United States
Consumer Product Safety Commission

Staff Briefing Package

Petition CP 25-2:
Petition Requesting Rulemaking to Require Child Resistant Ladders for Above Ground and Portable Pools

May 15, 2026

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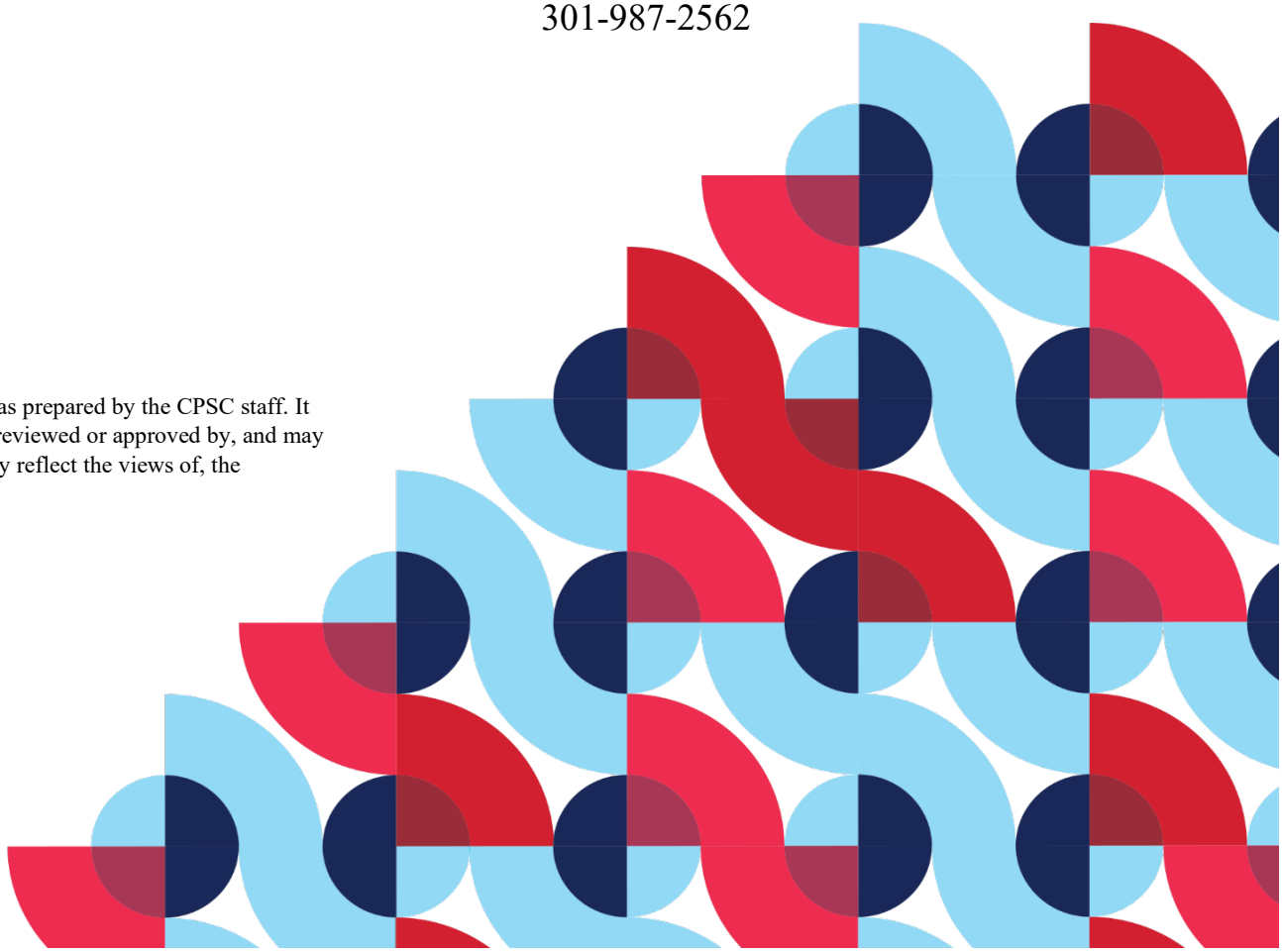

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ATTACHMENTS

Requesting a Mandatory Regulation for Child-Resistant Aboveground and Portable Pool Ladders," dated, May 15, 2026.

TAB E: Memorandum from Jaclyn Kramer, Directorate for Economic Analysis, "Market and Economic Considerations for Child-Resistant Aboveground and Portable Pool Ladders," dated, May 15, 2026.

TAB F: Memorandum from Reid Landis, Division of Enforcement and Litigation, "Applicable recalls for aboveground and portable pool ladders," dated, May 15, 2026.

TAB G: Memorandum from Sharon White, Division of Human Factors, Directorate for Engineering Sciences, "Staff Response to Comments Received on Petition CP 25-2," dated, May 15, 2026.

Executive Summary

On January 22, 2025, Carol Pollack-Nelson, Ph.D., of Independent Safety Consulting (Petitioner), petitioned the U.S. Consumer Product Safety Commission (CPSC or Commission) to initiate a rulemaking to require that all ladders sold with and for use with aboveground and portable pools be child-resistant and establish an objective and measurable definition of child resistance. The petitioner asserts the following:

- The ASTM subcommittee for portable pools presented data in 2014 that showed that young children used pool ladders as the primary method to access portable and aboveground pools.
- Since 2016, the ASTM voluntary standard for portable pools requires ladders to be child-resistant, but it lacks a test protocol to verify this.
- Aboveground pools are involved in more fatal drownings than portable pools. However, there is no requirement for ladders intended for aboveground pools to be child-resistant.

On March 26, 2025, the Petitioner's request was docketed as Petition CP 25-2.

CPSC staff analyzed aboveground and portable pool related incidents that occurred over a five-year period and identified 130 incidents within the scope of the petition. These 130 incidents involve fatal and nonfatal drownings of children under 5 where a pool ladder was used to access the pool. The incidents occurred between January 1, 2020, and April 30, 2025. There were 128 fatalities and 2 nonfatal injuries that involved children under age 5, with the majority of cases occurring among children between 1 and 3 years old. Of the 130 incidents, 17 involved child-resistant ladders. In 15 of the 17 incidents, the incidents occurred when consumers did not secure the child-resistant mechanism. Two of the 17 incidents involved self-closing and self-latching gates that did not function as intended.

The petitioner identified two standards that are relevant to the petition: *ASTM Standard Specification for Aboveground Portable Pools for Residential Use*, ASTM F2666-16 (Reapproved 2024), and *American National Standard for Aboveground/Onground Residential Swimming Pools,* ANSI/APSP/ICC-4 2012 (Reapproved 2022).[1] ASTM F2666-16 contains a requirement that ladders be child-resistant. However, the standard does not define nor contain a measurable definition of child-resistance. Additionally, ANSI/APSP/ICC-4 (2025) contains general performance requirements for ladders but does not include performance requirements for child-resistant ladders nor contain a measurable definition of child-resistance. ANSI/APSP/ICC-4 (2025) does contain labeling requirements for both child and non-child-resistant ladders. However, labeling alone is not adequate to prevent unauthorized access to portable or aboveground pools.

[1] This standard has been updated to ANSI/APSP/ICC-4 2025 to address the compression strap that surrounds the exterior of the pool that presents a foothold that enables a child to climb and gain access to a pool unsupervised. It was approved February 20, 2025, after the Petitioner's request dated January 22, 2025.

To address the concerns raised by the petition, the ASTM F15.60 Subcommittee for Portable Pools is drafting performance requirements for child-resistant ladders and a test protocol to verify child-resistance. On August 20, 2025, ASTM balloted the revisions to the standard for portable pools. The ballot received five negative votes. ASTM resolved two and will reballot them, deemed one unpersuasive, and discussed the remaining negatives. Additionally, based on public comments received from the Pool and Hot Tub Alliance (PHTA) regarding the Petitioner's request, PHTA also suggests forming a task group to address the Petitioner's concerns and develop requirements that can be incorporated into the existing voluntary standard for aboveground pools.

As discussed in this briefing package, staff assessed the balloted performance and labeling requirements in the standard for portable pools. Specifically, staff assessed that the balloted performance requirements with the proposed modifications are adequate. Regarding the balloted labeling requirements, staff assessed that the labeling requirements are not adequate to warn consumers of the need to secure the child-resistant mechanism. Therefore, considering that child-resistant ladders may not always be effective, as the injury data indicate, staff is working with ASTM to strengthen the labeling requirements for portable pools. Staff assesses that strengthened labeling requirements may incentivize consumers to engage the safety mechanism and take other precautions to enhance the effectiveness of child-resistant ladders.

If ASTM F2666-16 (R24) and ANSI/APSP/ICC-4 -2025 are revised to incorporate the provisions that the Petitioner is requesting, the revised ASTM and ANSI standards may address fatalities and injuries that may be addressed through the requested rulemaking. Also, staff is working with ASTM to strengthen the labeling requirements. Staff assesses that strengthened labeling requirements may motivate consumers to engage the safety mechanism and take other precautions to enhance the effectiveness of child-resistant ladders.

Based on the above, staff recommends that the Commission defer a decision on the petition for 12 months and direct the staff to work with the ASTM F2666 and ANSI Subcommittees to address the Petitioner's concerns. If the Commission votes to defer its decision for 12 months, staff will provide the Commission with an update on the progress of the voluntary standards process.

United States
Consumer Product Safety Commission

TO: The Commission
Alberta E. Mills, Secretary

DATE: May 15, 2026

THROUGH: Matthew Campbell, General Counsel
Brien Lorenze, Executive Director
DeWane Ray, Deputy Executive Director for Operations

FROM: Hala Nsouli, Assistant Executive Director,
Office of Risk Reduction

Sharon White, Project Manager
Division of Human Factors,
Directorate for Engineering Sciences

SUBJECT: Petition Requesting Rulemaking to Mandate Child-Resistant Ladders for Above Ground and Portable Pools and a Measurable Definition of Child-Resistance

I. INTRODUCTION

On January 22, 2025, Carol Pollack-Nelson, Ph.D., of Independent Safety Consulting (Petitioner), petitioned the U.S. Consumer Product Safety Commission (CPSC or Commission) to initiate rulemaking to require that all ladders sold with and for use with aboveground[2] and portable pools[3] be child-resistant and an objective and measurable definition of child-resistance.

The Petitioner's request was docketed as Petition CP 25-2.

On April 10, 2025, the Commission published a notice in the Federal Register requesting comments on the petition as well as any studies or data pertaining to child-resistant ladders intended to be used with aboveground and portable pools. 90 Fed. Reg. 15, 324.[4] The public comment period closed on June 9, 2025. CPSC received 14 comments. The comments are addressed in TAB G.

[2] Aboveground pools are defined as having a water depth of 36 inches or greater.
[3] Portable pools are defined as having a water depth of less than 36 inches. Portable pools are also located aboveground. However, rather than describe these pools throughout the briefing package as "Aboveground Portable Pools," this briefing package will describe these pools, using the Petitioner's description, as "portable pools" to be consistent.
[4] Available online at Federal Register: Petition Requesting a Mandatory Regulation for Child-Resistant Above-Ground and Portable Pool Ladders.

There are two standards that the Petitioner references as relevant to the petition, ASTM F2666-16 (Reapproved 2024),[5] *ASTM Standard Specification for Aboveground Portable Pools for Residential Use* and ANSI/APSP/ICC-4, *American National Standard for Aboveground/Onground Residential Swimming Pools*.[6]

CPSC staff prepared this briefing package in response to Petition CP 25-2.

A. PETITIONER

On January 22, 2025, Carol Pollack-Nelson, Ph.D. (Petitioner) petitioned the Commission to initiate rulemaking to require (1) any ladder sold with or for use with portable and aboveground pools to be child-resistant and (2) an objective and measurable definition of child-resistance. The Petitioner states that the objective of the petition is to reduce fatal drownings of children under the age of 5, and particularly of children between the ages of 1 and 3 years (12 to 47 months) who are most at risk of fatal drowning.

The Petitioner asserts that:

- In 2014, the ASTM subcommittee for portable pools presented data showing that young children used pool ladders as the primary method to access portable and aboveground pools.
- Since 2016, the ASTM voluntary standard for portable pools has contained a requirement that ladders be child-resistant; however, there is no test protocol required to verify this. Rather, the standard states that "verification can be satisfied by document review" (ASTM F2666-16 (R24), Section 5, 5.1).
- Between 2004 and 2012, most drownings occurred in pools taller than 48 inches. These incidents often occurred when parents or caregivers who were inside the home believed their children were inside the home.
- Even though aboveground pools are involved in more fatal drownings than portable pools, there is no requirement for ladders intended for aboveground pools to be child-resistant.
- Research shows that non-child-resistant pool ladders are more widely available, usually less expensive, and in some cases come with the pool. Consumers will likely choose a standard removable ladder over a child-resistant one if it comes with the

[5] ASTM F2666-16 (R24) was published May 2024.
[6] ANSI/APSP/ICC-4 2012 (R2022) was published November 17, 2022. This standard has been updated to ANSI/APSP/ICC-4 2025 to address the compression strap that surrounds the exterior of the pool that presents a foothold that enables a child to climb and gain access to a pool unsupervised. The updated standard does not contain performance requirements for child-resistant ladders. It was approved February 20, 2025, after the Petitioner's request dated January 22, 2025. Despite this, this briefing package assesses ANSI/APSP/ICC-4 (2025) since this is the most updated standard for aboveground pools. The briefing package will refer to the standard as ANSI/APSP/ICC-4.

pool or is less expensive. The Petitioner argues that having both "safe" and "unsafe" pool ladders in the market is not a reasonable approach to safety.

- Parents/caretakers do not have an appreciation for their children's ability to climb A-frame ladders and this lack of appreciation puts children at risk of fatal drowning.
- Industry's belief that the best form of child-resistance for a pool ladder – to have parents remove the ladder from the pool after every use – is lacking. This is not practical and is ineffective for many reasons.

B. PRODUCT DESCRIPTION

The scope of products in the petition includes ladders used to access aboveground and portable pools. There are four main types of ladders: A-frame, hook-on, steps, and double steps/bridge, all pictured below. The most common type is the A-frame design.

- A-frame ladders have two sets of legs with steps, one for the outside and one for the inside of the pool, connected by a platform over the pool wall, forming an "A." A-frame ladders are sold for pool heights from 36 inches up to 56 inches and have a maximum capacity of 300 pounds.
- Hook-on ladders have a curved J-shaped attachment at the top of the ladder that grip the pool's top rail. These ladders are often made of steel or plastic. The most common types fit a pool height of 48 to 54 inches and have a maximum capacity of about 300 pounds.
- Steps are a type of pool ladder that look like stairs with handrails. These are often more heavy duty and made of plastic resin. These products typically fit pool heights from 48 to 54 inches and can hold up to 350 to 400 pounds.
- A double step system has two sets of stairs and a base in between to enter and exit the pool, and handrails on both sides are sometimes referred to as a bridge system. These typically fit a pool height from 48 to 56 inches and can hold up to 300 to 400 pounds.

Staff provides photographs of the four main types of ladders below in the order as discussed above:

Figure 1. A-Frame Ladder
Fits 48 in. Wall Height

Figure 2. Hook-on
Fits up to 54 in. Wall Height

Figure 3. Steps
Fits 48 to 54 in. Wall Height

Figure 4. Double Step System
Fits 47.5 to 56.25 in. Wall Height

There are four main types of child-resistant ladders: roll guard, lockable gate, swing up ladder, and removable steps, all pictured below. These child-resistant systems are used with A-Frame and double stairs bridge ladders, which have a way to enter the pool from the outside. The hook-on and step type of ladder tend to be placed on the inside of the pool and do not have a child-resistant alternative on the market.

- A lockable roll down guard sold with the A-frame ladder is a barrier for the outside steps.
- A lockable gate is a self-closing gate on the steps to enter the pool which can be locked.
- A swing up ladder has steps to enter the pool that can lift or flip up.

- Removable steps are mainly on A-frame ladders and require a person to remove the steps to enter the pool.

Staff provides photographs of the four main types of child-resistant ladders below in the order as discussed above:

Figure 5. Roll Guard to Block Steps
Fits 48 to 56 in. Wall Height

Figure 6. Self-closing/Self-latching Ladder
Fits 48 to 54 in. Wall Height

Figure 7. Flip-up ladder
Fits 48 to 54 in. Wall Height

Figure 8. Ladder with Removable Steps for up to 48-in. Wall Height

C. RELEVANT STANDARDS AND ACTIVITIES

1. VOLUNTARY STANDARD FOR ABOVEGROUND PORTABLE POOLS FOR RESIDENTIAL USE

ASTM F2666-16 (R24) defines portable pools as "any moveable structure with the intended purpose of being used for swimming or other water recreation by consumers and having a water depth (at the fill line) of less than 36 in. (91cm)." These types of pools include self-rising, soft-sided self-rising, frame pools, inflatable, or inflatable top ring pools (ASTM F2666, Introduction). Figures 8 and 9 show examples of portable pools covered by ASTM F2666-16.

Figure 8. 14 ft. D x 33 in. H

ASTM F2666-16 (R24) contains performance requirements for ladders. It states, "any ladders sold with or for use with Type A[7] or Type B[8] pools shall meet all the applicable requirements found in ANSI/APSP-4 and be child resistant to the degree of preventing unauthorized access for children under the age of five years. Verification can be satisfied by document review." (ASTM F2666, Section 5, 5.1.) Although the standard states that ladders for portable pools shall be child-resistant, the standard does not operationally define or contain a measurable definition of child-resistance.

Figure 9. 12 ft. D X 30 in H

2. AMERICAN NATIONAL STANDARD FOR ABOVEGROUND/ ONGROUND RESIDENTIAL SWIMMING POOLS

ANSI/APSP/ICC-4 covers aboveground/onground pools that are defined as "pools with a shallow area water depth of 36 in. (91.4 in) minimum at the wall and a water depth of 48 in. maximum (1219mm) at the wall. This includes portable pools with flexible/nonrigid or rigid sidewalls which achieve their structural integrity by means of uniform shape, support frame or a combination thereof and can be disassembled for storage and relocation." Pools covered by this standard are intended for swimming and wading only. Figure 10 shows an example of an aboveground pool covered by the standard. ANSI/APSP/ICC-4 contains general performance requirements (*e.g.*, handrails, stability, etc.) for ladders. However, the standard does not include performance requirements for child-resistant

Figure 10. 13ft D x 48 in H

[7] Type A pools are defined as "Portable Pools without a Pump and Filter – Pools with no means of water circulation or water treatment during or after use. Such pools include but are not limited to wading pools, splash pools, and kiddy pools." ASTM F2666, Section 4, 4.1.

[8] Type B pools are defined as "Portable Pools with Pumps and Filters – Pools that are provided with a means or connection provisions to add equipment for circulation and filtration of water." ASTM F2666, Section 4, 4.1.2.

ladders nor a test protocol. The standard does contain labeling requirements for non-child-resistant and child-resistant ladders. However, labeling alone is not adequate to prevent unauthorized access to portable or aboveground pools.

3. ASTM ACTIVITY

ASTM F2666 was first published in 2007. Since then, the voluntary standard was revised in 2016 and then reapproved in 2024. ASTM F2666-16 added a requirement that the ladders be child-resistant to prevent unauthorized access for children under the age of five and that verification of child-resistance can be satisfied by document review. However, no performance or test requirements were added to the standard in the 2016 revision.

In 2018, the ASTM subcommittee reviewed a home video posted on social media, showing a two-year-old climbing a pool ladder (that was intended to be child-resistant) that was attached to an above ground pool. The ladder used a door designed to cover the steps to keep a child from accessing the pool. However, the door cover had vertical slats with openings between the slats that the two-year-old used for handholds and footholds to climb the ladder. Fortunately, the parents were nearby to intervene.

The F15.60 Subcommittee on Portable Pools met multiple times, including having several task group meetings, from October 11, 2018, to April 13, 2026. During these meetings, the Subcommittee has been developing performance requirements for child-resistant ladders for portable pools and requirements for a test protocol to establish child-resistance. The Subcommittee has also been revising the requirements for product instructions and warnings for pool ladders. On August 20, 2025, ASTM balloted the proposed revisions to F2666-16 (R24). The ballot closed on September 19, 2025. A summary of the balloted draft revisions is as follows:

<u>Definition</u>

- Bearing point – a through-hole opening, a protrusion, or indent greater than 0.21 in (5.3 mm) with a surface greater than 0.27 in^2 (175 mm^2) and with an angle of incline (steepness) less than 55 degrees downward from the horizontal plane.

<u>Performance Requirements</u>

- Limited-Access Ladder – The ladder must have features such as swing-up, slide-up, or removable steps, and step guards to limit access for children under 5 and prevent children from accessing the bearing point when the ladder is in its secured, access-limiting position.

- Locking and Unlocking Mechanism - The child-resistant feature must lock into place when the ladder is secured and require deliberate unlocking of the feature to use the ladder. To prevent the risk of unlocking from the secured, access-limiting position by children under five years or unintentional unlocking of the ladder, the unlocking mechanism must meet at least one of several actions as required by the standard.

Ladder Testing

- The child-resistant feature must be easy to operate by adults with a force not to exceed 15 lbf (67 N).
- It must remain functional after 2,000 cycles, moving from secured to unsecured and back.
- For retractable steps, the leg or device must withstand a pulling force of up to 22 lbf (100 N) for 10 seconds in the secured position.
- Testing must be conducted by a CPSC-Accepted Lab.

Instructions

- Instructions must include information on the child resistance of the ladder and emphasize the importance of additional layers of protection such as a pool fence and constant supervision even when a child resistant ladder is present and secured.

Warning Label Requirement

- The ladder warning label must comply with ANSI/APSP-4 and include a statement that the ladder is not fully childproof even in the secured position.
- A limited-Access ladder must have a visible marking in the use (access-granting) position reminding users to place the ladder in the secured (access-limiting) position when not in use.
- Ladders with automatically engaging child-resistant features must have a visible marking reminding users to check that the automatic feature engaged properly.

The August 2025 ballot[9] received five negative votes regarding:

- a bearing point of less than 0.25 inches needing an explanation; the scope did not state that the standard is written for manufacturers;
- minimum force of 15 lbf for the locking mechanism to prevent child access, but a maximum force of 15 lbf to make it easy for adults to operate;
- developing the ASTM standard without coordination with PHTA;

[9] On September 19, 2025, CPSC staff sent a letter to ASTM in response to the ballot. https://www.cpsc.gov/s3fs-public/Staff-Comment-to-ASTM-F15-60-Ballot-of-Portable-Above-Ground-Pools-September-18-2025.pdf?VersionId=SC7kF8D3rs5zzHEl0b4BLgDsAlyACUTQ

- requiring child-resistant ladders for portable pools (< 36 in water depth) without evidence-based confirmation that such a change would make pools within the scope of the standard safer; and
- seventeen fatal drowning incidents involved child resistant ladders, so requiring ladders to be child-resistant could create unexpected hazards for parents.

The ASTM F15.60 Portable Pools Subcommittee met on January 22, 2026, to discuss the ballot results. The outcome of the meeting was as follows:

- The subcommittee deemed the negative regarding a bearing point of less than 0.25 inches needing an explanation or needing to appear in the standard other than just as a definition, persuasive. The subcommittee suggested providing a rationale for a bearing point of greater than .21 inches. The subcommittee also deemed the negative about the scope persuasive.
- The subcommittee deemed the negative related to a minimum force of 15 lbf for the locking mechanism to prevent child access, but a maximum force of 15 lbf to make it easy for adults to operate persuasive. The subcommittee proposed to revise the minimum force requirement to be consistent with 4.13.1.2 of F963-23[10] for locking devices. Therefore, the proposed change would require the locking mechanism to be a minimum force of 10lbf (45N) to activate the release mechanism and a maximum of 15lbf (67N).
- The PHTA representative for aboveground pools requested that the Subcommittee put on hold developing the standard for portable pools so that PHTA could form a task group to consider the data and develop requirements that would address the hazard associated with portable and aboveground pools. The subcommittee expressed that if this is found persuasive then that would mean pausing the draft standard for portable pools. The Petitioner expressed that while she is in favor of alignment, putting the standard that is nearing completion on hold would be a step backwards, and is therefore, not in favor of it. The PHTA representative proposed creating a timeline for forming a task group.
- A subcommittee member believes that requiring ladders to be child-resistant will not make portable pools safer. The member expressed that the subcommittee should direct its efforts to developing requirements for child-resistant ladders for aboveground pools since the member mentioned that drowning incidents primarily involve aboveground pools. The member also proposes that certain ladders be excluded from the child resistant ladder requirements.

[10]ASTM Standard F963, *Standard Consumer Safety Specification for Toy Safety* (2023). ASTM International, West Conshohocken, PA, 2003, www.astm.org.

The Subcommittee met February 9, 2026, to address the remaining negatives.

- The subcommittee resolved the negative - a minimum force of 15 lbf for the locking mechanism to prevent child access, but a maximum force of 15 lbf to make it easy for adults to operate.
- The subcommittee resolved the negative regarding the bearing point.
- A member of PHTA provided a typical estimated timeline to develop the aboveground pool standard to include requirements for child resistant ladders. PHTA estimates that it would take 1½ years to develop the standard, meaning the standard could be ready for publication in 2027. The 1½-year timeframe encompasses the necessary administrative procedures, the activities of the standard writing committee and the standard consensus committee, as well as a period for public comment. The group does not want to put the development of the standard for portable pools on hold so that PHTA can form a task group to develop voluntary standards due to the long timeframe for PHTA to develop a standard. The subcommittee suggested that PHTA withdraw the negative or the subcommittee will find the negative unpersuasive.
- CPSC staff discussed the 17 child-resistant ladder-related incidents. Staff informed the group that of the 17 incidents, 15 occurred when consumers did not engage the child resistant mechanism, and two occurred when the self-closing and self-latching feature did not function as intended. Staff further informed the group that in none of the incidents did the child defeat the child resistant feature as suggested by the negative because consumers did not engage the child resistant feature. The member who submitted the negative expressed that removing the ladder from the pool is the best way to prevent drowning. CPSC staff expressed that the cost of compliance, in terms of time, effort, and convenience, to engage a child resistant feature is low while another member remarked that the cost of compliance to remove a ladder is high.
- A subcommittee member remarked that child resistant ladders are not the solution for addressing drownings in portable pools because the larger pools with the 48 in. wall height are primarily involved in the drowning incidents. Additionally, several members believe that short ladder heights will not meet the ladder requirements and suggested excluding certain ladders that cannot meet those requirements. The group plans to further discuss this issue.

The subcommittee met April 13, 2026, to continue to address the negatives.

- The subcommittee revisited the definition and performance requirement of a bearing point. CPSC staff pointed out that the performance requirement at 5.1.2 on bearing points do not mention the performance requirement for through hole or blind hole opening and should, to be consistent with the definition of a bearing point at 3.1.9. The subcommittee agreed and revised the performance requirement on bearing points to further clarify the performance requirement. Additionally, a subcommittee member proposed changing the wording in the performance requirement for a bearing point from

"inclined" to "slope" to avoid confusion. The subcommittee agreed to include a drawing of a slope for clarity.

- The subcommittee considered the negative that certain ladders may be unable to achieve compliance with section 5.1.2 on bearing points because the overall size of the ladder introduces bearing points below 45 inches from the ground. Some task group members suggested revising the language to address the negative in accordance with the proposed language at 5.1.2.1. However, the Petitioner expressed concerns about the proposed requirement. The Petitioner remarked that she thought that the purpose of the subcommittee's efforts is to avoid the implication that pool safety depends on caretakers removing the ladder. By exempting certain ladders, particularly A-frame ladders of any pool height, from child resistant requirements, caretakers must remove those ladders. The subcommittee agreed to further discuss the Petitioner's concerns before reballoting the performance requirements.

4. PHTA/ANSI Activity

AMERICAN NATIONAL STANDARD FOR ABOVEGROUND/ONGROUND RESIDENTIAL SWIMMING POOLS ANSI/APSP/ICC-4 (2025) was first published in 1991. Since 1991, ANSI has revised the standard four times. No performance or test requirements for child resistant ladders were added to the standard in the 2025 revision. However, PHTA submitted comments on the petition and plans to form a task group to develop requirements for child resistant ladders and a measurable definition of child resistance. As previously stated, at the February 9, 2026, Subcommittee meeting for Portable Pools, PHTA estimated that it would take 1½ years to develop the standard which means the standard could be ready for publication in 2027.

II. DISCUSSION

A. Injury Data

CPSC staff analyzed incident reports from the Consumer Product Safety Risk Management System and the National Electronic Injury Surveillance System for incidents between January 1, 2020, and April 30, 2025 (TAB A). CPSC staff identified 130 incidents that are within the scope of the petition in that the incidents involve fatal and non-fatal drowning of children under 5 from aboveground and portable pools that involve pool ladders. There were 128 fatalities and 2 nonfatal injuries that primarily involved children in the at-risk group.

Nearly all the in-scope incidents involving portable and aboveground pools occurred during the summer months. Virtually all the fatal drowning incidents (99%) occurred when children wandered away from supervision, or an age-appropriate caregiver was not near the child to intervene. Most of the drowning incidents occurred at the victim's home, and there were more than twice as many males as there were females. In 26 percent of the cases, the time between

when the child was last seen and found in a pool was not reported. However, in at least 52 percent of the fatal and nonfatal cases, the child was not seen for more than five minutes before being found in a pool. At least 22 percent of the cases reported that the child was last seen five minutes or less before being found in a pool.

B. Health Sciences Assessment

As discussed in TAB B, drowning is defined as the process of experiencing respiratory impairment from submersion in liquid. Drowning may result in death, or nonfatal drowning may occur when a person survives a drowning incident and experiences outcomes from no injuries to very serious injuries such as brain damage or permanent disability. Water aspiration results in hypoxemia which is defined as a low oxygen level in blood, because water can wash out surfactant[11] that is essential for maintaining the stability of pulmonary tissue and ensuring proper lung function. This can lead to pulmonary edema and acute respiratory distress syndrome. Hypoxemia causes anoxic brain injury and neuronal damage. Furthermore, hypoxia and acidosis can cause cardiac dysfunction, leading to dysrhythmias[12] as discussed in TAB B. The whole process, from water distress to cardiac arrest, takes only a few minutes.

There are several drowning risk factors, including the age of the child. Children between the ages of 12 to 47 months are particularly at risk; most of the children in this age group who die from drowning are male. Children with underlying medical conditions such as epilepsy, autism and attention-deficit/hyperactivity disorder (ADHD) may have an increased risk of drowning.

It is difficult to predict the clinical outcome for pediatric nonfatal drowning victims. Prognosis depends on the extent of cerebral hypoxia and cerebral damage. The greatest risk of a fatal outcome is associated with submersions lasting 15 to 25 minutes, while those exceeding 25 minutes are invariably fatal.

Most pediatric nonfatal drowning victims have a good outcome without neurologic complications. However, some survivors may have significant long-term neurologic deficits depending on how long victims are submerged.

C. Human Factors Assessment

Staff from the Engineering Sciences Human Factors Division (ESHF) analyzed the incident data (TAB C). ESHF staff assesses that children between the ages of 1 and 3 (12 to 47 months) are at greatest risk of drowning. Several factors play a role in drowning incidents, including developmental milestones, physical development of young children, underdeveloped abilities to

[11] A surfactant is a complex mixture of lipids and proteins produced in the lungs. Surfactant is essential for maintaining the stability of pulmonary tissue and ensuring proper lung function.
[12] Dysrhythmia is an abnormal or irregular heartbeat.

assess risk, lack of swimming and water safety skills, the swim season, and lapses[13] in supervision.

The ASTM Subcommittee for Portable Pools presented data that showed that young children use pool ladders as the primary method to access aboveground pools. Members of the industry maintain that the best way to prevent children from drowning in aboveground pools is for consumers to remove the ladders from the pool after every use. However, ESHF staff assesses that this is impractical because consumers would be unlikely to do this every time they use the ladder. Removal of the ladder is not likely to occur due to the time, effort, and inconvenience of having to lift the ladder over the side of the pool and carry it to a safe location after every use. Staff assesses that the better approach to reducing the potential for child drowning is to require ladders for portable and aboveground pools to be child resistant. Consumers are more likely to secure a child resistant feature such as a pulling down a roll guard than to remove a ladder after each use. Additionally, a child-resistant ladder may give a consumer enough time to intervene to rescue a child should the need arise. That is, the difficulty of disengaging the child resistant mechanism may give an adult enough time to notice that the child is missing, locate the child, and intervene before the child falls in the pool and drowns. However, child-resistant ladders may not always be effective. Some child-resistant ladders contain an "active" system, which require consumers to take an action to engage the safety feature. Some consumers, however, may not secure a child-resistant ladder for various reasons as discussed in the ESHF assessment, so these design types may not always be effective. Fifteen of the 130 in-scope incidents demonstrate this point. Other child-resistant ladders may contain a passive system such as a self-closing and self-latching system. However, if these features fail, children may access the pool unsupervised. Two of the 130 in-scope incidents illustrate this point.

CPSC staff is working with the ASTM Subcommittee for Portable Pools to develop performance requirements for child-resistant ladders and to develop a test protocol to verify that these ladders are child-resistant. Staff is also working with the Subcommittee to revise the requirements for an on-product warning. The ASTM subcommittee balloted both performance and labeling requirements on August 20, 2025, with a one-month comment period. Staff assessed that the balloted performance requirements with the proposed modifications are adequate. However, staff has concerns that the labeling requirements are not adequate.

ESHF staff is working with ASTM to develop a warning label that may motivate and incentivize consumers to engage the safety feature. Otherwise, if the warning does not contain motivational content, consumers may not appreciate the seriousness of engaging the child-resistant feature. Additionally, staff is working with the industry to develop precautionary statements that consumers should take to reduce child drowning as well as on the placement of the on-product warning.

[13] Gap in supervision.

As mentioned earlier (see footnote 10), on September 19, 2025, CPSC staff sent a letter to ASTM in response to the balloted revisions. In the letter, staff expressed support for developing strengthened labeling requirements. Therefore, at future meetings, staff will work with ASTM to develop requirements to strengthen the warning.

ANSI/PHTA/ICC-4 currently does not contain performance requirements for child resistant ladders for aboveground pools nor a test protocol to verify that ladders are child-resistant. However, PHTA is willing to form a task group to address the Petitioner's concerns.

Therefore, given that CPSC staff is working with the ASTM F15.60 Subcommittee on Portable Pools to address the issues raised by the Petitioner and PHTA is willing to form a task group to address these issues, staff recommends deferring a decision on the petition to allow the voluntary standards process to work. Revised voluntary standards that address the Petitioner's request may address the same hazard as the requested rule. Staff also assesses that enhanced labeling requirements may bolster the effectiveness of child-resistant ladders.

D. Mechanical Engineering Assessment

Engineering Sciences Mechanical and Combustion Engineering (ESMC) staff reviewed CP 25-2 (TAB D). ESMC staff concludes that the information provided in support of establishing child resistant requirements for A-frame and other ladders intended for aboveground and portable pools is valid; however, this issue is not adequately addressed by the current voluntary standards – ASTM F2666-16 (R24), and ANSI/APSP/ICC-4 (2025). Staff reviewed the latest ANSI/APSP/ICC-4 and found no performance requirements for child resistant ladders. The Petitioner provided data that demonstrates the need for a clearly defined "child-resistant" pool ladder requirement. Although most drownings occur in aboveground pools with a water depth of 36 inches or greater, ESMC staff finds it reasonable to include portable pools with a water depth of less than 36 inches, as defined by ASTM F2666-16 (R24), in the requirement because the hazard pattern is the same for both pool types.

ESMC staff also concludes that the information provided in support of the Petitioner's request to establish a measurable definition of child resistance is valid. However, this issue is not adequately addressed by ASTM F2666-16 (R24) or ANSI/APSP/ICC-4 because these standards lack a clear measurable definition of "child resistant." ASTM F2666-16 (R24) is developing requirements to address the petitioner's request. Additionally, PHTA is willing to form a task group for the same purpose and estimates approximately 1.5 years are required to revise the standard.

Staff reviewed the balloted revisions to ASTM F2666-16 (R24). The ballot received five negatives. ASTM resolved two and will reballot them. ASTM found one unpersuasive and

discussed the remaining two negatives. Staff assessed that the balloted performance requirements with the proposed modifications are adequate to address the concerns of the Petitioner.

E. Market and Economic Considerations

Staff from the Directorate for Economic Analysis provided information on the market for aboveground and portable pool ladders with and without child-resistant features, and the economic considerations related to the petition (TAB E).

There are four main types of ladders for aboveground and portable pools: A-frame, hook-on, steps, and double steps/bridge. However, the most common type is the A-frame ladder. A-frame ladders are sold at various online retailers, ranging in price from $60 to $230. Hook-on ladders, sold at various online retailers, range in price from $100 to $270. Steps that look like stairs with handrails retail for $130 to $450. Double steps/bridge ladders are priced from about $500 up to $1500 for the larger bridge system.

Staff gathered data from various sources on manufacturers of aboveground and portable pool ladders. Staff found 17 manufacturers that supply aboveground and portable pool ladders through online retailers. Of the 17 manufacturers, 12 are U.S. companies while the remainder are foreign. These manufacturers produce different types of pool ladders which can be purchased from various retailers. Staff was able to identify six companies that are considered small businesses, all of which are U.S. companies.

Staff estimated the societal cost of injuries and determined that the societal cost for drowning fatalities involving a pool ladder is $1.72 billion. The societal cost for nonfatal drowning injuries for known cases involving a pool ladder is $289,565.

A benefit analysis is not required for an analysis of a petition; however, staff assesses that, currently, the benefits of a child-resistant ladder at mitigating the risk of drowning is unknown for a few reasons as discussed in TAB E. Although child resistant ladders can mitigate the risk, staff assesses that child resistant ladders may not be 100 percent effective. Some of the reasons include: 1) most of the child resistant ladders require actions by the consumer such as taking away outside steps or locking it; however, parents may not engage the child resistant feature, 2) children may defeat the child resistant mechanism if given enough practice, or 3) children may access the pool using some other method such using a chair or other object.

F. Past Compliance Actions

The Office of Compliance and Field Operations staff reviewed recalls and related press release data from January 2015 through July 2025 and found five consumer-level recalls involving aboveground and portable pools (TAB F).

On July 21, 2025, Bestway, Intex, and Polygroup recalled about 5 million aboveground pools that were 48 inches or taller with compression straps around the outside of the pools. The compression straps that surround the pool legs may create a foothold, allowing a child to access the pool, posing a drowning risk. There were nine incidents of children between the ages of 22 months and 3 years who drowned after using the footholds created by the compression straps to access the pool.

On November 12, 2021, VidaXL recalled around 3,200 units of the VidaXL steel pool ladders because the steps could loosen during use posing a fall and drowning hazard to consumers. There were four reports of the ladders failing but no reported injuries.

On August 21, 2018, Confer Plastic recalled 100,000 units of the Curve in-pool step systems because children's limbs became entrapped in the side openings of the step system, posing a drowning hazard. There were two reports of a child becoming entrapped in the step system, however there were no reported drownings.

III. Public Comments

CPSC published a request for comments on the petition in the *Federal Register* on April 10, 2025. 90 Fed. Reg. 15,325. (Tab G). The comment period closed on June 9, 2025. CPSC received 14 comments.[14] The vast majority of the commenters, 11 out of 14, support the petition. Of the 11 who support the petition, two request additions to the rule (see below) should the petition be granted. Of the remaining three commenters, one commenter expressed neither support nor opposition but recommended additional safety measures to address the drowning risk One commenter opposes the petition, and one supports voluntary standards.

Topics raised by commenters include:

- Adding additional requirements, including raising the minimum height requirements of pool walls to 48 inches; continuing public awareness efforts like the Pool Safely campaign; enforcement, recalls, and post-market surveillance; coverage for replacement and aftermarket ladders; harmonization with Australian and European pool safety regulations; periodic review of injury data; and addressing unintended consequences
- Establishing Requirements for Fencing
- Adequacy of Removable Ladders
- Forming a Task Group to Address Aboveground Pools

[14] Public comments available online at https://www.regulations.gov/docket/CPSC-2025-0006/comments

IV. The Basis for Considering the Petition

The Commission's regulations on petitions state that when considering whether to grant or deny a petition, the Commission considers:

1. Whether the product that is the subject of the petition presents an unreasonable risk of injury;
2. Whether a rule is reasonably necessary to eliminate or reduce the risk of injury;
3. Whether failure to initiate rulemaking would unreasonably expose the Petitioner or other consumers to the risk of injury the Petitioner alleges the product presents; and
4. If the petition seeks a ban, whether the product is being or will be distributed in commerce and whether a feasible consumer product safety standard would adequately protect the public from the risk of injury.

16 C.F.R. § 1051.9(a). The petition regulations also state that when considering these factors, the Commission will consider the petition in relation to the agency's priorities, as stated in the CPSC's Policy on Establishing Priorities, and the Commission's resources available for rulemaking. 16 C.F.R. § 1051.9(b). Staff considered these factors when evaluating the petition and in developing the recommendations detailed in the briefing package.

V. Commission Options

1. Grant the Petition and Begin Rulemaking
2. Deny the Petition
3. Defer Decision on the Petition for 12 months, and at the end of the 12-month period, direct staff to update the Commission on the progress of standards developments in ASTM F2666-16 (R24) and ANSI/APSP/ICC-4.

VI. CONCLUSION AND STAFF RECOMMENDATION

CPSC staff identified 130 in-scope reported incidents involving ladders that occurred between January 1, 2020, and April 30, 2025. There were 128 fatalities and 2 nonfatal injuries. The victims primarily at greatest risk of drowning are children between the ages of 1 and 3 years. The developmental milestones, physical development of young children, underdeveloped ability to assess risk, lack of swimming and water safety skills, and time of year in which these incidents occur put children in this age group at greatest risk of drowning. Additionally, lapses in supervision are often cited (99%) as a contributing factor in childhood fatal drowning, especially for younger children. However, several factors may contribute to lapses in supervision, as discussed in Tab C.

Members of the industry maintain that removing a pool ladder after every use is the best way to prevent child drowning in aboveground pools. However, the incident data shows that this

method of drowning prevention is not effective for many reasons. One of those reasons is that the cost of compliance, in terms of time, effort, and convenience, is high because consumers would be required to remove the ladder after every use, and this is not likely to occur.

Child-resistant ladders are a more reasonable approach to pool safety than removing the entire ladder because consumers may allow child-resistant ladders to stay attached to the pool, while they are less likely to remove a ladder after each use. Consumers need only engage the safety feature to prevent or reduce the likelihood of child access. However, the incident data shows that of the 130 cases involving ladders, 17 cases involved child-resistant ladders specifically, and, in 15 of the 17 cases, consumers did not engage the safety feature. One reason for not engaging the safety feature may be due to consumer forgetfulness. It is foreseeable and reasonable to expect that consumers may forget to engage the safety feature. In the two remaining incidents, the incidents involved a ladder with a self-closing and locking feature that did not function properly.

As noted earlier, a voluntary standard exists for both portable ASTM F2666-16 (R24) and aboveground ANSI/APSP/ICC-4 pools. Staff is currently working with the Subcommittee for Portable Pools to address the Petitioner's concerns. The Subcommittee balloted revisions to the standard on August 20, 2025, to address the Petitioner's concerns, with a one-month comment period. The ballot received five negatives that were considered at meetings on January 22, 2026, February 9, 2026, and April 13, 2026. The Subcommittee resolved two negative votes and deemed one unpersuasive. The Subcommittee discussed the remaining two negatives.

As discussed in this briefing package, staff assessed the balloted performance and labeling requirements. Staff assessed that the balloted performance requirements with the proposed changes are adequate; however, staff has comments related to labeling requirements. The labeling requirements will likely be discussed at future meetings.

The ANSI/PHTA Subcommittee for aboveground pools has not yet formed a task group to consider the Petitioner's request; however, PHTA submitted public comments, expressing a willingness to form a task group to develop requirements to incorporate in the existing standard for aboveground pools. Because aboveground pools present similar if not the same hazard as portable pools, although more incidents involve aboveground pools, the subcommittee for aboveground pools may incorporate similar requirements as for portable pools to address the Petitioner's concerns.

Given that CPSC staff is working with the ASTM F15.60 Subcommittee on Portable Pools to address the issues raised by the Petitioner and PHTA expressed a willingness to form a task group to address these issues, staff recommend deferring action on the petition. Revised voluntary standards that address the Petitioner's request may address the same hazard as the requested rule. However, given that a caregiver may inadvertently fail to activate the child-

resistant ladder as suggested by the data, staff is working with the subcommittee for portable pools to strengthen the labeling requirements to enhance the effectiveness of child-resistant ladders.

Therefore, staff recommends that the Commission defer decision on the petition for 12 months and direct the staff to work with the standards development organizations to develop performance requirements for all ladders sold with and for use with aboveground and portable pools to be child-resistant and develop a measurable definition of child-resistance as the Petitioner proposes.

PHTA estimates that if they begin writing the standard in July 2026, it would take them 1½ years to develop the ANSI standard due to necessary administrative procedures, the activities of the standard writing committee and the standard consensus committee, as well as a period for public comment.

Therefore, if the Commission votes to defer its decision for 12 months, staff will provide the Commission with an update on the progress of the voluntary standards. At that time, the Commission could decide to continue to defer its decision on the petition and proceed with the voluntary standards process or pursue other Commission action. Deferring a decision on the petition does not preclude the Commission from initiating future rulemaking in response to this or another similar petition.

Tab A: Epidemiology Assessment

United States
Consumer Product Safety Commission

TO: Sharon White, Project Manager
Division of Human Factors
Directorate for Engineering Sciences

DATE: May 15, 2026

THROUGH: Stephen Hanway, Associate Executive Director
Directorate for Epidemiology

Ryan Seebruck, Division Director
Directorate for Epidemiology
Division of Hazard Analysis

FROM: Adam Suchy, Mathematical Statistician
Directorate for Epidemiology,
Division of Hazard Analysis

SUBJECT: Reported Fatal and Nonfatal Drownings to Children Younger than Five Years Old Associated with Aboveground or Portable Pools where a Pool Ladder was Reported or Assumed to have been used to Access the Pool

I. Introduction

Pool ladders commonly provide the only *natural*[15] access point to most aboveground or portable pools[16] that do not have a flush deck surface or stairs or steps immediately adjacent to these pools. In cases where a pool ladder is the only natural access point to an aboveground or portable pool, where there is no deck or stairs leading to the pool, if the pool ladder is either removed or immobilized in some way, then the pool would only be accessible by other means, such as using objects to climb over the outside wall of the pool. This memorandum focuses on incident scenarios where a pool ladder was reported to have been used to access the pool, or a pool ladder was assumed to have been used in cases where the pool ladder was the only natural access point to the pool.

II. Incident Data[17]

Staff extracted data on May 1, 2025 from incident reports in CPSC's Consumer Product Safety Risk Management System (CPSRMS) and cases from the National Electronic Injury Surveillance System (NEISS) for incidents occurring between January 1, 2020 and April 30, 2025 which include any of the following product codes: 1284 (Swimming pools, not specified);

[15] Natural access points to aboveground or portable pools include pool ladders, patio or deck surfaces, or stairs or steps. On the contrary, *unnatural* access objects can include almost anything other than the aforementioned natural access point products (*e.g.*, chair, pool filtration system, or trampoline).
[16] Aboveground or portable pools come in a variety of styles and sizes.
[17] Incidents presented in this memorandum represent a minimum for the number of incidents that have occurred during the given timeframe.

3221 (Aboveground swimming pools [excluding portable pools]); 3262 (Swimming pool equipment [excluding chemicals, diving boards and swimming pool slides]); 4078 (Ladders, other or not specified); or 5043 (Portable swimming pools). Staff read case narratives about incident scenarios involving these products to determine which were in-scope for this petition: drowning fatalities and injuries involving children younger than five years old associated with aboveground or portable pools where a pool ladder was reported to have been used to access the pool or a pool ladder was the only natural access point to the pool. In addition, reported cases of fatal and nonfatal drownings associated with aboveground or portable pools where a pool ladder is *not* the only *known* natural access point to the pool, and cases where the type of pool involved is unknown (*e.g.*, the involved pool could be an aboveground, in-ground, kiddie, portable, or other pool type), were tabulated as the maximum number of additional reports of drowning deaths and injuries that CPSC is aware of that do involve, or may involve, an aboveground or portable pool.[18]

In addition, reports from the CPSRMS with a product code among 9101, 9102, 9103, 9104, and 9201 (catchall product codes which include a wide array of products) with narratives or manufacturer information including "drown" or "submer" and also include "pool" were searched in accordance with the inclusion criteria, but no additional incidents were found. NEISS cases with diagnoses of aspiration (diag = 42), anoxia (diag = 65), and submersion (diag = 69) associated with pool products were reviewed to determine which involved drowning deaths and injuries.

In the data analysis section, the final or eventual severity of injury or death resulting from the drowning incident is used, whereas the age of the victim on the date when the incident occurred is used, if known; otherwise, the age of the victim at the time of death or the reported age of the child is used. For example, in cases of a prolonged time-period between a drowning incident and an eventual fatality due to the drowning incident, the age of the child on the incident date and the severity of death are used in the analysis.[19]

If the age of the child is not reported but implied to be a child younger than five years old, then the case was included. For instance, a victim described as a "baby" or "toddler" implies a child

[18] CPSRMS is the epidemiological database that houses all anecdotal incident reports received by CPSC, "external cause"-based death certificates purchased by CPSC, all in-depth investigations of these anecdotal reports, as well as investigations of select NEISS injuries. The NEISS consists of emergency department (ED)-treated injuries coming from a probability survey of about 100 hospitals nationally. Examples of documents in the CPSRMS are hotline reports, internet reports, news reports, medical examiner's reports, death certificates, retailer/manufacturer reports, and documents sent by state/local authorities, among others.

[19] There are two cases involving a child who was four years old or younger when a drowning incident occurred but were older than four years old when ultimately dying to causes related to the submersion injury. One child suffered a submersion injury at 21 months old and died at five years old in a pool where a pool ladder was the only natural access point, and the other child suffered a submersion injury at three years old and died at eight years old in an unknown type of pool (*e.g.*, the involved pool could be an above-ground, in-ground, kiddie, portable, or other pool type). For these two cases, death as the severity of injury and the age at the time of incident are used in the analysis.

younger than five years old and is included, whereas a victim described as a "boy," "child," "girl," or one of these descriptors preceded by "young" were excluded.

Reports with vague descriptions of children younger than five years old "drowning" in an aboveground or portable pool with no other details about treatment for the drowning or severity of the drowning were *not* included (*e.g.*, 'My baby slipped right thru the bottom of the product and was drowning,' 'Baby drowns in this thing – very poor quality,' 'Product does not hold baby up at all. He kept drowning under the water'), meaning all nonfatal cases in this memorandum involve reports with additional details clearly indicating a serious drowning injury occurred.

CPSC staff is aware of 362 children younger than five years old suffering drowning deaths and injuries associated with aboveground or portable pools, of which 328 were fatal and 34 were nonfatal. Of those 362 drownings, 128 fatal and two nonfatal cases either reported a pool ladder was used to access the pool or a pool ladder was the only natural access point to the pool. There were two incidents that each involved two drowning victims younger than 5 years old: one incident involved two deaths to twin 30-month-olds in an aboveground or portable pool where a deck or steps were present leading to the pool, and one incident involved one death and one nonfatal drowning to twin 26-month-olds in an aboveground or portable pool where it is unknown if a deck or steps leading to the pool were present.

Among reports of drowning fatalities and injuries to children younger than five years old associated with aboveground or portable pools, it was often difficult to distinguish whether these pools were taller than, equal to, or shorter than 36 inches; hence, cases are not categorized as either an aboveground or portable pool in this memorandum. Instead, since the focus of this memorandum is on the involvement of pool ladders and access to these aboveground or portable pools, cases were classified in terms of accessibility to the pool relative to potential involvement of a pool ladder. The following are categories of aboveground or portable pools:

- "Pool Ladder" cases involve pools in which a report states that a pool ladder was used to access the pool,[20] or it is known that the only natural access point to the pool was a pool ladder (and it is therefore assumed the ladder was used in these cases to access the pool). Among the cases where a pool ladder was the only access point to the pool, there were no moveable or immovable stairs or steps, flush deck surfaces immediately adjacent to the pool, or any other natural access point to the pool water other than a pool ladder. There were 128 fatal and two nonfatal Pool Ladder drowning cases (both nonfatal drownings required ED-treatment).
- "Climbable Objects" cases include incidents in which the victim reportedly used an object to gain access to the pool in some way. Commonly, an object was used to climb up

[20] There was one case involving a pool with deck access on one side and ladder access on the other; as the report confirmed the ladder was used to access the pool, this case was placed in the "Pool Ladder" category. Otherwise, pools with both ladders and decks/steps where it was unknown if the ladder was used were placed in the "Decks/Steps" category.

or on top of to access the pool (*e.g.*, chair, pool filtration system, moveable stairs, trampoline, etc.). There were 17 fatal and two nonfatal drowning cases involving climbable objects, where the nonfatal cases resulted in one hospitalization and one child was ED-treated. Among the fatalities, there were three reported cases associated with using a pool filtration system and two reported cases of using a trampoline to gain access to the pool.

- "Small Pools" cases involve pools known to be less than 36 inches tall and include *only* smaller inflatable and hard-shell kiddie pools. Aside from short-walled kiddie pools, cases of non-inflatable pools shorter than 36 inches which have some sort of frame were placed in one of the other categories. There were nine fatal and six nonfatal drowning cases involving small pools, where five of the nonfatal cases required ED-treatment and one case required first aid by a non-medical professional.

- "Decks/Steps" cases involve pools with immovable steps or stairs, or a flush deck surface immediately adjacent to the pool, where there exists an additional natural access point in addition to a possible pool ladder access point to the pool. Often, decks or stairs appear to be easier pool access points compared to climbing a pool ladder to gain access to the pool, such that removal of a pool ladder from these incident scenarios would not eliminate easy access to the pool. Cases where moveable stairs or steps are present were placed in the Climbing Objects category. There were 106 fatal and five nonfatal drowning cases, where two of the nonfatal cases resulted in a hospitalization and three cases required ED-treatment.

- "No Pool Ladder, Climbable Objects, or Deck/Steps" cases involve scenarios where an aboveground or portable pool had no deck, steps, or pool ladder providing access to the pool, and there were no objects reported to have been used to gain access to the pool. In these cases, it is unknown how the child gained access to the pool. There were two fatal drownings.

- "Child Left Unattended in an Aboveground Pool" refers to one case where a child was left in a pool unattended and soon after found in the water unresponsive and fatally drowned.

- "Aboveground or Portable Pool - Unknown Whether Deck/Steps are Present" cases are known to involve an aboveground or portable pool, but case reports in this category lack additional details to affirm whether the case belongs in the Deck/Steps, Pool Ladder, or Small Pools category. There were 65 fatal and 19 nonfatal drowning cases, where eight of the nonfatal cases resulted in a hospitalization, 10 cases required ED-treatment, and one case reported a child being rescued by a police officer with no specifically reported treatment administered.

Among all the reported aboveground or portable pool drowning cases, those in the Pool Ladder category may be most relevant to this petition, because in each case a pool ladder was used or most likely used to gain access to the pool (as there were no other natural access points present). Conversely, in the other categories, the role of a pool ladder in incident scenarios is either unknown (*i.e.*, Aboveground or Portable Pool - Unknown Whether Deck/Steps are Present), not present (*i.e.*, No Pool Ladder, Climbable Objects, or Deck/Steps), irrelevant due to an alternate access point, such as other objects used to access the pool (*i.e.*, Climbable Objects), low pool heights (*i.e.*, Small Pools) that are scalable without the need of a pool ladder or other objects, immoveable stairs or deck surfaces (*i.e.*, Decks/Steps) providing an alternative access point to the pool, or the child was already known to be in the pool alive and then found unresponsive (*i.e.*, Child Left Unattended in an Aboveground Pool).

In addition to the reported drowning fatalities and injuries in pools known to be aboveground or portable, reported cases where the type of pool involved is unknown (*e.g.*, the involved pool could be an aboveground, in-ground, kiddie, portable, or other pool type), were tabulated as the maximum number of additional reports of drowning deaths and injuries that CPSC is aware of, of which, a subset of these cases may involve an aboveground or portable pool where a pool ladder was used to access the pool. Although some of these reports involving unknown pool types likely involve aboveground or portable pools, this is indeterminable and therefore these cases were not included in analysis in this memorandum. Staff is aware of a reported 180 fatal and 93 nonfatal drowning cases involving children younger than five years old associated with an unknown pool type. Among the 93 nonfatal drownings, 63 children were hospitalized, 20 were ED-treated, six were seen by a medical professional, two were treated by a non-medical professional, and two had a level of care unknown (one case reported that an emergency call was made due to a child who was not breathing, and one case reported the victim's lips were blue after being saved from drowning).

III. Data Analysis

CPSC staff is aware of 128 drowning deaths and two drowning injuries to children younger than five years old associated with aboveground or portable pools where a pool ladder was reported to have been used to access the pool, or a pool ladder was assumed to have been used in cases where the pool ladder was the only natural access point to the pool.

Table 1 presents the reported counts of all Pool Ladder category aboveground or portable pool fatal and nonfatal drownings, by year of incident. Counts with a caret ("^") in the table indicate that reporting is still ongoing, especially for years 2023 through 2025; counts are likely to increase for these years in the future.

Among the 3 years of complete reporting, there were 25 or more deaths per year (annual average of 32 deaths), in each year from 2020 through 2022. As nearly all aboveground or portable pools

are located in outdoor locations and primarily in use during the warmer months, among the 97 fatal drowning cases from 2020 through 2022, 86 occurred during the months between May and August, which gives an average of 7.2 fatal drownings per month during these years and months.

Table 1: Pool Ladder Category Aboveground or Portable Pool Drowning Fatalities and Injuries to Children Younger than Five Years Old, by Year of Incident (Percent of Column Total), January 1, 2020-April 30, 2025

Year of Incident	Fatal Drownings	Nonfatal Drownings	Fatal & Nonfatal Drownings
Total	**128 (100%)**	**2**	**130 (100%)**
2020	41 (32%)	0	**41 (32%)**
2021	25 (20%)	0	**25 (19%)**
2022	31 (24%)	0	**31 (24%)**
2023^	21 (16%)	1	**22 (17%)**
2024^	10 (8%)	1	**11 (8%)**
2025^	0 (0%)	0	**0 (0%)**

Source: U.S. Consumer Product Safety Commission: CPSRMS and NEISS. Percentages may not sum to 100 due to rounding. Denoted (^) in the table, reporting is still ongoing, and counts are likely to rise in the future.

In most drowning reports of children younger than five years old in aboveground or portable pools, the drowning victim was 'found' motionless in a pool after wandering away from perceived supervision, from a secure location (*e.g.*, the child was last seen taking a nap in a bedroom), or from an environment perceived as safe (*e.g.*, the child was last seen playing with siblings or friends in a safe location such as outside in the back yard). In Table 2, a child is considered Directly Supervised if, at the moment the child began drowning, an *age-appropriate* caregiver[21] was aware of the victim's presence and was in or near the pool (*e.g.*, aware of and close enough to attempt to save a drowning child within seconds of the drowning incident beginning). A child is considered Not Directly Supervised if, at the moment the child began drowning, an age-appropriate caregiver was not close enough to respond and reach the victim within seconds of the drowning incident beginning or was unaware of the victim's presence, which includes reports of descriptions about the incident scenarios indicating the child was: discovered in, found in, or gained access to the pool; managed to bypass or exit a barrier (*e.g.*, escaped a house or bypassed a fence or gate); or missing, unseen for a duration of time, being searched for, or thought to be somewhere else. In the many reported cases describing a scenario where a child 'was found' motionless in the pool, it was assumed that the caregiver was not in direct supervision of the child at the moment the child began drowning. The one reported

[21] If reports did not refer to an adult, babysitter, or a designated child caregiver (*i.e.*, age-appropriate caregiver) aware of the victim's presence and also close enough to the victim to be able to reach the victim within seconds when the drowning began, then the victim was deemed Not Directly Supervised.

incident where it is unknown whether the victim was directly supervised came from a death certificate that included minimal details about the incident.

Table 2 presents the reported counts of all Pool Ladder category aboveground or portable pool fatal and nonfatal drownings, by whether the victim was directly supervised when the drowning began. The majority of drowning incidents occurred when children wandered from supervision or an age-appropriate caregiver was not in a position to save the child when the incident began (in most cases the child was not seen for minutes), as opposed to cases of children drowning while swimming in the pool with *direct* age-appropriate caregiver supervision.

Among the 128 Pool Ladder drowning death cases, 127 of the victims were not directly supervised and in one case it is unknown whether the victim was directly supervised. Among the two nonfatal drowning cases, one child was directly supervised, and one child was not directly supervised. In the one directly supervised case, the child was seen falling from a pool ladder into the pool, immediately rescued, and received ED-treatment.

Table 2: Pool Ladder Category Aboveground or Portable Pool Drowning Fatalities and Injuries to Children Younger than Five Years Old, by Whether the Victim was Directly Supervised During the Drowning Incident (Percent of Column Total), January 1, 2020-April 30, 2025

Direct Supervision During Drowning Incident	Fatal Drownings	Nonfatal Drownings	Fatal & Nonfatal Drownings
Total	**128 (100%)**	**2**	**130 (100%)**
Not Directly Supervised	127 (99%)	1	**128 (98%)**
Directly Supervised	0 (0%)	1	**1 (1%)**
Unknown	1 (1%)	0	**1 (1%)**

Source: U.S. Consumer Product Safety Commission: CPSRMS and NEISS. Percentages may not sum to 100 due to rounding.

Table 3 presents the reported counts of all Pool Ladder category aboveground or portable pool fatal and nonfatal drownings, by the time, in minutes, between when the victim was last seen and found in a pool.

While in 26 percent of cases (34 out of 130 cases) the time between when the child was last seen and found in a pool was not reported, in *at least* 52 percent of the fatal and nonfatal cases (68 out of 130 cases), the child was not seen for more than five minutes before being found in a pool, and in *at least* 22 percent of cases (28 out of 130 cases) the child was last seen five minutes or less before being found in a pool.

Table 3: Pool Ladder Category Aboveground or Portable Pool Drowning Fatalities and Injuries to Children Younger than Five Years Old, by Time Between Last Seen and Found (in minutes) (Percent of Column Total), January 1, 2020-April 30, 2025

Time Between Last Seen and Found (in minutes)	Fatal Drownings	Nonfatal Drownings	Fatal & Nonfatal Drownings
Total	**128 (100%)**	**2**	**130 (100%)**
0 to 5	27 (21%)	1	**28 (22%)**
6 to 10	29 (23%)	0	**29 (22%)**
11 to 30	23 (18%)	0	**23 (18%)**
More Than 30	16 (13%)	0	**16 (12%)**
Unknown	33 (26%)	1	**34 (26%)**

Source: U.S. Consumer Product Safety Commission: CPSRMS and NEISS. Percentages may not sum to 100 due to rounding.

Table 4 presents the reported counts of all Pool Ladder category aboveground or portable pool fatal and nonfatal drownings, by location of the pool incident relative to the residence where the child was last seen. The Home category refers to drownings occurring at the victim's residence. The Family/Friend/Acquaintance Residence category refers to drownings that occur during a scheduled visit to a family, friend, or acquaintance (including a neighbor) and the drowning occurred at that residence. The Neighbor Home category refers to drownings where the victim wandered from home to a different residence or wandered from a residence they were visiting (*e.g.*, family, friend, acquaintance or neighbor) to a different residence they were not visiting. For example, a case involving a child who is visiting a neighbor as an acquaintance and drowns in that neighbor's pool is found in the Family/Friend/Acquaintance category. Cases where a child is visiting a friend or relative and is found in the friend's or relative's neighbor's pool are found in the Neighbor Home category. The one Other – Residential case refers to a fatal drowning at a home daycare.

Table 4 shows that among the 130 reported fatal and nonfatal drownings, 68 percent (87 deaths and one nonfatal drowning) occurred at the home residence of the victim; 26 percent (34 deaths) occurred at the residence of a family member, friend, or acquaintance; five percent (six deaths) occurred at the residence of a neighbor of the home the child was last supervised; one death occurred at a residence daycare (Other – Residential); and one nonfatal drowning occurred at an unknown location.

Table 4: Pool Ladder Category Aboveground or Portable Pool Drowning Fatalities and Injuries to Children Younger than Five Years Old, by Location of Pool Relative to Last Seen (Percent of Column Total), January 1, 2020-April 30, 2025

Location of Pool Incident	Fatal Drownings	Nonfatal Drownings	Fatal & Nonfatal Drownings
Total	**128 (100%)**	**2**	**130 (100%)**
Home	87 (68%)	1	88 (68%)
Family/Friend/Acquaintance Residence	34 (27%)	0	34 (26%)
Neighbor Home	6 (5%)	0	6 (5%)
Other - Residential	1 (1%)	0	1 (1%)
Unknown	0 (0%)	1	1 (1%)

Source: U.S. Consumer Product Safety Commission: CPSRMS and NEISS. Percentages may not sum to 100 due to rounding.

Table 5 presents the reported counts of all Pool Ladder category aboveground or portable pool fatal and nonfatal drownings, by sex and age in months, and shows the percentage of all (fatal and nonfatal) drownings that were males for each age in months. Counts with an asterisk ("*") in the tables below reference the two nonfatal drowning incidents (nonfatal cases are defined under each table). There were no reports of unknown age or unknown sex victims among any cases.

Table 5 shows that there were as many or more males than females in each age range from 12 to 17 months to 54 to 59 months. Among the 130 fatal and nonfatal drownings (there were two nonfatal male drownings: a 21-month-old and a 24-month-old), if you combine age-in-months categories into groups by age-in-years, then there were a higher percentage of males among one-year-olds (68 percent; or 30 out of 44 were male), two-year-olds (67 percent; or 38 out of 57 were male), three-year-olds (68 percent; or 15 out of 22 were male), and four-year-olds (86 percent; or 6 out of 7 were male). Among all these fatal and nonfatal drownings to children younger than five years old, in 95 percent (123 out of 130 fatal and nonfatal drownings) of cases the child was between one and three years old; and there were seven fatal drownings to 4-year-olds and zero drownings to under 1-year-olds.

Table 5: Pool Ladder Category Aboveground or Portable Pool Drowning Fatalities and Injuries to Children Younger than Five Years Old, by Sex and Age (in months), January 1, 2020-April 30, 2025

Age (in months)	Female	Male	% of All Drownings (Fatal and Nonfatal) that were Male
Total	**41**	**89**	**68%**
0 to 5	0	0	N/A
6 to 11	0	0	N/A
12 to 17	4	4	50%
18 to 23	10	26*	72%
24 to 29	13	17*	57%
30 to 35	6	21	78%
36 to 41	6	12	67%
42 to 47	1	3	75%
48 to 53	1	5	83%
54 to 59	0	1	100%

Source: U.S. Consumer Product Safety Commission: CPSRMS and NEISS. Percentages may not sum to 100 due to rounding. Denoted (*) in the table, the only nonfatal cases include one 21-month-old male and one 24-month-old male.

Table 6 presents the reported counts of all Pool Ladder category aboveground or portable pool fatal and nonfatal drownings, by race. Notice that 12 out of 130 (9 percent) fatal and nonfatal drowning cases are of children with an unknown or unspecified race. Percentages of drowning counts in Table 6 are based only on the 118 cases where the race of victims is known (*i.e.*, excluding the 12 cases where the race of victims is unknown or unspecified). There were not enough cases where it is known whether the drowning victim was Hispanic to perform an analysis.

Comparing the proportions of each race in the U.S. population with the proportions of each race among the 118 fatal and nonfatal Pool Ladder category drownings to children younger than five years old in aboveground or portable pools, where the race of the victim is known, there were:

- 94 deaths (79.7 percent of drowning deaths) of White children, which is higher than their share of children in the U.S. population (68.9 percent);
- 18 deaths (15.3 percent of drowning deaths) of Black/African American children, which is lower than their share of children in the U.S. population (16.1 percent);
- 1 death (0.8 percent of drowning deaths) of Asian children, which is lower than their share of children in the U.S. population (6.1 percent);
- 1 death (0.8 percent of drowning deaths) of American Indian/Alaska Native children, which is lower than their share of children in the U.S. population (1.9 percent);
- 2 deaths (1.7 percent of drowning deaths) of Native Hawaiian/Pacific Islander children, which is higher than their share of children in the U.S. population (0.4 percent); and

- 2 deaths (1.7 percent of drowning deaths) of Multiracial/Other Known Races children, which is lower than their share of children in the U.S. population (6.6 percent).

Table 6: Pool Ladder Category Aboveground or Portable Pool Drowning Fatalities and Injuries to Children Younger than Five Years Old, by Race (Percent of Known Race Drownings), January 1, 2020-April 30, 2025

Race	Percent of the U.S. Population[22]	Fatal & Nonfatal Drownings
Total (Known Race)	**100%**	**118 (100.0%)**
White	68.9%	94* (79.7%)
Black/African American	16.1%	18 (15.3%)
Asian	6.1%	1 (0.8%)
American Indian/Alaska Native	1.9%	1 (0.8%)
Native Hawaiian/Pacific Islander	0.4%	2 (1.7%)
Multiracial/Other Known Races	6.6%	2 (1.7%)
Unknown/Unspecified	—	12*

Source: U.S. Consumer Product Safety Commission: CPSRMS and NEISS. Percentages may not sum to 100 due to rounding. Denoted (*) in the table, among the two nonfatal drownings, one child was White, and the race of the other child was Unspecified. Among the 130 cases, race is known in 118 of these and not known in 12 cases; the percentages in Table 6 are based on those 118 cases where the race of the victim is known.

[22] The proportions of the U.S. population by race are based on U.S. Census estimates of annual averages for children ages 0 to 4 years old from January 1, 2020, through April 30, 2025.

TAB B: Health Sciences Assessment

United States
Consumer Product Safety Commission

TO: Sharon White, Engineering Psychologist, Engineering Sciences Human Factors, Project Manager for Child-Resistant Pool Ladder Petition

DATE: May 15, 2026

THROUGH: Stefanie Marques, Ph.D., Director, Health Sciences Pharmacology and Physiology Assessments

FROM: Andrei Komarov, M.D., Ph.D., D.A.B.T., Physiologist Health Sciences Pharmacology and Physiology Assessments

SUBJECT: Drowning Injury and Death

I. Introduction

The memo discusses the process of drowning, risk factors for drowning, and drowning outcomes including death and nonfatal drowning.

II. Discussion

A. Physiology and pathophysiology of drowning

Drowning is defined as the process of experiencing respiratory impairment from submersion/immersion in liquid. Water aspiration results in hypoxemia,[23] as the water can wash out surfactant[24] leading to pulmonary edema[25] and acute respiratory distress syndrome (ARDS).[26] The hypoxemia causes anoxic brain injury[27] and neuronal damage (NCBI, 2023). Furthermore, hypoxia and acidosis[28] contribute to cardiac dysfunction, with a risk of dysrhythmias[29] usually characterized by the sequence of tachycardia,[30] bradycardia,[31] pulseless electrical activity, and asystole.[32] The whole process, from water distress to cardiac arrest, takes only a few minutes.[33] (PMC, 2023).

[23] Hypoxemia is a low oxygen level in blood.
[24] A surfactant is a complex mixture of lipids and proteins produced in the lungs. Surfactant is essential for maintaining the stability of pulmonary tissue and ensuring proper lung function.
[25] Pulmonary edema is a condition when lungs fill with fluid.
[26] ARDS is a condition that causes fluid build-up and reduces oxygen in blood.
[27] The result of brain oxygen supply cutoff.
[28] A pathologic condition characterized by increase of hydrogen ion concentration (decrease of pH) in the blood and body tissues.
[29] Dysrhythmia is an abnormal or irregular heartbeat.
[30] Tachycardia is heart rate over 100 beat per minute.
[31] Bradycardia is a slow heart rate.
[32] Asystole, colloquially referred to as "flatline," represents the cessation of electrical and mechanical cardiac activity.
[33] The process could take longer in the cold water (PMC, 2023).

Animal studies showed that aspiration of 2.2 ml of water per kg of body weight is sufficient to cause severe disturbances in oxygen exchange (CCJM, 2018). For an average 3-year-old child weighting 14 kg, this is equivalent to aspiration of just 30.8 ml of water (about 2 tablespoons).

B. Risk factors for drowning

The highest rate of drowning occurred with children aged 12 to 47 months for years 2020 to 2022 (CPSC, 2025). Furthermore, 66% of children less than 5 years old who die from drowning were male (CPSC, 2025).

Children with underlying medical conditions such as epilepsy,[34] autism,[35] and attention-deficit/hyperactivity disorder (ADHD)[36] may have an increased risk of drowning. For children with neuromuscular junction and muscle diseases[37] or peripheral neuropathies,[38] risk of drowning may be increased as well (AAP, 2021).

Exertion while swimming can trigger arrhythmia[39] among individuals with long QT syndrome.[40] Additionally, Brugada syndrome[41] and catecholaminergic polymorphic ventricular tachycardia[42] may also lead to increased risk of drowning (AAP, 2021).

Medications can increase the risk of drowning as well, especially psychotropic medications[43] commonly prescribed for depression, anxiety, bipolar disorder, schizophrenia,[44] and other conditions. Side effects from these medications can be like the effects of alcohol, such as difficulty thinking clearly and decreased motor skills (CDC, 2024).

[34] Brain disease that causes repeated seizures.
[35] Developmental disorder.
[36] Mental health disorder.
[37] Cleveland Clinic, "Neuromuscular Disorders: What They Are, Symptoms & Types," Feb. 20, 2024.
[38] Nerve damage that causes weakness, numbness and pain in hand and feet.
[39] Irregular heartbeat.
[40] Cleveland Clinic, "Long QT Syndrome: Symptoms & Treatment," Mar. 20, 2023.
[41] Cleveland Clinic, "Brugada Syndrome: Symptoms & Treatment," May 1, 2026.
[42] Cleveland Clinic, "Catecholaminergic Polymorphic Ventricular Tachycardia (CPVT): What It Is, Causes & Treatment," May 5, 2022.
[43] FDA does not approve psychotropic medications for children under 5 years old; however, physicians may choose to prescribe these medications "off label" to that age group. Off label means a prescription which deviates from FDA's approved use.
[44] Mental disorders.

C. Drowning injury and death

In nonfatal drownings, arrhythmias can be seen secondary to hypoxemia. Sinus tachycardia,[45] sinus bradycardia,[46] and atrial fibrillation[47] are the most common arrhythmias seen in this setting. Metabolic and respiratory acidosis[48] is often seen in nonfatal drowning patients (NCBI, 2023).

The clinical outcome for pediatric drowning victims can be difficult to predict. Prognosis is dependent on the extent of cerebral hypoxia and cerebral damage. Good outcomes (survival with no neurologic complications) are increased with submersion durations of less than 6 minutes and emergency response times of less than 10 minutes (AAP, 2021). The highest risk of fatal outcome was associated with submersions of 15 to 25 minutes' duration, with those longer than 25 minutes being always fatal (AAP, 2021).

Most pediatric nonfatal drowning victims have a good outcome without neurologic complications. However, some survivors may have significant long-term neurologic deficits. Children whose submersion duration exceeded 10 minutes had a significantly poorer health-related quality of life than those who were submerged for shorter durations (AAP, 2021).

According to the recent CPSC report, an annual average of 73 percent of the emergency department-treated nonfatal drowning injuries, and 79 percent of the reported fatal drownings, involved children younger than 5 years of age (CPSC, 2025).

III. Conclusion

Drowning may result in death, or nonfatal drowning may occur when a person survives a drowning incident and experiences outcomes from no injuries to very serious injuries such as brain damage or permanent disability.

[45] Fast heart rate.
[46] Slow heart rate.
[47] Irregular and often rapid heart rhythm.
[48] Two types of disorders leading to decreased blood pH level. They have different causes and physiological mechanisms.

IV. References

Pool Safety - StatPearls - NCBI Bookshelf (NCBI, 2023)
Epidemiology, clinical aspects, and management of pediatric drowning - PMC (PMC, 2023)
Denny, Sarah A., et al., Prevention of Drowning, PEDIATRICS, 148 (2): e2021052227, 2021; American Academy of Pediatrics (AAP, 2021)
Risk Factors for Drowning | Drowning Prevention | CDC (CDC, 2024)
https://cpsc.gov/s3fs-public/Pool-or-Spa-Submersion-Estimated-Nonfatal-Drowning-Injuries-and-Reported-Drownings-2025-Report.pdf?VersionId=EaannN_hQd1lQtE4AoAq2eyX.7YYRnpm. (CPSC, 2025)
Szpilman, David, et al., Dry drowning' and other myths, CLEVELAND CLINIC JOURNAL OF MEDICINE, 85 (7) 529-53, 2018 (CCJM, 2018)
New Data Shows Child Drownings Remain High | Pool Safely (CPSC, 2024)

Tab C: Human Factors Assessment

United States
Consumer Product Safety Commission

TO: File
Division of Human Factors
Directorate for Engineering Sciences

DATE: May 15, 2026

THROUGH: Rana Balci-Sinha, Ph.D., Director,
Division of Human Factors

FROM: Sharon R. White
Engineering Psychologist

SUBJECT: Petition to Require Child Resistant Ladders for Portable and Aboveground Pools and a Measurable Definition of Child Resistance

I. INTRODUCTION

On January 22, 2025, Carol Pollack-Nelson, Ph.D. (the Petitioner), of Independent Safety Consulting, LLC, petitioned the U.S. Consumer Product Safety Commission (CPSC or Commission) to initiate rulemaking to require 1) child-resistant A-frame and other ladders for portable and aboveground pools and 2) an objective and measurable definition of child-resistance to reduce fatal drownings of children under the age of 5, and particularly to children between the ages of 1 and 3 years who are most at risk of fatal drownings.

This memorandum provides and assesses the drowning injury data, risk factors, and drowning prevention measures and their effectiveness. It also considers relevant standards and identifies gaps. Additionally, this memorandum discusses ongoing and upcoming standards development.

II. INCIDENT DATA

Staff in the Directorate for Epidemiology identified 130 in-scope[49] reported incidents involving ladders in the Consumer Product Safety Risk Management System database that occurred between January 1, 2020, and April 30, 2025. There were 128 fatalities and 2 nonfatal injuries. Where known, the data documented the following characteristics of the fatal and nonfatal drowning incidents to children younger than age 5:

[49] Source: The Division of Hazard Analysis' memorandum, "Reported Fatal and Nonfatal Drownings to Children Younger than Five Years Old Associated with Aboveground or Portable Pools where a Pool Ladder was Reported or Assumed to have been used to Access the Pool," dated April 14, 2026.

Ninety-five percent (123 out of 130 fatal and nonfatal drownings) of the cases involved children between the ages of one and three years old. There were seven fatal drownings to 4-year-olds. Eighty-eight (68%) of the incidents occurred in the victims' home. See Tables 4 and 5 in TAB A.

Sixty Three percent (63 out of 130 fatal and nonfatal drownings) of the cases documented pool wall height and 25% (32 out of 130 drownings) of the cases documented pool water depth.

The pool wall height is documented as follows:

- Thirty-six inches in 5 cases and less than 36 inches in one case.
- Between 42 and 48 inches in 36 cases and greater than 48 inches in 21 cases

The pool water depth is documented as follows:

- 28 inches in 1 case
- Thirty-six to 48 inches in 28 cases
- Greater than 48 inches in three cases

Based on the above, the data shows that most of the incidents involved aboveground pools.

Supervision

Supervision of the child was documented in 129 of the 130 cases (99%). Of these cases, there was a lapse of supervision in 128 cases (98%); 127 of the 128 cases were fatal and one case was nonfatal. In one case, there was direct supervision (1%). In another case, supervision was not documented (1%). Of the 129 cases in which supervision was documented, where known, 122 cases suggested that the supervisor was at least 18 years old (94%). Three of the cases indicated that the supervisor was younger than 18 years of age (.025 %). See Table 3 for incident scenarios for when a lapse in supervision occurred.

Table 3.

Incident Scenario	Number
was outdoors working (*e.g.*, car repairs, yard work, grilling)	12
was in a different room. Of the 12, five were in the restroom	12
was sleeping	11
assumed other parent was watching the child	9
tended to another child or other children	8
was doing chores indoors	5
left child outdoors and went in indoors; 1 of these incidents occurred when adult made a phone call	4
was not aware that the child had awakened	3
allowed child to go inside home to retrieve toy	1
was talking on phone	1
let child walk alone to relative's camper next to child's house	1
left the room	1
otherwise, lost sight/contact/whereabouts of the child	60

Ladders for Portable and Aboveground Pools

Description of Ladders. Of the 130 incidents, 128 incidents (98%) involved removable A-frame ladders.[50] Of the 130 incidents, 17 incidents (13%) involved child-resistant ladders. Staff determined that these were child-resistant ladders based on the descriptions given and (photos provided) in the incident reports, as discussed below. Fifteen of the 17 child-resistant ladders were A-frame type-ladders whereas two of the 17 ladders were attached deck ladders that raised and lowered.[51]

Ladder Use. Of the 128 incidents involving removable ladders, consumers in 16 cases indicated that they typically removed the ladder from the pool but did not remove the ladder at the time of the incident. The following are some examples of case narratives documenting use of the ladder:

- Normally removes ladder after each use but didn't on this occasion.
- Older kids forgot to remove the ladder.

[50] A-frame pool ladders are designed for aboveground pools without a deck, featuring two sets of steps that form an "A" shape, one for entering and one for exiting the pool.
[51] This is a child-resistant stairs/steps/ladder with handrails. The ladder flips-up/down and is designed for an aboveground/onground pool with a deck.

- Normally removes the ladder because the victim is known to use it. This time the family didn't remove it due to distraction.
- Mother stated that she's normally good about taking the ladder out of the pool but didn't on the day of the incident.
- The ladder is always removed from the pool.
- Parents reported that they usually remove the ladder when the pool is not in use for safety reasons but earlier in the day the father was cleaning the pool for the July 4th holiday and inadvertently left the ladder in place.
- Normally takes the ladder off the pool and stores it away but forgot to take the ladder away.
- Usually, the ladder is out of the pool and lying down so that the kids cannot climb onto the ladder.
- The ladder is normally removed from the pool when adults are not there to supervise to prevent accidents.
- The victim has climbed the ladder on a couple of occasions, so the parents always removed the ladder from the pool but stated that they forgot to remove it "last night."
- An adult removed the ladder from the pool and laid it on its side several feet away from pool. However, one of the kids set it back up against the pool.
- Parent always tells everyone to take ladder off the pool and put it up the hill when they get out, but did not tell the babysitter that day.

Of the 17 incidents involving child-resistant ladders, the following are narratives and/or descriptions of the CR ladders from each case:

- The guard had not been pulled down over the ladder.
- Multi-step ladder with a retractable guard on the front of ladder.
- Ladder has cover that slides down and locks.
- Ladder had a safety feature where steps could be raised. At the time of the incident, the steps were in the down position.
- Safety ladder was in the down position.
- Ladder was not in raised position at the time of the incident.
- Pool ladder found in "down" position when it should have been in the "up" position.
- When the pool is not in use, the steps slide up and are secured.
- Ladder to pool was in the down position; the ladder can fold up.
- Ladder to pool was in the "up" position when police saw it; assumed in the down position when child accessed it.
- Noticed pool ladder was down and not in secured position.
- Ladder can be raised or lowered.
- Gate that was supposed to be self-closing and self-latching stayed open.

- Ladder that originally came with the pool slid upwards. Consumer thought unsafe so purchased a ladder with a gate which was thought safer. Based on photos, this ladder resembles self-closing, self-latching gate. The gate to the ladder was open, but consumer thought nothing of it because everyone was present.
- Unlocked pool ladder.
- Pool ladder was unlocked at the time of the incident.
- Pool deck ladder left in the down position.

Date of Incidents

Between September 23, 2021, and January 23, 2023, there were 130 incidents involving pool ladders. Of these, 82 percent took place during the summer months of June, July, and August.

III. DISCUSSION

Developmental Abilities

The period between the ages of 1 and 3 is characterized by significant developmental milestones, including in motor skills and language. Children between 8 through 11 months usually begin to walk with support and climb (Richards, Putnick, Suwalsky, Bornstein, Phillips, and Hurley, 2020). These researchers, however, indicate that children ages 12 through 18 months are gaining confidence as climbers and walkers, and most children in this age group have learned to walk. Children in this age group can also climb heights, but these children lack awareness of the consequences of falling. Between 19 through 23 months, children begin to walk and climb with confidence and are interested in water. By age two, most children can climb steps and short ladders and may get themselves to the top of a climbing structure only to find that they cannot get back down.

The mobility of children between the ages of 1 and 3 enables them to explore areas of the home that were once inaccessible to them. This together with children learning the concept of in and out, open and close, make these children fascinated with doors since at this age they can also turn knobs (Shelov, S., and Altmann, T., 2009).

Also, two-year-olds have a relatively high center of gravity because their bodies are proportionally different, with a larger head and torso in relation to their shorter legs. This higher center of gravity combined with their developing motor skills and eagerness to explore, makes toddlers less stable and more prone to falls than older children.

Reaching these developmental milestones together with the physical development of young children put children between the ages of 1 and 3 years at greatest risk of drowning. Males are twice as likely than females to drown. This may be due, in part, to the inclination of boys to engage in more exploratory, dangerous, and greater risk-taking behavior than girls (Rivara and

Mueller 1987; Blum and Sheild, 2000; Landen, Bauer, and Kohn, 2003). Furthermore, although swimming classes are offered for very young children, these classes focus on skills such as floating, kicking, and splashing which are not sufficient for a child to rescue him/herself from drowning. Additionally, the swim instructors are within arm's reach of the child while they are performing these skills. It is not until ages 4 through 5 years that children are beginning to learn to swim (Richards, Putnick, Suwalsky, Bornstein, Phillips, and Hurley, 2020).

Supervision

Manufacturers of consumer products, including pools, expect consumers to supervise their children at all times to prevent product-related injuries in general, and in this case, pool-related injuries specifically. However, a lapse in supervision is often cited as a contributing factor for childhood drowning, especially for younger children (Feldman, Monastersky, and Feldman, 1993; Landen, Bauer and Kohn, 2003). Several factors may play a role in the lapse of supervision.

- Underestimating the Skills of the Child. Consumers may lack knowledge and appreciation of young children's developmental skills (Rivara and Howard, 1982; Pollack-Nelson and Drago, 2002; and Smith, Greene, and Singh, 2002). This knowledge gap can influence parental practices, as is evidenced in the 128 drowning incidents in which supervision was not present. In those incidents, consumers may not have been aware of their child's ability to escape the home and/or climb the ladder. At least one case is suggestive. In this case, the consumer indicated that she did not believe that her 2-year-old could climb the ladder prior to the incident. In this case the consumer left her child in the yard to use the restroom because the yard was fenced in, and the consumer erroneously believed that the pool ladder was in the up position. When exiting the restroom, the consumer noticed that her child was no longer in the yard.
- Overestimating the skills of the child. Consumers often expect their children to have skills far beyond their developmental abilities (Morrongiello and Kiriakou, 2004). In one of the fatal incidents, the parents indicated that they taught the children pool safety. In this incident, a parent left the 2-year-old child outside to retrieve an item inside. The parent may have believed that the child knew the pool safety rules and thus overestimated the child's knowledge of the rules, unintentionally placing the child at risk for drowning. Thus, overestimating a child's ability may be another factor that contributes to lapses in supervision which increases the risk of drowning.
- Distraction Due to Crowded Gatherings. In many of the cases, given the time of year, the family either entertained guests or were guests at someone else's home during a social gathering when the child drowned. Large crowds of people make supervision of a child difficult (Lueder and Rice, 2008) and especially of very young children who are very active and naturally curious. In such cases, it is all too easy to lose sight or knowledge of the whereabouts of the child, putting the child at risk of injury.

- Tending to Other Children. Parents tending to other children in the home could easily become distracted and lose sight of a child whose intent is to access the pool. The eight fatalities that occurred when a parent or caretaker was tending to another child or other children illustrate this point.
- Perception of Environment. An overwhelming majority of the incidents occurred at the child's own home, a place caregiver usually perceive as safe. The perceived safety of the child's home may be corroborated by a study that showed that respondents considered the risk of injury low when a child was left alone to play or engage in other activities in his/her own bedroom (Pollack-Nelson and Drago, 2002). Thus, if the perception of hazard is low, consumers may not take the appropriate supervisory precautions to reduce the injury risk.
- Perception of Hazard Involving the Product. A lapse in supervision may also be influenced by consumer's perception of the hazard involving pools. The pool wall height was documented in 63 cases (63%). Of the 63 cases, the pool wall height was 42 inches or greater in 57 cases (90%). The high sides of the pool walls coupled with the pool's framed construction may provide a false sense of security that the pool wall can act as a barrier to prevent a toddler from accessing the pool. Similarly, the A-frame ladder that straddles the pool is tall. Many caregivers may not be aware of their toddler's developmental abilities as earlier mentioned and particularly their toddler's ability to climb A-frame ladders without assistance as a consumer in one of the cases demonstrated. Additionally, the results of a national telephone survey that assessed parental attitudes and understanding of child safety showed that parents were well informed about potential automobile injuries, but parents knew little about the dangers of drowning, or other dangers such bicycle injuries and burns. The parents who were surveyed mentioned "being careful" when describing precautions to take to reduce the risk of injuries rather than mentioning specific safety measures (Eichelberger, Gotschall, Feely, Harstad, and Bowman, 1990).

Thus, to prevent or reduce the likelihood of childhood injuries like drownings, constant and close supervision around a pool is essential. This includes consistently and vigilantly watching, listening, staying physically close to the child, knowing their whereabouts and activities, and being ready to act immediately if a problem arises (Morrongiello, B, 2005). However, as the above analysis shows, caregivers cannot be expected to provide constant supervision. Lapses in supervision can stem from multiple factors, including caregivers' perception of the hazard associated with the product and the environment, their unawareness of their toddler's ability to climb A-frame ladders, and distractions such as the number of children in the home or the caretaker's own activities. For example, caretakers may not appreciate their child's developmental skills such as their child's ability to climb. This may create a false sense of security that their child is safe from hazards in and around the home. This knowledge gap may contribute to caretakers being less than vigilant with respect to paying attention to the activities of the child and having a lapse in supervision. Also, a caretaker may have more than one child to attend. The demands placed on the caretaker with multiple children may present a challenge to

pay constant and close supervision. It is these lapses that put children at risk, in this case, for drowning injuries.

Time of Year

As previously mentioned, most of the incidents occurred during the summer months of June, July, and August. More drownings occur in the summer, because increased hot weather leads to more people swimming in pools, which increases the risk of incidents. This surge in water activity, combined with increased risk factors, such as developmental abilities and lapses in supervision when children access a pool, elevates the risk of drowning during the summer.

Drowning Prevention Measures

Removable Ladders. As stated earlier, the ASTM Subcommittee for Portable Pools presented data in 2014 that showed that young children used pool ladders as the primary method to access aboveground pools. Manufacturers of aboveground and portable pools believe that the best way to prevent children drowning in aboveground pools is for consumers to remove the ladder after every use. However, removal of the ladder may not be effective for many reasons. First, consumers may allow their children to go in and out of the pool throughout the day. Therefore, it is unreasonable to assume that a consumer will remove the ladder from the pool throughout the day after every use. Second, nearby neighbors who do not have children may see no reason to remove their ladder when their pool is not in use. Third, some consumers rely on older children to remove the ladder from the pool when the children get out of the pool only to learn later that the children forgot to remove it, resulting, unfortunately, in a drowning. The incident data is suggestive of this scenario. Fourth, some pool ladders for aboveground pools weigh more than 50lbs (Stewart, 2025). Consumers are likely to find it challenging, if not impossible, to lift this type of ladder out of the pool after every use. Fifth, it takes time and effort, and it may be inconvenient for consumers to remove the ladder every time the pool is not in use. The shape of the ladder is likely to make it awkward and cumbersome to lift out of the pool after every use. Also, pool ladders and stairs are often filled with sand or water for stability (sometimes weighing ~100 lbs). Lifting this type of ladder, especially when water-logged or weighted down with sand, after every use is likely to require significant physical effort, with many users opting for another person to assist with lifting or leaving them in place for the season to avoid daily strain. It is possible that another user may not be available to assist with removing the ladder. If this is the case, the user may leave the ladder attached to the pool. Published research suggests that when the cost of compliance, in terms of time, effort, and convenience is high, consumers are less likely to comply with an instruction then when the cost of compliance is low (Laughery, 2006; Ayres, 2013; Laughery and Wogalter, 2014; and Wogalter, Mayhorn, and Laughery, Sr., 2021).

Staff assesses that 16 of the 113 incidents that did not involve child resistant ladders would have been addressed if child resistant ladders were available to use given that the cost of compliance

to engage the safety feature is low compared to the high cost to remove a ladder after every use. This is because consumers in those 16 cases remarked that they typically removed the ladder but forgot to on the day of incident. Given that those consumers likely exerted more time and effort to remove the ladder, consumers are likely to have exerted less time and effort to engage the child-resistant safety feature if a child resistant ladder were available. Finally, consumers may get distracted or may reasonably forget to remove the ladder even though consumers may typically make it a practice to remove it. Staff is aware of several incidents provided above that highlight this scenario.

The combination of the developmental abilities and the physical development of the children in the at-risk group, lapses in supervision, with relying on consumers to remove the ladder after every use, highlights the need for child-resistant ladders to address the risk of drowning.

Child-Resistant Ladders. The Petitioner is requesting a rule that requires ladders that come with or for use with aboveground and portable pools be child-resistant. Compared to relying on consumers to remember to remove ladders every time the pool is not in use, child-resistant ladders are not likely to incur a high cost, in terms of time, effort, and convenience, to activate. In other words, consumers would not be required to remove the child-resistant ladder from the pool after every use, if at all. Child resistant ladders are intended to remain attached to the pool. Consumers would need only engage the safety mechanism (*e.g.*, removing or pulling up the steps or pulling down a guard over the steps) after each use. Therefore, the cost of complying with the instruction to engage the safety feature is likely to be lower than having to remove a ladder after every use.

The petitioner also requests a measurable definition of child resistance. Although ASTM F2666-16 (R24) contains a requirement that child-resistant ladders be child-resistant, it does not contain a test protocol to establish child-resistance. ASTM F2666-16 (R24) states that verification can be satisfied by document review.

ASTM F2666-16 (R24) also contains a requirement that the ladder meet all the applicable requirements found in *American National Standard for Aboveground/Onground Residential Swimming Pools – ANSI/APSP/ICC-4 (ANSI/APSP-4)*. ANSI/APSP-4[52] contains general requirements for ladders (Section 9) related to stability, handholds, treads, risers, as well as other requirements. Additionally, there is a section in the standard (Section 8) on Safety Signs for removable and limited access ladders (child-resistant) that is intended to address the issue of preventing unauthorized access to pools, but safety signs (*i.e.*, warnings) alone are not adequate to prevent unauthorized access by a child. However, ANSI/APSP-4 does not contain performance requirements for child resistant-ladders or test protocol to verify whether the ladder is child resistant. Therefore, based on the above, it appears that ANSI/APSP-4 relies on labeling

[52] The updated version is ANSI/PHTA/ICC-4 2025.

requirements for ladders to prevent unauthorized access to a pool. However, labeling alone is not adequate to address the child-resistance of ladders for portable pools.

As the data shows, most drownings occurred in pools covered by the ANSI/APSP-4 standard. Aboveground pools covered by this standard present the same hazard as portable pools. Therefore, based on the injury data, ladders sold with or for use with both portable and aboveground pools should be child-resistant and tested to verify child resistance.

Effectiveness of Child-Resistant Ladders

The data shows that of the 130 in-scope incidents, 17 involved child-resistant ladders. Ten of the 17 incidents occurred when the ladder was left in the "down" position (child-resistant mechanism not engaged). In three of the 17 incidents, it appears that consumers did not pull down the child-resistant guard over the ladder. In two of the 17 cases, the ladder's child-resistant feature was unlocked at the time of the incident. Two of the 17 incidents involved self-closing and self-latching gates that are attached to the ladder. In one of these two ladder incidents, the gate failed to close and self-latch due to issues with the hardware. In the other self-closing and self-latching ladder incident, it appears that the gate was left open.

Based on the above, consumers were required to activate the child-resistant mechanism in 15 of the 17 incidents, but consumers did not engage the feature at the time of the incident. In two of the 17 incidents, the gate was supposed to self-close and self-latch, but it appears that the ladders did not function as intended. Although children may be able to defeat a child-resistant mechanism with enough practice, in none of these 17 cases involving child-resistant ladders did the child defeat the child-resistant mechanism. Therefore, if consumers had engaged the child-resistant mechanism then in 15 of the 17 cases the incident may not have occurred. Additionally, if the self-closing and self-latching gates had functioned as intended in two of the 17 incidents, these incidents also may not have occurred.

Despite the incidents involving the child-resistant ladders, ESHF assesses that child-resistant ladders are likely to be a more effective measure to thwart child access to aboveground and portable pools than removable ladders because the cost, in terms of, time, effort, and convenience is low compared to relying on consumers to remember to remove the removable ladders after each use. The reasons consumers did not engage the child-resistant mechanism may be very similar to the reasons why consumers did not detach the removable ladders. One such reason is that consumers may have foreseeably forgotten to engage the child-resistant mechanism.

ASTM Subcommittee for Portable Pools

As previously mentioned, F2666-16(R24) contains a requirement that ladders sold with or for use with portable pools be child-resistant and that verification of child-resistance be satisfied by document review. Although the standard contains a requirement that ladders be child-resistant,

the standard does not define child-resistance. Therefore, CPSC staff is working with the ASTM F15.60 Subcommittee on Portable Pools to add anthropometrically based performance requirements for child-resistant ladders to ASTM F2666-16 (R24) and a test protocol to assess child-resistance to the performance requirements. Staff is also working with the subcommittee to revise the warning requirements.

On August 20, 2025, ASTM balloted the proposed performance requirements for child-resistant ladders and test protocol as well as the proposed requirements for the section on product instructions and warnings. ESHF staff reviewed the balloted revisions to ASTM F2666-16R24 for Residential Use.[53] The ballot received five negative votes. ASTM resolved two and will re-ballot them, deemed one unpersuasive, and discussed the remaining negatives. Staff assessed that the balloted performance requirements with the proposed modifications are adequate to address the petitioner's concerns.

Labeling

As previously stated, CPSC staff is aware of 17 incidents involving child resistant ladders. Staff assesses that despite these incidents, child resistant ladders are likely to be a more effective measure to thwart child access to aboveground and portable pools than removable ladders due to the low cost, in terms of time, effort, and convenience to engage the child resistant features compared to removing ladders after each use. In the September 2025 letter, staff mentioned working with ASTM to developing strong warnings for consumers.[54] Strong warnings are needed to enhance the effectiveness of child resistant ladders.

In future ASTM and (ANSI/PHTA) meetings, staff plans to discuss labeling improvements needed for stronger warnings including developing warnings that have motivational content such as informing consumers that children have drowned when the ladder was not secured. Staff also plans to discuss the importance of personalizing the warning to make it difficult for users to conclude that the warning is not directed to them and that it is not important to comply with the warning (Wogalter, M.S.; Kalsher, M.J.; and Raciot, B.M. (in press)). Additionally, staff plans to discuss the need to keep the warning brief by limiting the hazard to drowning to minimize warning clutter as well as consider the need to customize the precautions in the warning depending on the child-resistant feature. Moreover, staff plans to discuss placement of the graphic in a warning as well as placement of the warning on the product itself.

Pool & Hot Tub Alliance

The Pool & Hot Tub Alliance (PHTA) developed the most current and updated edition of the standard for aboveground/onground swimming pools. The title is ANSI/PHTA/ICC-4 2025,

[53] The ballot closed September 19, 2025.
[54] Letter to ASTM dated September 19, 2025. https://www.cpsc.gov/s3fs-public/Staff-Comment-to-ASTM-F15-60-Ballot-of-Portable-Above-Ground-Pools-September-18-2025.pdf?VersionId=SC7kF8D3rs5zzHEl0b4BLgDsAlyACUTQ

American National Standard for Aboveground/Onground Residential Swimming Pools (PHTA-4). ANSI/APSP-4 contains general requirements for ladders (Section 9) related to stability, handholds, treads, risers, as well as other requirements. However, ANSI/APSP-4 does not contain performance requirements for child resistant-ladders or test protocol to verify whether the ladder is child resistant. Section 8 of the standard requires Safety Signs for removable and limited access ladders (child-resistant) that is intended to address the issue of preventing unauthorized access to pools. Therefore, ANSI/APSP-4 relies on labeling requirements for ladders to prevent unauthorized access to a pool. However, labeling alone is not adequate to address the child-resistance of ladders for aboveground or portable pools.

As the data shows, most drownings occurred in pools covered by the ANSI/APSP-standard. Aboveground pools covered by this standard present the same hazard as portable pools. Therefore, because labeling is not adequate to prevent or reduce the likelihood of drowning as the injury data shows, ladders sold with or for use with both portable and aboveground pools should be child-resistant and tested to verify child-resistance. As with ASTM F2666 (16R24), ANSI/PHTA/ICC-4 currently does not contain performance requirements for child resistant ladders for aboveground pools nor contain a test protocol to establish child resistance as previously stated. However, based on comments received from PHTA regarding the Petitioner's request, PHTA is willing to form a task group to address the Petitioner's concerns.[55] Once PHTA forms a task group, CPSC staff plans to actively participate in the voluntary standards process including attending meetings, providing injury data, assisting with developing performance requirements, and reviewing and commenting on balloted requirements.

IV. CONCLUSION

Children between the ages of 1 and 3 years are at greatest risk of drowning. Their developmental stage, underdeveloped ability to assess risk, and a lack of swimming and water safety skills play a role. Also, lapses in supervision are often cited as a contributing factor for childhood drowning, especially for younger children.

The ASTM Subcommittee for Portable Pools provided data that showed that young children used pool ladders as the primary method to access above ground pools. Members of the industry believe that the best way to prevent child drowning in aboveground pools is for consumers to remove the ladders after every use. However, ESHF staff provided many reasons as to why this approach is not likely to be effective, one of which is high cost in terms of time, effort, and convenience to remove the ladder after every use. Staff assesses that the better approach to reducing the potential for child drowning is to require ladders for portable and aboveground pools to be child-resistant. Consumers would need only to engage the child-resistant

[55] See PHTA's comment at the following link: https://downloads.regulations.gov/CPSC-2025-0006-0014/attachment_1.pdf

mechanism. Additionally, a child-resistant ladder may give a consumer enough time to intervene to rescue a child should the need arise.

Staff assesses that 16 of the 113 incidents that did not involve child resistant ladders would have been addressed if child-resistant ladders were available to use given that the cost of compliance to engage the safety feature is low compared to the high cost to remove a ladder after every use. This is because consumers in those 16 cases remarked that they typically removed the ladder but forgot to on the day of incident. Given that those consumers likely exerted more time and effort to remove the ladder, consumers are likely to have exerted less time and effort to engage the child-resistant safety feature if a child resistant ladder were available.

CPSC staff is working with the ASTM Subcommittee for Portable Pools to develop performance requirements for child-resistant ladders and a test protocol to establish child resistance as well as to develop requirements for a warning. A PHTA representative attends these meetings and is aware of the petition. Because some consumers may not secure a child-resistant ladder as the data shows, ESHF staff is working with ASTM to develop labeling requirements that may encourage consumers to engage the child-resistant feature to increase the effectiveness of child-resistant ladders.

ANSI/PHTA/ICC-4 currently does not contain performance requirements for child-resistant ladders for aboveground pools nor contain a test protocol to establish child-resistance. Although PHTA has not yet started to develop performance requirements for child-resistant ladders, based on their public comment on the petition, PHTA is willing to form a task group to address the Petitioner's request.

Therefore, given that CPSC staff is working with the ASTM F15.60 Subcommittee on Portable Pools to address the issues raised by the Petitioner and PHTA is willing to form a task group to address these issues, a mandatory regulation as requested by the Petitioner to mandate child-resistant ladders for aboveground and portable pools and an objective and measurable definition of child resistance is currently not warranted. Revised voluntary standards that address the Petitioner's request may address the same hazard as a mandatory standard.

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Tab D: Mechanical Engineering Assessment

United States
Consumer Product Safety Commission

TO: Sharon White, Project Manager, Child-Resistant Aboveground and Portable Pool Ladders Petition

DATE: May 15, 2026

THROUGH: Caroleene Paul, Director
Division of Mechanical and Combustion Engineering
Directorate for Engineering Sciences

FROM: Daniel Stewart, Mechanical Engineer
Division of Mechanical and Combustion Engineering
Directorate for Engineering Sciences

SUBJECT: Mechanical Engineering Assessment for Petition Requesting a Mandatory Regulation for Child-Resistant Aboveground and Portable Pool Ladders

I. Introduction

Carol Pollack-Nelson, Ph.D., of Independent Safety Consulting, LLC (Petitioner) is requesting that the Consumer Product Safety Commission (CPSC) establish a mandatory regulation for child-resistant pool ladders for aboveground pools[56] (water depth of 36 inches or more) and portable pools [57] (water depth of less than 36 inches) to reduce the drowning deaths of children younger than 5 years of age, and particularly children between 1 and 3 years, the age group asserted to be at greatest risk (CP 25-2, 2025 petition).

The Petitioner asserts that ASTM F2666-16, Safety Specification for Aboveground Portable Pools for Residential Use includes a "general requirement" for child resistance on pool ladders and ANSI/APSP/ICC-4 2012, American National Standard for Aboveground/Onground Residential Swimming Pools contains requirements for ladder warnings and performance standards. However, the Petitioner states that there is no protocol or metric required to verify that a ladder is child-resistant, only a "Verification can be satisfied by document review" statement in section 5.1 of ASTM F2666-16. The Petition states the following concerns:

> **Concern #1.** Lack of a well-defined child-resistant requirement for A-frame and other ladders intended for aboveground and portable pools in current voluntary standards.

[56] ANSI/APSP/ICC-4 2025 pertains to aboveground/onground residential swimming pools with a water depth of 36 in. (91 cm) or greater.
[57] ASTM F2666-16 defines a "portable pool" as "any movable structure with the intended purpose of being used for swimming or other water recreation by consumers and having a water depth (at the fill line) less than 36 in. (91 cm)."

Concern #2. Lack of an objective and measurable definition of "child-resistant" in current voluntary standards.

When petition CP-25-2 was filed, ANSI/APSP/ICC-4 2012 was the current standard and the one to which the Petitioner refers. An updated standard was approved on February 20, 2025 (after the petition was filed). The updated 2025 version has since been reviewed by staff. The 2025 updated standard does not contain child resistant (CR) requirements for ladders or test requirements to establish child resistance for aboveground and portable pools.

This memorandum provides Engineering Sciences Division of Mechanical and Combustion Engineering (ESMC) staff's assessment of the petitioners' request for a Mandatory Regulation for Child-Resistant Aboveground and Portable Pool Ladders.

II. Product Description

Non-CR Ladders are shown in Figure 1-4

- The A-frame design is a self-supporting ladder with two sets of rungs connected to a platform; one set is positioned outside the pool and the other placed inside the pool. A-frame ladders are sold for pool heights from 36 inches up to 56 inches and have a maximum capacity of 300 pounds.

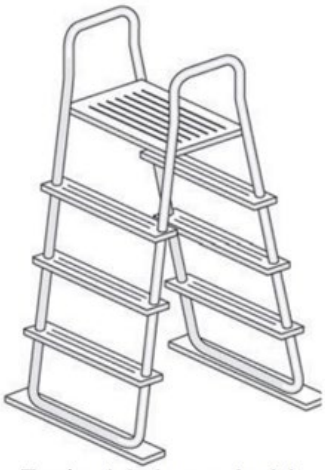

Figure 1. A-frame Ladder

- A hook-on ladder is a ladder that is U-shaped at the top to attach to the pool. These ladders are often made of steel or plastic. The most common products fit a pool height of 48 to 54 inches and have a maximum capacity of about 300 pounds.

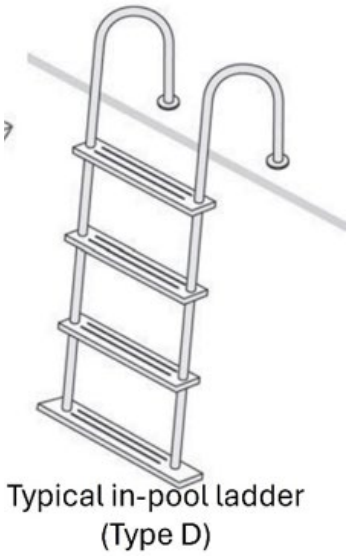

Figure 2. Hook-on Ladder

- Steps are a type of pool ladder that look like stairs with handrails. These are often more heavy duty and made of plastic resin. These products typically fit pool heights anywhere from 48 to 54 inches and can hold up to 350 to 400 pounds.

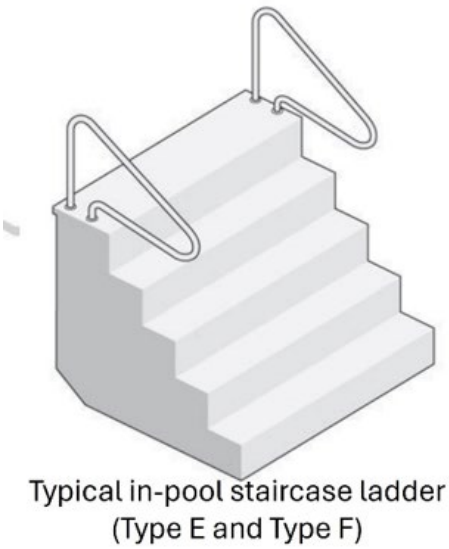

Figure 3. Staircase Ladder

- A double step system has two sets of stairs and a base in between to enter and exit the pool, and handrails on both sides are sometimes referred to as a bridge system. These typically fit a pool height from 48 to 56 inches and can hold up to 300 to 400 pounds.

Figure 4. Double Step Ladder

Child Resistant Ladders are shown in Figure 5-9

- A lockable roll down guard sold with the A-frame ladder is a barrier for the outside steps.
    - A locking roller cover is pulled down to completely block access to the steps.

Figure 5. CR A-frame Ladder

- A lockable gate is a self-closing gate on the steps to enter the pool which can be locked.
    - The lockable gate swings closed when not being held open.

Figure 6. CR Lockable Gate Ladder

- A swing up ladder has steps to enter the pool that can lift or flip up.
    - The ladder rotates (flips) upwards and locks to prevent access.

Figure 7. CR Flip Up Ladder

- Removable steps are mainly on A-frame ladders and require a person to remove the steps to enter the pool.
    - The steps are removable to restrict access to the pool.

Figure 8. CR Removable Steps Ladder

- A child-resistant gate is added to outside staircase to prevent access.
    - Access to the outside staircase is restricted by a child-resistant locking gate.

Figure 9. CR Double Step Ladder

Staff's Assessment of Relevant Standards from the Current Petition

(A) ASTM F2666-16, Standard Specification for Aboveground Portable Pools for Residential Use

The ASTM F2666-16 standard provides safety and performance requirements for portable pools for residential use. The standard covers all types of portable pools with a water depth of less than 36 in. (91 cm) and addresses pool hazards including childhood drowning, sanitation, electrical safety, and entrapment.

Section 5. of the standard covers the *Performance Requirements* which includes a sub-section 5.1 for *Ladders*. The requirements for ladders are as follows: "Any ladders sold with or for use with Type A[58] or Type B[59] pools shall meet all the applicable requirements found in ANSI/APSP-4 and be child-resistant to the degree of preventing unauthorized access for children under the age of five years. Verification can be satisfied by document review." The term "*child resistant*" is not defined in the standard.

Section 6. of the standard covers *Tests*. There are no testing requirements for ladders in the standard.

Section 7. of the standard covers *Instructions*. Sub-section 7.1.5 states that pools with a depth greater than 18 in. (46 cm) shall direct consumers to barrier recommendations as described in CPSC Pub. No. 362, Safety Barrier Guidelines for Residential Pools (Preventing Child Drownings). ESMC staff evaluates the CPSC publication in part **(E)** of this memorandum.

Sub-section 7.2.1.1 requires the instruction manual to list the following: "Prevent Young Children From Gaining Access to Pool: Remove pool ladders before leaving pool. Toddlers can climb ladder and get into pool. Position furniture away from pool so that children cannot climb and gain access to pool."

Section 9. of the standard covers *Package Marking and Materials*. Sub-section 9.3 requires a message panel with the following: "Install a pool fence around the pool to prevent children from gaining unauthorized access and drowning." This messaging does not include a statement for restricting access to ladders.

(B) Assessment of ASTM F2666-16 standard

Petition CP 25-2 states that the current voluntary standards used by industry lack a definition and testing protocol for child-resistant pool ladders. ESMC staff reviewed ASTM F2666-16 and concurs that the voluntary standard does not address the main concerns of the petition.

ESMC staff concludes that the term "child-resistant" is not defined and there are no measurable testing requirements for ladders in the standard. The standard addresses child resistance by recommending that caregivers remove the pool ladder when not in use to prevent children from accessing the pool by climbing the ladder.

Section 7.2.1.1 suggests removing the ladder when the pool is not in use. Staff concludes this is not practical. Some pool ladders for aboveground pools weigh in excess of 50 lbs. A person of advanced years or perhaps a physical disability would find it very difficult if not impossible to

[58] Portable Pools without a Pump or Filter
[59] Portable Pools with Pumps or Filters

lift this type of ladder out of the pool. Furthermore, it takes time and effort, and it may be inconvenient for consumers to remove the ladder every time the pool is not in use.

(C) ANSI/APSP/ICC-4 2025, American National Standard for Aboveground/Onground Residential Swimming Pools

ANSI/APSP/ICC-4 2025 describes certain criteria for the design, manufacturing, testing, care, and use of aboveground/onground residential (Type-O) non-diving swimming pools and their components. Aboveground/onground residential (Type-O) non-diving swimming pools are defined as pools with a shallow area water depth of 36 in. (914 mm) minimum at the wall and a water depth of 48 in. (1219 mm) maximum at the wall. The updated version does not include performance requirements for child-resistant ladders.

Section 7 of the standard covers the *Instructions and Responsibilities*, which includes sub-section 7.2.3 that states: "Instruction manuals shall state that a barrier is necessary and often required by law, regulation, or standard to provide protection against potential drowning and near drowning and that barriers are not a substitute for the constant supervision of children."

Sub-section 7.2.7 *Ladders* covers instructions for the proper assembly and use of pool ladders but does not mention any child resistance requirements.

Sub-section 7.3.1 covers instructions for installers: "Installers shall follow written instructions regarding positioning of all equipment connected to the circulation systems. All of these components shall be positioned to prevent their being used as a means of access to the pool, especially by young children.

Section 8 of the standard covers *Safety signs for ladders*. The different types of ladders can be seen in Figure 10.

Subsection 8.2.1 is for A-frame ladders which are separated into Type A, Double Access Ladders and Type B, Limited Access Ladders. Limited Access Ladders are designed with built-in lockable features such as swing-up or removable stairs, or lockable gate, or protective barrier on the entry side of the ladder to prevent children from entering the pool.

Sub-section 8.2.1.4 is for Type A ladders, and Section 8.2.1.4.1 requires Type A ladders to have an affixed safety sign stating, "REMOVE AND SECURE LADDER WHEN POOL IS NOT OCCUPIED."

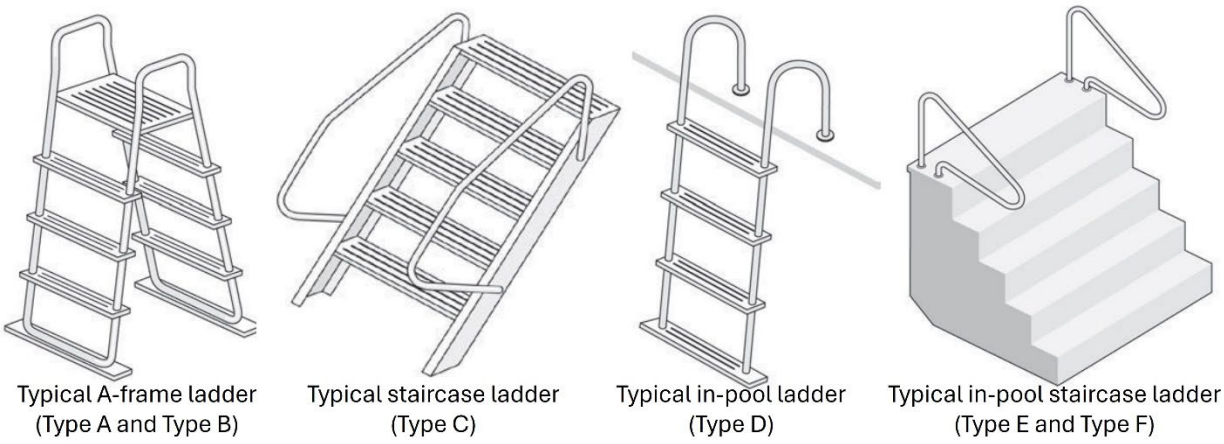

Figure 10. Pool Ladders

Sub-section 8.2.1.5 is for Type B ladders, and Section 8.2.1.5.1 requires Type B ladders to have an affixed safety sign stating, "SECURE LADDER WHEN POOL IS NOT OCCUPIED." Section 8.2.5.2 requires Type B ladders which utilize some type of feature to limit accessibility to have an affixed safety sign stating: "WHEN POOL IS NOT OCCUPIED, SECURE THE LADDER TO PREVENT UNSUPERVISED ACCESS, ESPECIALLY BY YOUNG CHILDREN."

Subsection 8.2.2 is for Type C ladders which resemble a staircase that can swing up or be removed when the pool is not in use. Section 8.2.2.1 requires an affixed safety sign stating, "WHEN NOT IN USE SWING-UP AND SECURE OR REMOVE."

Section 9. *Aboveground/Onground Pool Ladders and Staircases* cover general requirements (9.1) and test requirements (9.2). These sections have requirements for slip-resistance, structural integrity, stability, riser height and entrapment, but nothing on child resistance.

Section 10. *Aboveground/onground raised decks and fencing*, sub-section 10.6.3 states, "Where fencing is required and/or provided on the pool or deck, the fencing shall have at least 65 percent open area to allow visibility to the pool area and shall be constructed so as to eliminate or discourage climbing by young children."

(D) Assessment of ANSI/APSP/ICC-4 2025 standard

Petition CP 25-2 states that the current voluntary standards used by industry lack definition and testing protocol for child-resistant pool ladders. ESMC staff reviewed ANSI/APSP/ICC-4 2025 and concurs that the voluntary standard does not address the main concerns of the petition.

ESMC staff concludes that the terms "child-resistant" or "limited access" are not defined and there are no measurable testing requirements for ladders in the standard. The standard addresses

child resistance by recommending that caregivers remove the pool ladder when not in use to prevent children from accessing the pool.

Sections 8.2.1.4 and 8.2.2 suggest removing the ladder when the pool is not in use. This is not practical in some situations and with A-frame (type A and B) ladders. Some pool ladders for aboveground pools weigh more than 50 lbs. A person of advanced years or perhaps a physical disability would find it very difficult if not impossible to lift this type of ladder out of the pool. Section 8.2.2 requires signage that suggests that Staircase ladders (type C) swing up to prevent access; however, the standard does not require type C ladders to swing up. Signage for type C ladders suggest removing the ladder; however, due to the size and weight, ESMC staff assesses that removing the staircase is not practical. There are signage requirements for type D, E and F ladders that are addressed in the Human Factors memo.

Section 9.3 lacks any general requirement or testing requirement that pertains to verifying the child resistance or limited accessibility of a pool ladder.

Section 10 falls short of specifically requiring barriers for pool ladders.

(E) CPSC Pub. No. 362, Safety Barrier Guidelines for Residential Pools

This publication is referenced in ASTM F2666-16. The publication provides information and data on drowning and non-fatal drowning incidents for children as well as guidelines for barriers to prevent child access to residential pool areas but does not define "child resistance."

(F) Summary of CPSC Pub. No. 362

The publication provides guidance on the minimum height for a pool barrier. Although the guidance does not address pool ladders, the requirements for a barrier may be relevant for pool ladders because the barrier requirements are intended to prevent access to the pool by children. The suggested minimum barrier height is 48 inches above grade. ESMC staff concludes/assesses this height could be applied to barriers around pool ladders as well as minimum accessible step height when a pool ladder is in the "child-resistant" configuration.

Evaluation of the Data in the Petition

(A) Data provided in CP 25-2

The Petitioner provided data from an ASTM subcommittee for Portable Pools meeting showing that pool ladders are the primary method by which toddlers and young children access water in aboveground and portable pool drownings and near-drownings.[60] A data review of 95 IDIs between 2004 and 2012 and for pools with up to 52" wall height indicated that most drownings

[60] Data summary presented by industry member of the ASTM subcommittee for Portable Pools, May 13, 2014.

were in pools taller than 48 inches and the primary means of access was via a ladder. Of the 92 cases where the means of access was known, the ladder was identified in 61 incidents (66%).

The Petitioner also provided data from a more recent report from the CPSC entitled, *Pool or Spa Submersion: Estimated Nonfatal Drowning Injuries and Reported Drownings, 2024 Report*, which summarizes drowning data related to pools including aboveground and portable pools. The report breaks down the rate of drowning by age (see Figure 11). As seen in this figure, children between 1 and 3 years are at greatest risk of drowning, comprising approximately 64% of the reported fatalities.

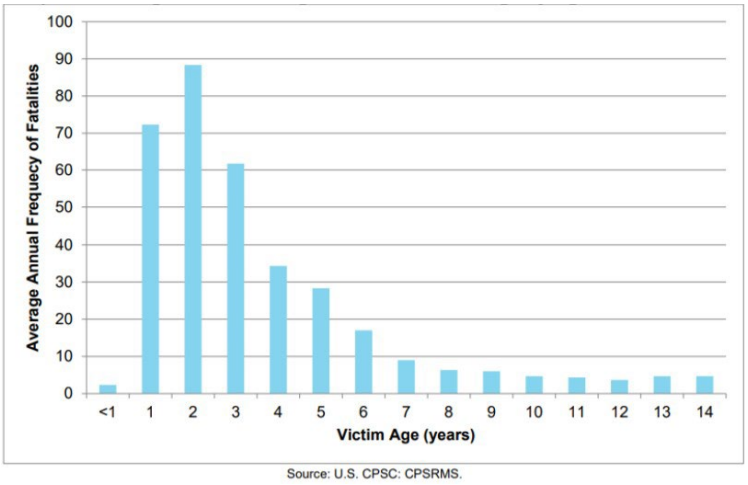

Figure 11. Average Annual Drowning Deaths Associated with Pools or Spas, 2019-2021

According to the 2024 report, 26% of deaths involving children younger than 5 years from 2019-2021 occurred in aboveground and portable pools, both of which are accessed by ladders. The majority of these deaths (85%) were in aboveground pools.

III. Discussion

(A) Assessment of Petitioner's Requests

In CP 25-2, the Petitioner made two requests:

Petitioner's first request. Establish a mandatory regulation for a child-resistant requirement for A-frame and other ladders intended for aboveground pools (water depth of 36 inches or more) and portable pools (water depth of less than 36 inches).

ESMC Staff's assessment of Petitioner's first request:

ESMC staff assesses that the Petitioner has provided evidence of the need for a child-resistant requirement for all ladders intended for use with aboveground and portable pools. The data shows that aboveground pools are involved in the majority of the reported drownings for

children under the age of 5 years and portable pools account for a smaller percentage of the incidents. Based on the data provided by the petitioner, ESMC staff concludes that drownings of children in aboveground and portable pools can be reduced by making the pools inaccessible by children when the pool is not in use.

Petitioner's second request. Establish a mandatory regulation for an objective and measurable definition of "child-resistant" for pool ladders.

ESMC Staff's assessment of Petitioner's second request:

ESMC staff agrees with the Petitioner's assessment that the current voluntary standards lack a quantitative definition of child resistant. Neither standard addressed in the petition defines a "child-resistant" ladder. In addition to the lack of definition, ASTM F2666-16 section 5.1 states that "Verification can be satisfied by document review." ESMC staff concurs with the Petitioner that no tangible testing metrics are provided. Verification should consist of test results to specific performance requirements that correlate to the ability of a child to access or use a pool ladder.

(B) The proposed revisions submitted by the ASTM subcommittee

Adds requirements for child-resistant ladders in Section 5 – Performance Requirements:

> 5.1 Ladders—Any ladders sold with or for use with Type A or Type B pools shall meet all the applicable requirements found in ANSI/APSP-4 and shall be Type B ladders with limited-access in accordance with section 5.1.1.
>
> 5.1.1. Limited-Access Ladder – To limit access to the pool, the ladder shall include features that provide child-resistance for children under 5 years of age. Limited-access ladder designs may rely on, but are not limited to, swing-up steps, slide-up steps, removable and securable steps and step guards or closures.
>
> 5.1.2. Child-Resistant Features – All designs of limited-access ladders shall rely on the following principle for child resistance for children under five years of age: When the ladder is in its secured (access-limiting) position, the height between the lowest bearing point of the ladder and the ground or the foot of the ladder shall be greater than or equal to 45 in (1143 mm).
>
> 5.1.3. Automatic Features – Child-resistant features can be automatically engaging, and such designs are encouraged provided they do not impede easy and safe use of the ladder. Such impediments for safe use may include:
>
> - hindering safe and easy pool ingress or egress during regular use
>
> - affecting reliability of the child-resistant feature
>
> - creating difficulty for regular use that may encourage users to bypass the child-resistant feature

5.1.4. Locking and Unlocking Mechanism – When placed in the secured (access-limiting) position, the child-resistant feature shall lock into place and require deliberate unlocking of the feature to place it back into the use (access-granting) position. To prevent the risk of unlocking from the secured (access-limiting) position by children under five years of age or unintentional unlocking of the ladder, the unlocking mechanism shall require at least one of the following actions:

- A minimum of 15 lbf (67) (applied at the furthest point from the axis for rotating parts) to unlock

- At least two consecutive actions on the unlocking mechanism to release it, the second being dependent on the first being permed and maintained

- Two separate but simultaneous actions that rely on different working principles

- Two unlocking devices at least 39.4 in (1000 mm) apart and which require simultaneous activation to unlock

- Be inaccessible to children under the age of five by being at a minimum distance of 54 in (1372 mm) from the ground

5.1.4.1. The use of tools such as a token, a key, a magnetic card, etc. and the action of opening the access-limiting feature are not considered to be an unlocking action as defined above.

5.1.4.2. Ladders with lifting steps shall have a blocking device that retains the steps in the lifted position. Such blocking device shall be automatic and signaled in a visible or audible manner.

Adds requirements for child-resistant ladders in Section 6 – Tests:

6.3 Ladder Testing

6.3.1. The child-resistant feature shall satisfy the requirements in sections 5.1.2 and 5.1.3 and be easily operated by adults such that the required force does not exceed 15 lbf (67 N).

6.3.2. The child-resistant feature shall remain functional after 2,000 cycles of operation; one cycle consists of starting with the feature in the secured (access-limiting) position, moving to the unsecured (access-granting) position, and returning to the secured (access-limiting) position.

6.3.3. For ladders with retractable steps, the leg or the device that is operated to retract the steps shall withstand a tensile pulling force applied gradually from zero to 22 lbf (100 N) when in the secured position. The pulling force shall be applied in the direction of separation of the components and held for the duration of 10 seconds.

(C) ASTM Balloted Revisions Summary

On August 20, 2025, ASTM balloted the proposed revisions to *Standard Specification for Aboveground Portable Pools for Residential Use*- F2666-16 (Reapproved 2024). CPSC staff

commented on the ballot in a letter, dated September 19, 2025, to ASTM. Staff expressed support for the proposed requirements and acknowledged that requirements for child-resistant ladders with the removal of the lightweight non-child-resistant ladders as an approach that may save children's lives. Additionally, the ballot received five negatives. ASTM resolved two and will reballot them. ASTM found one unpersuasive and discussed the remaining negatives. Staff assessed that the balloted performance requirements with the proposed modifications are adequate to address the concerns of the Petitioner.

IV. Conclusion

ESMC staff reviewed CP 25-2. The Petitioner made two requests:

(1) Establish a mandatory regulation for a child-resistant requirement for A-frame and other ladders intended for aboveground and portable pools.

(2) Establish a mandatory regulation for an objective and measurable definition of "child-resistant" for pool ladders.

After reviewing ASTM's balloted revisions with modifications, ESMC staff finds them adequate to address the concerns of the Petitioner. The additional performance requirements address the Petitioner's first request, and the proposed test protocol addresses the Petitioner's second request with the addition of a definition to Section 3 of the standard.

The Pool and Hot Tub Alliance (PHTA) also exhibited a willingness to address the Petitioner's concerns.

ESMC staff recommends working with the subcommittee for ASTM and ANSI/PHTA to address the Petitioner's concerns.

TAB E: Economic Considerations

United States
Consumer Product Safety Commission

TO: Sharon White, Project Manager,
Petition for Aboveground and Portable Pool Ladders

DATE: May 15, 2026

THROUGH: Rohit Khanna
Acting Associate Executive Director
Directorate for Economic Analysis

FROM: Jaclyn Kramer, Economist
Directorate for Economic Analysis

SUBJECT: Market and Economic Considerations for Child-Resistant Aboveground and Portable Pool Ladders

I. Introduction

On January 22, 2025, Carol Pollack-Nelson, Ph.D. of Independent Safety Consulting, LLC (the petitioner) requested that the U.S. Consumer Product Safety Commission (CPSC) establish a mandatory regulation for child-resistant ladders for aboveground and portable pools. The petition states that pool ladders are the primary method children access aboveground and portable pools in drownings and near-drownings.

The ASTM voluntary standard for portable pools, ASTM F2666-16, *Safety Specification for Aboveground Portable Pools for Residential Use*, includes a general requirement that pool ladders should prevent unauthorized access for children under the age of five years.[61] The petitioner seeks to (1) establish a child-resistant standard for A-frame ladders and other ladders intended for aboveground and portable pools; and (2) establish an objective and measurable definition of "child-resistant." This petition was filed by CPSC as petition CP 25-2.

This memorandum provides information on the market for aboveground and portable pool ladders with and without child-resistant features, and the economic considerations related to the petition. The analysis is based on information that is readily available, including information provided by the petitioner, public comments, and public websites such as manufacturers and retailers.

II. Product

The scope of the petition includes ladders used to access aboveground and portable pools. There are four main types of ladders: A-frame, hook-on, steps, double steps/bridge. The most common type is the A-frame design.

[61] ASTM International, "ASTM F2666-16: Standard Specification for Aboveground Portable Pools for Residential Use," 2016, https://www.astm.org/READINGLIBRARY/.

- The A-frame design has two sets of ladders, one set positioned outside the pool and the other placed inside the pool. A-frame ladders are sold for pool heights from 36 inches up to 56 inches and have a maximum capacity of 300 pounds. These products are sold at various online retailers and their price ranges from $60 to $230.[62]
- A hook-on ladder is a ladder that is U-shaped at the top to attach to the pool. These ladders are often made of steel or plastic. The most common products fit a pool height of 48 to 54 inches and have a maximum capacity of about 300 pounds. These products are sold at various online retailers and their price ranges from $100 to $270.
- Steps are a type of pool ladder that look like stairs with handrails. These are often more heavy duty and made of plastic resin. These products typically fit pool heights anywhere from 48 to 54 inches and can hold up to 350 to 400 pounds. These retail for $130 to $450.
- A double step system has two sets of stairs and a base in between to enter and exit the pool, and handrails on both sides are sometimes referred to as a bridge system. These typically fit a pool height from 48 to 56 inches and can hold up to 300 to 400 pounds. The price ranges from about $500 up to $1500 for a larger bridge system.

There are four main types of child-resistant ladders to prevent access to aboveground and portable pools: roll guard, lockable gate, swing up ladder, and removable steps. These child resistant systems are used with A-Frame and double stairs/bridge ladders which have a way to enter the pool from the outside. The hook-on and step type of ladder tend to be placed on the inside of the pool and do not have a child-resistant alternative on the market.

- A lockable roll down guard sold with the A-frame ladder is a barrier for the outside steps. It is sold on various online retailers and retails from $263 to $370.
- A lockable gate is a self-closing gate on the steps to enter the pool which can be locked. This system is often sold with double stairs ladders and range in price from $500 to $1500.
- A swing up ladder has steps to enter the pool that can lift or flip up. This type of ladder ranges in price from $200 to $350.
- Removable steps are mainly on A-frame ladders and require a person to remove the steps to enter the pool. These retail from about $121 to $173.

III. Market

Staff gathered data from various sources, including major retail sites, and collected data on manufacturers of aboveground and portable pool ladders. Staff found 17 manufacturers that supply aboveground and portable pool ladders through online retailers--the remaining products on the

[62] Price data is as of July 2025. Price data is from online retailers Walmart, Amazon, Home Depot, and Leslie's Pool Supply.

market are unbranded. Staff found 12 of the manufacturers are U.S. companies while the remainder are foreign. These manufacturers produce different types of pool ladders which can be purchased from various retailers.

Manufacturers of pool ladders can be classified by the North American Industrial Classification (NAICS) under the sporting and athletic goods manufacturers category (NAICS category 339920). This is a broad category and includes many products other than pool ladders. These manufacturers, according to the Small Business Administration criteria, are considered small if they have fewer than 750 employees.[63] Staff was able to identify six companies that are considered small businesses, all of which are U.S. companies.

In January 2025, there were over 10.4 million residential pools in the United States.[64] Of those, it is estimated that there are 4.16 to 5.10 million above-ground pools in the United States. In 2024, the global pool ladder market was valued at $125 million. [65] EC estimates about $25 million of that is the North America market and roughly $8.33 million is the market for pool ladders in the United States.[66]

IV. Societal Cost of Injuries

Staff examined incident data from January 2020 to April 2025 of drowning injuries and fatalities involving children younger than 5 years old involving an aboveground or portable pools. Staff identified 128 drowning deaths and two drowning injuries involving children younger than five years old in aboveground or portable pools where it is known a pool ladder was present to access the pool.[67] The two nonfatal injuries resulted in emergency department-treated (ED) visits.[68] Of the total incidents associated with an above-ground or portable pool ladder, 127 fatal drownings and 1 nonfatal drownings were not directly supervised.[69] Of the 128 deaths identified, 17 fatalities involved a child-resistant ladder, where the ladder was not properly secured.

[63] The most recent Small Business Administration (SBA) Size Standards are available at: http://www.sba.gov/size
[64] Pool Research, "How Many Swimming Pools are In the U.S.?", January 21, 2025.
[65] Verified Market Reports, "Pool Ladder Market Size, Potential, Competitive Insights & Forecast 2033", 2025.
[66] The global pool ladder market is broken down into North America, Europe, Asia-Pacific, Middle East, and Latin America. Assuming 1/5 is the North America market, and 1/3 of that is the United States market.
[67] Fatality data is reported by CPSRMS. ED visits are reported by NEISS. Memorandum from Adam Suchy, Directorate for Epidemiology, dated April XX,2026, Subject: "Reported Fatal and Nonfatal Drownings to Children Younger than Five Years Old Associated with Aboveground or Portable Pools where a Pool Ladder was Reported or Assumed to have been used to Access the Pool."
[68] Ibid.
[69] Ibid.

Table 1: Aboveground and portable pool incident data

Aboveground or Portable Pool Incidents	**Nonfatal Drownings**	**Fatal Drownings**
Total	34	328
Pool Ladder Present	2	128
Pool Ladder Present and Not Directly supervised	1	127
Child-Resistant Pool Ladder Present	0	17

To estimate the societal costs, staff applied the Value of Statistical Life (VSL) for deaths and CPSC's Injury Cost Model (ICM) for injuries. Staff used the U.S. Health and Human Services (HHS) recommended estimate for adults, $13.46 million in 2024 dollars.[70] The societal cost for the drowning fatalities involving a pool ladder is $1.72 billion.[71] The societal cost for nonfatal drowning injuries for known cases involving a pool ladder is $289,565.[72]

CPSC staff is aware of 128 drowning deaths and two drowning injuries to children younger than five years old associated with aboveground or portable pools where a pool ladder was reported to have been used to access the pool or was the only apparent access point. Child-resistant ladders can mitigate the risk of drowning but the number of incidents that can be prevented if child-resistant ladders are widely used is unknown. Although child resistant ladders can mitigate the risk, staff assesses that child-resistant ladders may not be 100 percent effective. Some of the reasons include: 1) most of the child resistant ladders require actions by the consumer such as taking away outside steps or locking it. However, parents may not engage the child-resistant feature, 2) children may defeat the child-resistant mechanism if given enough practice, or 3) children may access the pool using some other method such using a chair or other object.

[70] U.S. Health and Human Services, "HHS Standard Values for Regulatory Analysis, 2025," February 13, 2025, standard-ria-values.pdf (hhs.gov). Value of Statistical Life is $13,456,427 in 2024.
[71] The societal cost for fatalities is $13,456,427 x 128 drowning fatalities equaling $1,722,422,656 in 2024 dollars.
[72] In 2024 dollars, discounted at a 3 percent rate.

Tab F: Compliance

United States
Consumer Product Safety Commission

TO: Sharon White, Engineering Psychologist, Engineering Sciences, Human Factors, Project Manager for Child-Resistant Pool Ladder Petition

DATE: May 15, 2026

THROUGH: Jennifer Sultan, Acting Director, EXC
Mary Murphy, Director, Division of Enforcement and Litigation, EXC
Howard Tarnoff, Deputy Director, Division of Enforcement And Litigation, EXC

FROM: Reid Landis, Compliance Officer,
Division of Enforcement and Litigation, EXC

SUBJECT: Applicable recalls for aboveground and portable pool ladders

I. Introduction

This memorandum summarizes CPSC recalls involving aboveground and portable pools from January 2015 through July 2025. Within that time frame, CPSC announced five recalls involving aboveground and portable pools.

II. Compliance Investigation

Compliance reviewed recalls and related press release data from January 2015 through July 2025 and found five consumer-level recalls involving child access to aboveground and portable pools. The recalls are summarized in the table below along with additional details.

Release Date	Recalling Firm	Recalled Product	Recall #
07/21/2025	Bestway, Intex, and Polygroup	48-inch and taller AGP with compression straps	25-393
11/12/2021	Vida XL	VidaXL Steel Pool Ladders	22-708
08/21/2018	Confer Plastics	Curve in-pool step systems	18-198

On July 21, 2025, Bestway, Intex, and Polygroup recalled about 5 million aboveground pools 48 inches or taller with compression straps around the outside of the pools. The compression straps that surround the pool legs may create a foothold, allowing a child access to the pool, posing a

drowning risk. The pools have been sold since 2002. There were nine cases of children between the ages of 22 months and 3 years drowning after gaining access to the pools via the footholds created by the compression straps. Consumers were instructed to contact one of the recalling firms to receive a free repair kit which replaces the compression strap with a rope.

On November 12, 2021, VidaXL recalled around 3,200 units of the VidaXL steel pool ladders because the steps could loosen during use posing a fall and drowning hazard to consumers. The ladders were sold from February 2021 through August 2021. There were four reports of the ladders failing but no injuries reported. Consumers were encouraged to remove two of the ladder's steps and dispose of the steps and ladder in the trash. VidaXL is providing a full refund and contacting all known purchasers directly.

On August 21, 2018, Confer Plastic recalled 100,000 units of the Curve in-pool step systems because children's limbs can become entrapped in the side openings of the step system, posing a drowning hazard. The step systems were sold from January 2013 through July 2018. There were two reports of a child becoming entrapped in the step system. No drownings were reported. Confer is providing a repair kit for consumers which includes additional panels to prevent entrapment.

Tab G: Response to Comments

United States
Consumer Product Safety Commission

TO: File DATE: May 15, 2026

THROUGH: Mark Kumagai, Associate Executive Director
Directorate for Engineering Sciences

FROM: Sharon White, Project Manager
Petition for Child Restraint Ladders for Portable and Aboveground Pools
Division of Human Factors

SUBJECT: Staff Responses to Comments Received on Petition CP 25-2

I. Introduction

CPSC published a request for comments on the petition in the *Federal Register* on April 10, 2025. 90 Fed. Reg. 15, 324. The comment period closed on June 9, 2025. CPSC received 14 comments.[73] The vast majority of the commenters, 11 out of 14, support the petition. Of the 11 that support the petition, two of the 11 commenters who support the petition request additions to the requested rule should the petition be granted. Of the remaining three commenters, one commenter expressed neither support nor opposition but recommended additional safety measures to address the drowning risk. One commenter opposes the petition, and one supports voluntary standards.

Topics raised by the commenters include:

- Adding additional requirements to the requested rule, including raising the minimum height requirements of pool walls to 48 inches; enforcement, recalls, and post-market surveillance; coverage for replacement and aftermarket ladders; harmonization with Australian and European pool safety regulations; and periodic review of injury data
- Establishing requirements for fencing
- Adequacy of removable ladders
- Forming task group to address aboveground pools

II. Comments Received and Staff's Responses

Comment 1. Eleven commenters support the petition, requesting a mandatory rule to require child resistant ladders for aboveground and portable pools and a measurable definition of child resistance.[74] However, another commenter recommends denying the petition.[75] The commenter

[73] Public comments available online at https://www.regulations.gov/docket/CPSC-2025-0006/comments
[74]CPSC-2025-0006-0003, CPSC-2025-0006-0005, CPSC-2025-0006-0006, CPSC-2025-0006-0007, CPSC-2025-0006-0008, CPSC-2025-0006-0009, CPSC-2025-0006-0010, CPSC-2025-0006-0011, CPSC-2025-0006-0012, CPSC-2025-0006-0013, and CPSC-2025-0006-0016.
[75] CPSC-2025-0006-0004

believes that government intervention is unnecessary and that simply removing the ladder is sufficient.

Staff Response

CPSC staff appreciates the commenters for their input in support of the rule. However, concerning the comment that simply removing the ladder is sufficient, we note that of the 130 incidents involving children climbing ladders to access the aboveground and portable pools, there are 128 fatalities and two nonfatalities. Some of these incidents occurred when consumers became distracted and forgot to remove the ladder even though consumers expressed that they typically made it a practice to remove the ladder. Other incidents occurred when consumers relied on older children to remove the ladder, but who also forgot to remove it. Furthermore, it is unreasonable to assume that a consumer will remove the ladder from the pool throughout the day after every use. Therefore, staff believes that child-resistant ladders better address child drownings than relying on consumers to remove the ladder. Staff is recommending that the Commission defer decision on the petition to allow the ASTM Subcommittee for Portable Pools and PHTA to develop voluntary standards to address the Petitioner's request.

Comment 2. Two of the eleven commenters who support the petition request additions to the rule should the petition be granted.[76] [77] The additions are:

- Establish the metrics responsible for the standardized testing and define the basis of product liability.
- Require that child-resistant standards also apply to in-ground pools.
- Consider that cost-benefit data show that the benefits associated with a reduction in societal costs outweigh the cost to redesign the pool ladder.
- Raise the minimum pool wall height to 48 inches.
- Mandate that all retail ladders sold in the U.S. be consistent with a passive design equipped with child-resistant removable steps, roll guards, locking swing steps, or self-latching gates.
- Continue public awareness efforts like the Pool Safely campaign by promoting informed consumer decisions in a combination of mandatory clear safety labeling on all pool-related products.
- Establish a regulation that requires the collection and reporting of injury and fatality data by race, income, and geography, and prioritize outreach and compliance assistance to communities with the highest drowning risks.
- Ensure the rule covers not only ladders sold with new pools but also aftermarket and replacement ladders, which are widely used and often lack robust safety features

[76] CPSC-2025-0006-0008
[77] CPSC-2025-0006-0010

- Analyze and harmonize with Australian and European pool safety regulations, which mandate both physical barriers and specific ladder-locking mechanisms proven to reduce child access.
- Mandate large, multi-lingual, pictorial warning labels and require that all ladders come with clear, accessible instructions for securing ladders and restricting access when not in use.
- Require post-market surveillance, annual compliance audits, and rapid recall procedures for non-conforming products to ensure long-term effectiveness and public trust.
- Ensure that regulatory costs do not raise prices beyond the reach of low-income families and consider a subsidy or voucher program for compliant ladder upgrades in underserved areas.
- Fund independent research on the efficacy of existing and emerging child-resistant ladder designs and require periodic review of injury data to update standards as new evidence emerges
- Monitor for unintended risks, such as increased injuries to older children or adults from overly complex ladder mechanisms and incorporate user feedback from diverse household types.
- Encourage use of non-toxic, recyclable materials and designs that withstand extreme weather, to ensure ladders remain safe and functional in a changing climate.

Staff Response

If, based on the available information contained in the briefing package, the Commission concludes that ladders sold with or for use with above ground and portable pools may present an unreasonable risk of injury or death and it finds that rulemaking may be reasonably necessary to eliminate or adequately reduce the drowning risk, the Commission may grant the petition and direct the staff to begin a rulemaking under the authority of the consumer Product Safety Act. However, granting the petition does not mean that the Commission would necessarily issue a rule in the specific form requested in the petition or by commenters. Staff will consider the commenters' requests during the voluntary standards process and during any rulemaking if the Commission grants the petition.

Comment 3

One commenter recommended that safety measures include an appropriate fencing mechanism to protect the property from entry to the pool perimeters and to add childproof fencing pegs for additional protection.[78]

Staff Response

CPSC does not have authority to require the use of fencing, but CPSC does recommend fencing as another layer of protection to keep young children from entering the pool area unaccompanied by a supervising adult. This is not a CPSC standard, nor are they mandatory requirements, but are guidelines that are contained in *Safety Barrier Guidelines for Residential Pools – Preventing Child Drownings* prepared by the CPSC. Although these are not mandatory requirements, the guidelines point out that some states and localities have incorporated CPSC guidelines for safety barriers such as fencing into their building codes. The guidelines also contain specific recommendations on how to ensure that the barrier does not permit children to access the pool.

Comment 4

A commenter from PHTA suggests that CPSC join with them to form a task group to address the Petitioner's concerns.[79]

Staff Response

CPSC staff agrees with the commenter and urges PHTA to form a task group as quickly as possible.

[78] CPSC-2025-0006-0015
[79] CPSC-2025-0006-0014