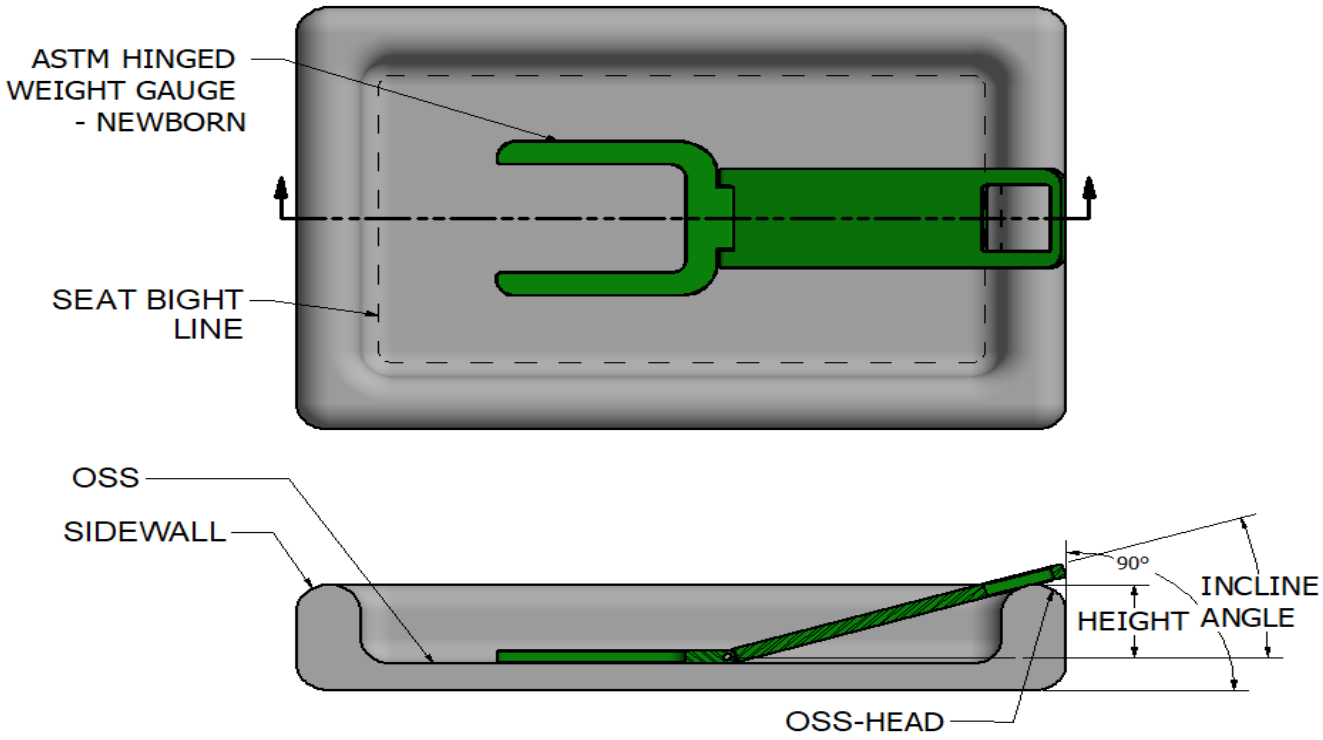

Figure 1. CPSC staff's proposed maximum incline angle requirement, which uses the lowest surface (OSS) and the highest surface (OSS-head) of lounger products to determine the incline angle. Considering the geometry of this gauge, the height of the side could be estimated as follows: side height = length of torso section of newborn hinge gauge x sin(maximum incline angle). Using the 11-inch length of the hinge gauge torso section and the 10-degree maximum incline angle, the side height is calculated to be 1.9 inches. The actual product side height will be higher due to the compression of the sidewall material under the weight of the newborn hinge gauge.

It is foreseeable that a lounging infant can have their head and body positioned on these different surfaces in a variety of ways, creating an angle which, if greater than 10 degrees, could pose an increased risk when the infant falls asleep. Therefore, CPSC staff proposes that measurement of the maximum incline angle with the newborn hinge gauge as described in the ISP Rule should be performed in the following ways: first, from the lowest occupant support surface (OSS) on which the infant occupant may be placed when supported by the lounger product as shown in figure 1 and figure 2 (green line), to the highest surface the infant occupant's head may be placed, including the sides of lounger products (OSS-head); second, from the surface on which the lounger is placed, such as the floor as shown in figure 2 (red line), to the highest surface the infant occupant's head may be placed, including the sides of lounger products (OSS-head).

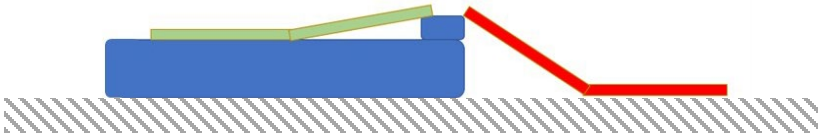

Figure 2. CPSC staff proposes conducting the maximum inclined angle test from the lowest surface of the product where an infant may be placed to the highest surface and infant's head may be placed (green lines), and in addition an outside position from floor or support surface of the product to the highest surface on the product including the sides of the product (red line).

Due to the geometry of the newborn hinge gauge and the ISP Rule methodology for measuring the maximum incline angle, this requirement would limit the height of the side that the infant occupant comes in contact with while using the product to about 2 inches. CPSC staff measured the maximum incline angle of eight lounger products of different shapes and sizes, using this modification of the requirement in the ISP Rule, and observed that loungers that had maximum incline angles of 10 degrees or less had a more gradual transition from the lower surfaces to the higher surfaces of the products, and therefore appeared less likely to contain the infant occupant (Figure 3 left). In contrast, lounger products that had maximum incline angles greater than 10 degrees had more defined, raised upper surfaces or sides along the perimeters of the products, which tended to give the impression that these products could contain the infant occupant (Figure 3 right). CPSC staff recommends adding this maximum incline requirement to the lounger standard because, in addition to addressing positional asphyxia and suffocation hazards, it addresses potential visual cues that might suggest that infant lounger products could safely contain the infant occupant.

Also, CPSC staff notes that conducting the maximum inclined test as illustrated in Figure 2 (red line) from the floor outside the product to the highest surfaces including sides would also limit the overall height of the lounger products to less than 2 inches. If a consumer uses a lounger inside of another product, such as a crib, bassinet, or play yard, and the infant rolls/falls out of the product, there is a potential for the infant to become wedged between the lounger and the other product. Limiting the overall lounger side height to be 2 inches or less reduces this entrapment potential.

CPSC staff assesses the proposed maximum incline angle requirement will address the hazards posed by lounger side height issues and containment visual cues. Based upon the above discussion, staff considers the proposed 4-inch side height to pose risks to infants and recommends minimal height with no distinct, raised perimeter. However, if ASTM allows a raised perimeter with a maximum height requirement, staff also has concerns regarding the side height measurement proposed in the ASTM draft lounger standard and recommends a different test procedure.

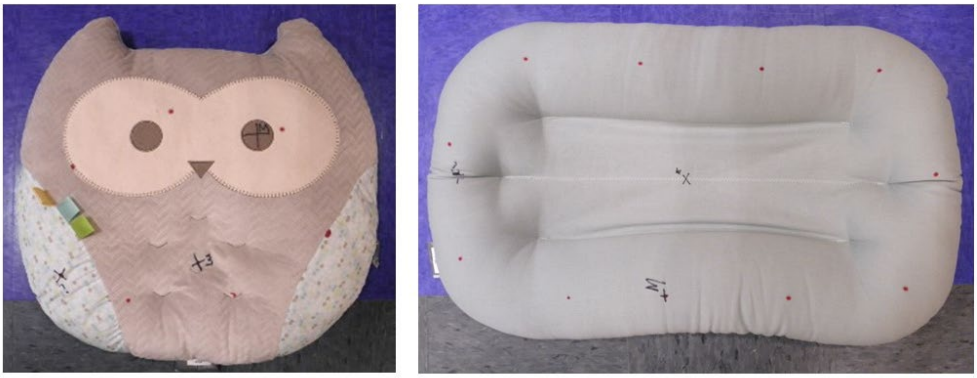

Figure 3. An example of a lounger product with a maximum incline angle of 4.6 degrees (left) compared to a lounger product with a maximum incline angle of 21.4 degrees (right).

Before arriving at the above recommendation to use the ISP Rule's maximum inclined sleep angle requirement, staff conducted comparison testing using a 3-inch hemispheric probe instead of a 0.25 inch (6 mm) thick, 6 x 6-inch aluminum plate for the initial OSS compression as proposed in the ASTM draft test method for measuring side height, in section 7.11. The test proposed in the draft standard places the aluminum plate next to the side wall of the infant lounger, to compress the OSS; the side height is measured from this compressed surface to the top of the side wall. CPSC staff observed that the weight of the 6 x 6-inch aluminum plate was less than the weight of an infant's head and therefore the surface would be compressed less under the aluminum plate than it would be under an infant's head; this would likely result in a measured side height lower than what the infant occupant would actually experience while in the product. The 3-inch probe CPSC staff used more closely approximates the size and shape of an infant's head and can better fit within the smaller lounger products as compared to the aluminum plate.

Figure 4 illustrates how the 3-inch probe can be used to measure side height. First, the side of the 3-in probe is positioned vertically and tangentially to the intersection of the sidewall and OSS, and a 10 N (2.2 lb) force is applied. Second, the measured height is taken from the base of the hemisphere to the top of the sidewall. Because using a 3-inch probe to compress the OSS with a 10 N force is more consistent with the weight and placement of an infant's head, CPSC assesses that this testing procedure would yield results that would more effectively address the entrapment and other hazards.

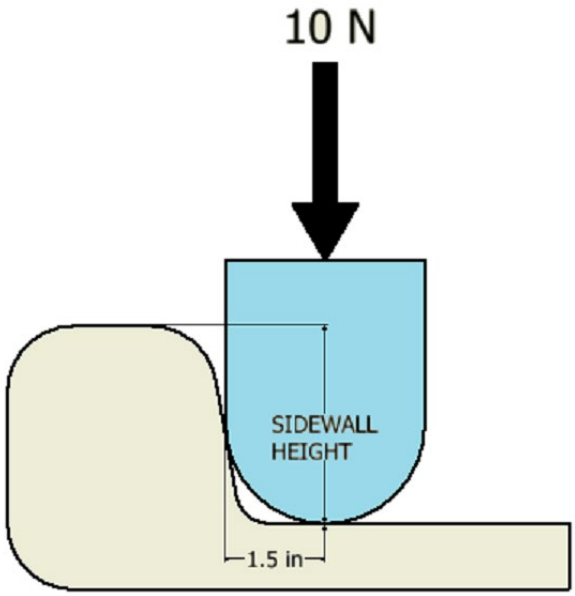

Figure 4. Side height measurement using a 3-inch hemispheric probe.

Comparing side height measurements for eight different lounger products using CPSC staff's recommended method with the 3-inch probe, and the draft infant lounger standard's proposed method using the 6 x6 aluminum plate, shows that the measurements for the method in the draft lounger standard are consistently lower than the CPSC proposed method (Figure 5). CPSC staff is concerned about possible underestimation of the side height that could increase the likelihood that the infant occupant would be exposed to potential asphyxia, suffocation, and entrapment hazards.

We look forward to discussing these ideas at the next Performance Requirements Task Group meeting.

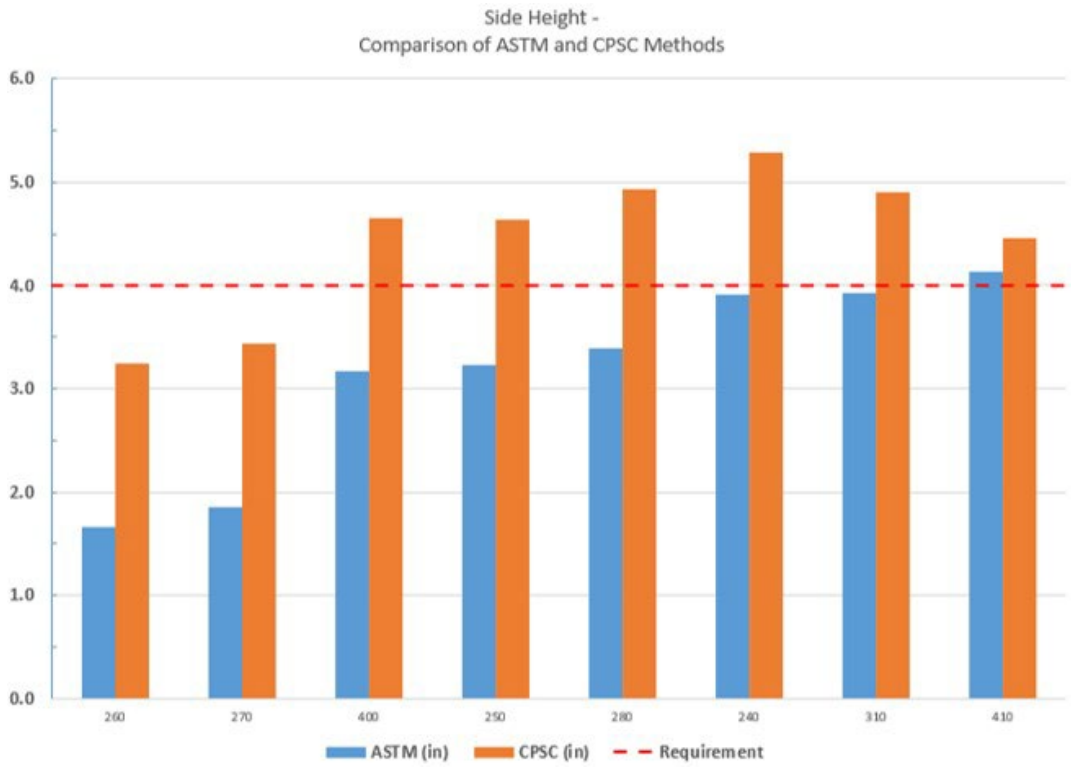

Figure 5. Side height measurements using a 3-inch hemispheric probe (CPSC) compared to side height measurements using a 6 x 6 aluminum plate (ASTM).

Sincerely,

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