Before the
CONSUMER PRODUCT SAFETY COMMISSION
Bethesda, MD 20814

In the Matter of	)	
	)	
Safety Standard and Notification	)	
Requirements for Button Cell or Coin	)	Docket No. 2023-0004
Batteries and Consumer Products	)	
Containing Such Batteries	)	

COMMENTS OF THE CONSUMER TECHNOLOGY ASSOCIATION

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TABLE OF CONTENTS

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I. INTRODUCTION AND SUMMARY

The Consumer Technology Association® ("CTA") submits this response to the Consumer Product Safety Commission's ("CPSC" or "Commission") Notice of Proposed Rulemaking ("NPR") on Safety Standard and Notification Requirements for Button Cell or Coin Batteries and Consumer Products Containing Such Batteries (the "Proposed Rules").[1] CTA is North America's largest technology trade association. CTA's members are the world's leading innovators—from startups to global brands—helping support more than 18 million American jobs. CTA also owns and produces CES®—the most influential tech event in the world. CTA members operate in a competitive marketplace to produce innovative products that provide enormous benefits to consumers and power the economy.

The Proposed Rules cover a subset of consumer electronics products offered by CTA members, and CTA is committed to working with the CPSC on measures to effectively promote safety of those products. In response to the NPR, these comments provide information and recommendations on (1) a subset of products that should be exempt from the proposed testing, labeling and instruction requirements; and (2) the deadline for compliance with the Proposed Rules.

Products that comply with UL 62368-1 should be exempt from the proposed 16 CFR Part 1263 requirements because no evidence has been presented that any product compliant with UL 62368-1 has been involved in an incident where a child swallowed a button cell or coin cell battery that was freed from the product by the child.[2]

[1] Consumer Product Safety Commission; Safety Standard and Notification Requirements for Button Cell or Coin Batteries and Consumer Products Containing Such Batteries; Notice of Proposed Rulemaking; 88 Fed. Reg. 8692 (Feb. 9, 2023) ("NPR").

[2] IEC 62368-1, *Audio/video, information and communication technology equipment - Part 1: Safety requirements*, is the international product safety standard for many consumer technology products. Individual

For products not exempt from the Proposed Rules, CTA encourages CPSC to conclude there is good cause to extend the effective date of the final rule to 24 months after publication in the Federal Register to avoid creating supply chain disruptions that might, themselves, create safety issues for consumers.

II. CPSC SHOULD DEEM PRODUCTS COMPLIANT WITH UL 62368-1 TO BE COMPLIANT WITH ITS NEW RULES

A large universe of products would be subject to CPSC's Proposed Rules. For a small segment of these products – those that comply with UL 62368-1 – there are two important facts to consider: 1) UL 62368-1 is an existing standard that addresses the button/coin cell battery hazard and it became effective on December 20, 2020;[3] and 2) no evidence has been presented that any product compliant with this standard has been involved in an incident where a child swallowed a button/coin cell battery that the child freed from the product.

The scope of UL 62368-1 includes "electrical and electronic equipment within the field of audio, video, information and communication technology, and business and office machines with a rated voltage not exceeding 600 V."[4] It also includes "accessories intended to be used with equipment within the scope of this document."[5]

No evidence has been presented in the NPR of any audio, video, information and communication technology, or business and office machine product that is compliant with UL 62368-1 – or any accessory intended for use with such product that is compliant with UL 62368-1 – having had a button cell or coin cell battery freed from it by a child. CTA reviewed the library of press clippings on the Poison.org website from the time UL 62368-1

countries frequently adopt IEC standards as their own national standards, but with some deviations specific to their countries. UL 62368-1 is IEC 62368-1 with some deviations for the U.S. market.

[3] *See* UL press release "IEC 62368-1 based Standards Updates" published February 10, 2015 (https://www.ul.com/news/iec-62368-1-based-standards-updates).

[4] *See* UL 62368-1, October 22, 2021, p.37.

[5] *See* UL 62368-1, October 22, 2021, p.37.

became effective to now and found no incidents involving a product within the scope of UL 62368-1 having had a button cell or coin cell battery removed from it by a child. There was one incident reported in the articles where a coin cell battery from a pair of 3D glasses for a TV was swallowed, but the battery was a spare that was stored in a cabinet, not freed from the product by the child.[6]

CTA also reviewed data from the National Electronic Injury Surveillance System ("NEISS") and found no evidence that a product compliant with UL 62368-1 had been involved in a case where a child freed a button or coin cell battery from the product.

CTA believes proposed paragraph 16 CFR 1263.1(d) should be revised as follows (proposed added text is **highlighted**):

> (d) Exemption.
> **(i)** Any object designed, manufactured, or marketed as a plaything for children under 14 years of age that is in compliance with the battery accessibility and labeling requirements of 16 CFR part 1250, Safety Standard Mandating ASTM F963 for Toys, is exempt from the requirements of this part.
> **(ii) Any product within the scope of UL 62368-1 that has been determined to be compliant with UL 62368-1 by a laboratory recognized by the Occupational Safety and Health Administration as a Nationally Recognized Testing Laboratory is exempt from the requirements of this part.**

In the NPR, CPSC lists several areas where it believes IEC 62368-1 does not adequately address the button/coin cell battery hazard.[7] CTA responds to CPSC's concerns later in these comments in section V.

[6] *See* "This Dad's Tragic Story About Button Batteries Could Be A Live-Saving Reminder For Parents;" Romper.com; September 29, 2017. (https://www.poison.org/-/media/files/poisonorg/battery/2017-09-29-this-dads-tragic-story-about-button-ba-romper.pdf)

[7] *See* CPSC Staff Briefing Package: Draft Proposed Rule to Establish a Safety Standard and Notification Requirements for Button Cell or Coin Batteries and Consumer Products Containing Such Batteries ("Staff Briefing Package") Table 7 at OS 28.

III. A MINIMUM OF 24 MONTHS IS NEEDED TO COMPLY WITH THE PROPOSED REGULATIONS

Product safety rules published by the Commission are required to have effective dates not exceeding 180 days from their publication in the *Federal Register*, unless the Commission finds, for good cause shown, that a later effective date is in the public interest and publishes its reasons for such finding.[8] In this case a later effective date is in the public interest because industry will be unable to redesign products, retool factories, obtain compliance certification and reprint packaging and instruction materials within 180 days, resulting in supply chain disruptions that will lead to empty store shelves. This would have negative consequences for consumer safety, generally, as some of the affected products perform functions that increase safety. For example, audio and video products keep people informed when they are in danger, whether from natural disasters or threats posed by human activity. Door openers allow people to open and close doors from the safety and security of their homes or vehicles. Clip lights and bicycle lights make pedestrians and cyclists visible at night, helping to avoid collisions that can result in serious injury or death. These are just some examples.

The steps needed to implement the Proposed Rules include product redesign, substitute part acquisition, internal quality assessment, factory retooling, quality and safety certification, package redesign and redesign of user instructions, redesign of product labeling, shipping, import and delivery. Redesigning a product, acquiring parts and retooling a factory can take from nine to 12 months. In the case of CPSC's Proposed Rules, compliance testing may be delayed while waiting for labs to become accredited for testing to the new requirements. Lab accreditation typically takes about three months. The vast majority of safety compliance testing performed on consumer electronics products is performed by accredited third-party laboratories.

[8] *See* 15 U.S.C. § 2058(g)(1).

Once the ability of test labs to determine compliance with the new CPSC rules has been established it typically takes three to six months for labs to complete testing of manufacturers' products. Given the broad spectrum of products impacted by this new rule, test lab lead times are expected to increase due to the high demand for testing. In addition to the 12-18 months needed for new products to be compliant with the new rules, there is also some additional time needed for shipping, importing, delivery, and ensuring warehouses and distributors have enough time to work through existing stock so existing inventory does not have to be reworked or scrapped. All in all a minimum of 24 months is needed to get to the point where all products sold at retail are compliant with the new CPSC rules.

IV. THE EVIDENCE INDICATES THAT UL 62368-1 IS EFFECTIVELY ADDRESSING THE BUTTON/COIN CELL BATTERY HAZARD

The potential for children to swallow button/coin cell batteries and suffer negative consequences has been known for many years and was addressed by the consumer electronics industry as soon as it became known. Table 1 shows the timeline of how this potential hazard was addressed with respect to consumer electronics.

Table 1: Timeline of actions to address button/coin cells in consumer electronics

Date	**Milestone**
January 20, 2010	National Capital Poison Center mails letter to various organizations alerting them to incidents of children swallowing button/coin cell batteries
March 2, 2010	CTA's Product Safety Working Group forms ad hoc group to address button/coin cell battery ingestion by children
2010-2014	CTA members study the button/coin cell battery issue and work within IEC and UL standards development processes to address it.
December 1, 2014	UL publishes UL 62368-1, *Audio/video, information and communication technology equipment - Part 1: Safety requirements Ed. 2*,[9] which includes requirements to address the button/coin cell battery hazard, including a requirement that screws be captive.
March 16, 2015	UL announces[10] publication of UL 4200A, *Products Incorporating Button or Coin Cell Batteries of Lithium Technologies*
November 10, 2015	Effective date of UL 4200A[11]
December 20, 2020	Effective date of UL 62368-1 Ed. 2[12]

These actions have been effective, though the way CPSC presents data in the NPR could easily lead one to conclude otherwise. Data collected before 2015 is not representative of newer products compliant with the UL 62368-1 safety standard. To be clear, no evidence has been presented that any product compliant with UL 62368-1 (first published with coin cell battery requirements on December 1, 2014, and with an effective date of December 20, 2020) has been involved in a button/coin cell battery ingestion incident where a child freed the battery from the product.

[9] *See* "Effective Date Information: Audio/Video, Information & Communication Technology Equipment;" Underwriters Laboratories; https://ctech.ul.com/wp-content/uploads/sites/54/2022/02/UL-com_62368_Effective_Date_Info_ver.7.8_2022_02_23_.pdf.

[10] *See* UL press release dated March 16, 2015 (https://www.ul.com/news/ul-announces-new-standard-products-using-lithium-button-or-coin-cell-batteries).

[11] *See* UL press release dated March 16, 2015 (https://www.ul.com/news/ul-announces-new-standard-products-using-lithium-button-or-coin-cell-batteries).

[12] *See* UL press release "IEC 62368-1 based Standards Updates" published February 10, 2015 (https://www.ul.com/news/iec-62368-1-based-standards-updates).

To a casual reader who immediately thinks of a TV remote when hearing the term "remote control," CPSC's reporting of the findings in the Litovitz Study[13] leads one to believe the study found nearly 2,000 incidents of children under six years of age freeing button cell batteries from TV remotes and swallowing them. CPSC writes:

> *Also, in 2010, Toby Litovitz (Litovitz et al., 2010b) found that from more than 8,000 ingestion cases reported to the National Battery Ingestion Hotline over a period of 18 years, for children under the age of 6, the button cell or coin battery was obtained from a product in 61.8 percent of the incidents. The button cell or coin batteries ingested were loose 29.8 percent of the time and came directly from the button cell or coin battery packaging 8.2 percent of the time. Remote controls were the source of incident batteries in 37.3 percent of ingestions (Litovitz et al., 2010).*[14]

It is easy to infer from CPSC's report that Litovitz found nearly 2,000 cases of children under six years of age swallowing button or coin cell batteries obtained from remote controls (8,000 x 61.8 percent x 37.3 percent = 1,844). In reality, Litovitz found only 36 such cases over the 18.25-year study period, or an average of two cases per year. The following are direct quotes from the Litovitz Study:

> *Of the 55 ingestions by children who were younger than 6 years and involving 20-mm lithium cells intended for remote controls, 65.2% were obtained from the product by the child; 28.3% were found sitting out, loose, or discarded; and 6.5% were obtained from the product or battery packaging.*[15]

> *This investigation focuses on all button and cylindrical battery ingestions reported to the NBIH between July 1, 1990, and September 30, 2008.*[16]

Thus Litovitz found 65.2 percent of 55 ingestions, or 36 ingestions, involved a child getting a coin cell battery from a remote control. Clearly, products within the scope of IEC 62368-1 were already quite safe even during the 1990-2008 timeframe studied by Litovitz,

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[13] *See* Litovitz, Toby; Nicole Whitaker and Lynn Clark; "Preventing Battery Ingestions: An Analysis of 8648 Cases;" *Pediatrics;* May 20, 2010 ("Litovitz Study").

[14] *See* Staff Briefing Package at OS 120.

[15] *See* Litovitz Study at p. 1180.

[16] *See* Litovitz Study at p. 1179.

and that was before button/coin cell battery safety requirements were added to the standard. It is important to emphasize that last point, the data from the Litovitz study predates the implementation of UL 62368-1 Ed. 2, so the Litovitz study does not reflect current design practices for audio/video, information and communication technology equipment.

V. CPSC'S ANALYSIS OF IEC 62368-1'S SUITABILITY MISSES SEVERAL IMPORTANT FACTS

CPSC tentatively concludes that IEC 62368-1 is lacking in 13 specific areas.[17] The analysis that led to this conclusion is lacking in several ways.

In general, CPSC's analysis seems to ignore the fact that international standards frequently have country-specific deviations, and in this case there are U.S. deviations from IEC 62368-1 that address the button/coin cell battery hazard in several important ways. These deviations are included in the U.S. version of IEC 62368-1, known as UL 62368-1.[18] UL 62368-1 applies to the U.S. market, and it is this standard that CTA believes CPSC should incorporate into its Proposed Rules by reference.

A. Captive screws

CPSC preliminarily concludes that the UL 4200A and IEC 62368-1 requirements for captive screws are adequate, except for the provision in UL 4200A that reads, "This requirement does not apply to large panel doors on large devices which are not likely to be discarded or left off the equipment."[19] CPSC seeks comment on this exemption.

This exemption exists because of computers. Coin cell batteries are commonly used on computer motherboards to provide backup power to the computer's BIOS (basic input/output

[17] *See* Staff Briefing Package Table 7 at OS 28.

[18] *See* UL 62368-1, *Audio/Video, Information and Communication Technology Equipment – Part 1: Safety requirements;* Underwriters Laboratories, Inc.; October 22, 2021 ("UL 62368-1").

[19] *See* Staff Briefing Package at OS 32. *See also* UL 4200A, *Products Incorporating Button or Coin Cell Batteries of Lithium Technologies* ("UL 4200A")*;* UL LLC, February 10, 2015 (section 5.6 at p. 6).

system) firmware, which is responsible for booting up the computer when it is powered on. These batteries are not user-replaceable because they typically last the life of the product. Also, because of other hazards within the computer (exposed electronic circuitry, moving fans, etc.) the inner parts of these machines are well-secured by protective enclosures. Because of this, the coin cell batteries on computer motherboards are not accessible to young children.

For example, to access the coin cell battery on the motherboard of a typical computer at CTA one needs to:

1. remove two screws from the back of the computer;
2. pull the large panel side door off, which even without the screws is secured by metal tabs;
3. remove the plastic front cover from the computer by simultaneously lifting three plastic clips that together span a distance of 8.25 inches;
4. remove three screws that hold the hard drive in place; then
5. move the hard drive out of the way to get to the coin cell battery.

Figure 1 is a picture of the opened computer.

Figure 1: Computer opened after removing five screws and disengaging eight metal tabs and three plastic tabs (left); close-up of coin cell battery (right)

The UL 62368-1 standard differs slightly from UL 4200A in that it describes the exemption from the captive screw requirement for these products as follows: "This does not apply to side panel doors on larger devices which are necessary for the functioning of the equipment and which are not likely to be discarded or left off the equipment."[20] Exceptions like this for large panels are typical in situations where the panel forms part of the system enclosure and is not expected to be opened regularly due to the absence of user serviceable parts inside. CTA believes this exemption is appropriate because the safeguards in place to prevent children from accessing other hazards inside a product with a large panel will also prevent children from accessing any battery that might be inside the product.

B. Threaded attachment requirements

UL 4200A says, "For a battery compartment secured by a screw, the screw shall engage a minimum of two full threads."[21] CPSC tentatively concludes this is adequate. CTA agrees.

Both UL 4200A and UL 62368-1 say, for twist-on access covers to battery compartments, "a minimum torque of 0.5 Nm and a minimum angle of 90 degrees of rotation shall be required to open the compartment."[22] CPSC tentatively concludes this requirement is adequate.[23] CTA agrees.

Overall CPSC tentatively concludes the threaded attachment requirements in IEC 62368-1 are inadequate because IEC 62368-1 does not include the requirement that battery compartments secured by screws have the screws engage a minimum of two full threads. CTA believes UL 62368-1 adequately addresses battery compartment doors secured by screws. Both

[20] *See* UL 62368-1, section 4.8.3DV D2, at p. 92.
[21] *See* UL 4200A, section 5.4, at p. 6.
[22] *See* UL 62368-1, section 4.8.3 at p. 92. *See also* UL 4200A, section 5.4, at p. 6.
[23] *See* Staff Briefing Package Table 7 at OS 28. Because CPSC indicates UL 4200A has adequate threaded attachment requirements, it appears CPSC believes the similar twist-on access cover requirement in IEC 62368-1 (and UL 62368-1) is adequate, too.

UL 4200A and UL 62368-1 apply the exact same preconditioning test – ten cycles of loosening and tightening any screws, opening and closing the battery compartment door, and removing and replacing the battery followed by abuse testing.[24] CTA believes these tests sufficiently ensure that any screws used to secure the battery compartment door will do so adequately. While CPSC notes a few cases with comments about "products with ineffective screws, including comments about stripped threads, continuous spinning, screws that were 'too short,' and compartments that popped open, even though there was a screw,"[25] CTA cannot find any evidence that any of these products were determined to be compliant with UL 62368-1. We believe UL 62368-1 testing is working, without the "two full threads" requirement. Given this, CTA believes CPSC should accept UL 62368-1 as adequately addressing battery compartment doors secured by screws.

C. Opens with two independent and simultaneous movements

CPSC preliminarily concludes that the following requirement is adequate:

> *"Secure the battery compartment enclosure so that it requires a minimum of two independent and simultaneous hand movements to open. The movements to open cannot be combinable to a single movement with a single finger or digit."*[26]

Also, CPSC preliminarily concludes that the following requirement is inadequate:

> *"The battery compartment door or cover requires the application of a minimum of two independent and simultaneous movements to open by hand."*[27]

The difference between these two statements is the added sentence in the Proposed Rules indicating that the two independent movements cannot be a single movement with a single finger or digit. In CTA's view this additional sentence is redundant. It is obvious that a single movement with a single finger would not qualify as two independent movements. For someone

[24] *See* UL 4200A, section 6.2.1(b), at p. 7. *See also* UL 62368-1, section 4.8.4.3, at p. 92.
[25] *See* Staff Briefing Package at OS 23.
[26] *See* Staff Briefing Package at OS 32 and OS 88.
[27] *See* Staff Briefing Package Table 7 at OS 28. *See also* UL 62368-1 section 4.8.3 at p. 92.

to design a single movement with a single finger that purported to be two independent movements that person would have to make the ending point of the first movement the starting point of the second movement, which means the two movements would not be independent. While CTA has no objection to updating UL 62368-1 to add the language proposed by CPSC, CTA does object to CPSC preliminarily concluding that UL 62368-1 is inadequate because it does not say that a single movement with a single finger is not two independent movements. This fact seems obvious. Also, the UL 62368-1 compliance criteria require the battery compartment to remain inaccessible when a force is applied to its cover with the test probe, which simulates a person pushing on the battery compartment cover with a single finger.[28]

D. Drop test – based on product weight/type

CPSC preliminarily concludes that the UL 4200A 10-cycle drop test for handheld items is adequate to address and prevent incidents of breaking consumer products or battery compartments.[29] CTA agrees. CPSC notes that UL 4200A includes a 3-cycle drop test for portable products, which UL 4200A defines as "products specifically designed to be carried easily, with mass not exceeding 18 kg (39.7 lb)."[30] CPSC does not specifically address the drop test in UL 62368-1, which is similar to the UL 4200A drop test except the 3-cycle drop test applies to products with a mass of 7 kg (15.4 lb) or less instead of 18 kg (39.7 lb) or less. CPSC says, "A more severe test is better able to address incidents of breaking consumer products or battery compartments allowing access to button cell or coin batteries, and is therefore more adequate to address the risk of injury."[31] Thus, CPSC preliminarily concludes that a 10-cycle drop test is more adequate than a 3-cycle drop test for portable products. While CTA agrees with

[28] *See* UL 62368-1, section 4.8.5 at p. 93.
[29] *See* Staff Briefing Package at OS 34.
[30] *See* Staff Briefing Package at OS 129. *See also* UL 4200A section 4.4 at p. 5.
[31] *See* Staff Briefing Package at OS 129.

CPSC that a 10-cycle drop test is appropriate for remote controls, CTA believes the three-cycle drop test is adequate for other products.

UL 62368-1 aims to address all hazards that audio/video, information technology and communication technology products might present. This includes hazards like shock, fire, hazardous substances, sharp edges, moving parts, radiation, and many more. Section 4.4.3.3 of UL 62368-1 describes the drop tests that products within the scope of the standard must pass to guard against these hazards, and these tests specify three drops for all products, including handheld and transportable products.[32] Given that three drop tests have been determined to be sufficient to guard against shock, fire, hazardous substances, sharp edges, moving parts, radiation and many other hazards, CTA believes three drop tests adequately guard against the button/coin cell battery hazard, too. Given the nature of remote controls, the manner in which they are used, and the frequency with which they are used, CTA supports the 10-drop test in section 4.8.4.4 of UL 62368-1 for remote controls containing button or coin cell batteries.[33] However, CTA believes the three drop test is adequate for all other equipment, and we point to the fact that three drops have been determined sufficient to guard against so many other hazards as evidence to support this conclusion. CTA is not aware of any incident data suggesting more than three drops are needed to adequately test non-remote-control products.

E. Drop test – based on age grading

In its assessment of existing voluntary standards for button cell or coin cell batteries in Table 7 of the NPR, CPSC notes that UL 4200A and UL 62368-1 do not have drop tests based on age grading. In its proposed regulations for 16 CFR Part 1263, CPSC does not include a drop

[32] *See* UL 62368-1, section 4.4.3.3, at p. 86. *See also* UL 62368-1, section T.7 at p. 389.
[33] *See* UL 62368-1, section 4.8.4.4, at p. 92.

test based on age grading. CTA infers from this that CPSC does not believe a drop test based on age grading is required. CTA agrees with this.

F. Impact test

CPSC preliminarily concludes that the impact test in UL 4200A "reasonably indicates the durability of the battery compartment during foreseeable use and misuse, as required by Reese's Law."[34] CPSC also notes that IEC 62368-1 varies the required impact energy based on the type of product, and for this reason preliminarily concludes its impact test is inadequate.[35] What CPSC fails to consider is that UL 62368-1 includes a deviation from IEC 62368-1 that says, "4.8.4.5DV D2 Modify 4.8.4.5 by deleting the first dashed paragraph."[36] The first dashed paragraph is the paragraph that specifies a different amount of impact energy for 3D glasses. Thus, while IEC 62368-1 varies the amount of impact energy based on the type of product, the North American version of the standard does not. UL 62368-1 specifies the same amount of impact energy for all products as CPSC proposes for all products.[37] In fact, CTA believes the UL 62368-1 language is slightly better because it specifies the height from which the steel ball must be dropped to achieve 2 J of work, rather than leaving it to the user to calculate the height from the force equals mass times acceleration and work equals force times distance equations. This removes an opportunity for human error.

G. Crush test

The crush test proposed by CPSC and the crush test in UL 62368-1 are virtually the same, except that UL 62368-1 says a crushing force in the range 325-335 N is to be applied,

[34] *See* Staff Briefing Package at OS 34.
[35] *See* Staff Briefing Package, Table 7 at OS 28.
[36] *See* UL 62368-1, section 4.8.4.5 at p. 93.
[37] *See* UL 62368-1, section 4.8.4.5 at p. 93. *See also* Staff Briefing Package at OS 297.

while CPSC proposes to apply a crushing force of 335 N.[38] CPSC does not explain why it believes the crushing force must be precisely 335 N instead of 330 ± 5 N.

Another difference in wording between CPSC's Proposed Rules and UL 62368-1 is that CPSC proposes that devices be set up "in positions likely to produce the most adverse results,"[39] [emphasis added] while UL 62368-1 says devices are to be supported "in a position likely to produce the most adverse results"[40] [emphasis added]. Also, CPSC proposes the crushing force be applied "to the exposed surface,"[41] [emphasis added] while UL 62368-1 says the crushing force is applied "to the exposed top and back surfaces"[42] [emphasis added]. CTA believes these differences in wording – multiple positions and one surface vs. one position and multiple surfaces – are not significant and would not change the outcome of the test.

Finally, CPSC's Proposed Rules do not limit the products that are subject to the crush test[43] while UL 62368-1 applies the crush test only to handheld remote control devices.[44] CPSC says the purpose of its proposed crush test is to simulate "a child pushing on the product with hands or feet, which cannot be assessed during the drop test on some consumer products."[45] CTA believes the crush test requirements in UL 62368-1 are adequate to protect against the button/coin cell battery hazard when it comes to products within the scope of UL 62368-1. We believe the test results reported by CPSC in Table 1A of Appendix A of the Staff Briefing Package support this conclusion. CPSC used the UL 4200A standard to test 83 products and did not find a single product that failed the UL 4200A crush test.[46] Importantly, UL 4200A applies

[38] *See* UL 62368-1, section 4.8.4.6 at p. 93. See also Staff Briefing Package at OS 298.
[39] *See* Staff Briefing Package at OS 298.
[40] *See* UL 62368-1, section 4.8.4.6 at p. 93.
[41] *See* Staff Briefing Package at OS 298.
[42] *See* UL 62368-1, section 4.8.4.6 at p. 93.
[43] *See* Staff Briefing Package at OS 298.
[44] *See* UL 62368-1, section 4.8.4.6 at p. 93.
[45] *See* Staff Briefing Package at OS 62.
[46] *See* Staff Briefing Package, Appendix A, Table 1A at OS 273-276.

the crush test to all products, not just remote controls,[47] meaning that even products whose safety compliance was determined using the UL 62368-1 standard passed the UL 4200A crush test performed by CPSC. CTA believes this is because UL 62368-1 subjects all products – not just those with button or coin cell batteries – to a steady force test of between 100 N ± 10 N and 250 N ± 10 N.[48] We believe this sufficiently guards against a child pushing on the product with hands or feet.

Without an explanation of the perceived need for a precise 335 N crushing force, and given that no evidence has been presented that any product compliant with UL 62368-1 has been involved in an incident where a child swallowed a button cell or coin cell battery freed from the product by the child, CTA believes the 330 ± 5 N crushing force specified in UL 62368-1 for handheld remote controls, and the between 100 N ± 10 N and 250 N ± 10 N test for all other products specified in UL 62368-1, adequately protect against a child pushing on a product with hands or feet.

H. Torque and tension tests

The Proposed Rules include torque and tension tests to "address battery accessibility to children in pliable products."[49] CPSC reports:

> *"Many of the non-rigid products, such as light-up clothing and greeting cards, passed abuse tests from UL 4200A because they can absorb the energy from the tests, but the batteries or battery compartments can be accessed easily through other methods not considered in UL 4200A, such as torque or tension loads, which simulate a child grabbing and twisting or pulling on parts of the battery enclosure or tearing apart soft goods with fingers or teeth."*[50]

[47] *See* UL 4200A, section 6.3.4 at p. 8.
[48] *See* UL 62368-1, section 4.4.3.2 at p. 85.
[49] *See* Staff Briefing Package at OS 63.
[50] *See* Staff Briefing Package at OS 136.

UL 4200A and UL 62368-1 were designed to address household products containing button/coin cell batteries, meaning products primarily designed for use inside a residence or in the immediate vicinity outside a residence. They were not designed to address shirts, shoes, greeting cards or similar items. CTA acknowledges that it might be necessary to address such items, though it is not clear there is an urgent need to do so. According to the latest data from the National Capital Poison Center there is, on average, one known incident per year of a coin cell battery used in accessories or clothing being ingested.[51]

CTA has no opinion regarding CPSC's proposal to apply torque and tension tests to items like shirts, shoes and greeting cards. However, CPSC's conclusion that UL 4200A and UL 62368-1 are deficient because they lack these tests is incorrect for two reasons. First, the scopes of UL 62368-1 and UL 4200A are limited to household type products. Shirts, shoes, greeting cards and similar items are not within the scopes of these standards. Second, UL 4200A and UL 62368-1 in effect include torque and tension tests. Section 5.4 of UL 4200A says,

> "During the examination of a product to determine whether it complies with the [Test Probe 11 accessibility] requirements in 5.3, a part of the enclosure that may be opened or removed by the user, either without using a tool or with less effort than two independent and simultaneous movements by hand, is to be opened or removed."[52]

Similarly, Annex V of UL 62368-1 says,

> "An accessible part of an equipment is a part that can be touched by a body part. For the purposes of determining an accessible part, a body part is represented by one or more of the specified test probes. Accessible parts of an equipment may include parts behind a door, panel, removable cover, etc. that can be opened without the use of a tool."[53]

[51] *See* Figure 8, "Intended Use of Ingested 20 mm Button Batteries," NBIH Data, July 2016 - June 2018. (https://www.poison.org/battery/stats#20161).

[52] *See* UL 4200A section 5.4 at p. 6.

[53] *See* UL 62368-1, section V.1.1 at p. 394.

The UL 62368-1 compliance criteria for products with button or coin cell batteries says, "the battery shall not become accessible,"[54] which means the battery shall not be able to be reached without using a tool, per the description of an "accessible part" in Annex V. Thus, if a product's button or coin cell battery compartment can be opened with bare hands it will not meet the compliance criteria in section 4.8.5 of UL 62368-1.

In CTA's opinion a product within the scope of UL 62368-1 whose battery can be freed by a child twisting or pulling on parts, or tearing apart with fingers or teeth, would not meet the requirements of UL 62368-1 section 4.8.5.

I. Compression test (little surface area)

CPSC tentatively concludes that the compression testing in UL 4200A – which applies 330 ± 5 N (74.2 ± 1.1 lbf) over a 100 by 250 mm (3.9 by 9.8 in) area[55] – "adequately addresses a child pushing on the product with hands or feet."[56] However, CPSC goes on to say, "the larger compression area of the UL 4200A is inadequate to address the risk of injury associated with a child pushing on the product with fingers."[57] What CPSC does not appear to consider is that UL 62368-1 does adequately address the risk of injury associated with a child pushing on the product with fingers.

UL 62368-1 section 4.4.3 addresses safeguards such as enclosures, barriers, etc.[58] It says such safeguards on transportable, handheld and direct plug-in equipment shall be subjected to a steady force test of 100 N ± 10 N over a circular plane surface 30 mm in diameter for

[54] *See* UL 62368-1, section 4.8.5 at p. 93.
[55] *See* UL 4200A, section 6.3.4 at p. 9.
[56] *See* Staff Briefing Package at OS 35.
[57] *See* Staff Briefing Package at OS 35.
[58] *See* UL 62368-1, section 4.4.3.1 at p. 85.

approximately 5 s.[59] CTA believes this test adequately models a child pushing with fingers[60] and notes that the section 4.4.3 safeguard robustness test in UL 62368-1 has adequately protected against other hazards like shock, burn, sharp edges, etc. based on experience with billions of audio, video, information and communication technology products in use in the marketplace.

J. Accessibility probe compliance test

CPSC says, "The maximum force requirements in IEC 62115 for the tensile test and the accessibility probe are greater than those in ASTM F963-17 and UL 4200A, respectively."[61] CPSC does not mention UL 62368-1 in its analysis, but UL 62368-1 specifies the same amount of force as UL 4200A (45 N ± 1 N applied for 10 s).[62] CPSC tentatively concludes that the higher force required by IEC 62115 "will better address children unintentionally accessing the battery compartment."[63] CTA believes the 45 N ± 1 N specified in the UL 4200A and UL 62368-1 tests is adequate for two reasons. First, the difference between the 50 N specified in IEC 62115 and the 45 N specified in the UL standards is not substantial, and no evidence has been provided to suggest that button/coin cell batteries have been freed by children applying a force in the 45-50 N range. Second, the scope of IEC 62115 says it applies to children up to 14 years of age.[64] Reese's Law directs the Commission to address the button/coin cell battery hazard for children up to six years of age.[65] CTA does not believe the 50 N test designed to

[59] *See* UL 62368-1, section 4.4.3.2 at p. 85 and annex T.4 at p. 388.

[60] *See* B. Hohendorff, C. Weidermann, K.J. Burkhart, P.M. Rommens, K.J. Prommersberger, M.A. Konerding, "Lengths, girths, and diameters of children's fingers from 3 to 10 years of age," Annals of Anatomy - Anatomischer Anzeiger, Volume 192, Issue 3, 2010, Pages 156-161, for dimensions of children's fingers.

[61] *See* Staff Briefing Package at OS 136.

[62] *See* UL 62368-1, section 4.8.5 at p. 93. Note that the 45 N requirement is a U.S.-specific deviation in the UL version of the standard. The international standard specifies 30 N.

[63] *See* Staff Briefing Package at OS 136.

[64] *See* IEC 62115 Ed. 2, *Electric toys – Safety*, section 1 at p. 8.

[65] *See* Public Law 117-171, section 2(a)(1), August 16, 2022.

protect 14-year-old children is necessary to protect six-year-old children. CTA believes a 45 N test is sufficient to protect six-year-old children.

K. Securement (non-removable batteries)

CPSC says UL 4200A and IEC 62368-1 do not require abuse testing for products with button or coin cell batteries that are held fully captive by soldering, fasteners, or any equivalent means.[66] This statement is somewhat misleading. What UL 4200A actually says is for the enclosure housing a button cell battery to not have to pass the abuse testing specified in UL 4200A, the button cell battery must 1) be held fully captive by the use of soldering, fasteners such as rivets, or equivalent means; and 2) pass the secureness test in UL 4200A.[67] The overall product, itself, is still subject to abuse testing to address any other hazards that may be present.

CPSC says, "IEC 62368-1 also excludes from abuse testing any products with non-removable batteries; but it does not require any secureness test."[68] Again, this is somewhat misleading. IEC 62368-1 only exempts from the other coin/button cell-specific requirements products with coin/button cells that are soldered in place.[69] It does not exempt products with batteries held captive through use of fasteners, rivets or other equivalent means. Also, it does not exempt overall products, themselves, from abuse testing. For example, see the UL 62368-1 section 4.4.3 requirement to apply a steady force test of 100 N ± 10 N over a circular plane surface 30 mm in diameter to enclosures, barriers, etc. As noted above, this requirement has adequately protected against other hazards like shock, burn, sharp edges, etc. based on

[66] *See* Staff Briefing Package at OS 35.
[67] *See* UL 4200A, section 5.7 at p. 6.
[68] *See* Staff Briefing Package at OS 35.
[69] *See* UL 62368-1, section 4.8.1 at p. 91.

experience with billions of audio, video, information and communication technology products in use in the marketplace.

The general UL 62368-1 requirements applicable to all products are spelled out in section 4 of UL 62368-1.[70] Section 4.1.3 says, "Parts of equipment that could cause injury shall not be accessible, and accessible parts shall not cause an injury. Compliance is checked by inspection and by the relevant tests."[71] So, UL 62368-1 still requires a button cell battery that is soldered or otherwise secured to a circuit board to be tested to ensure it will not become accessible.

VI. THE LABELING AND INSTRUCTION REQUIREMENTS IN UL 62368-1 ADEQUATELY WARN CONSUMERS ABOUT THE BUTTON/COIN CELL BATTERY HAZARD

A. UL 62368-1 is working and compliant products should be exempt

Given there is no evidence that any product compliant with UL 62368-1 has had a button or coin cell battery freed from it by a child six years old or younger, CTA believes all of the requirements in UL 62368-1 are addressing this hazard adequately – including the design, labeling and instruction requirements. Therefore, CTA believes products determined to be compliant with UL 62368-1 by a Nationally Recognized Testing Laboratory should be exempt from all of the proposed CPSC regulations intended to address the button/coin cell battery hazard, including the labeling and instruction requirements.

B. General issues regarding labeling and marking

While CTA believes products compliant with UL 62368-1 should be exempt from the new labeling requirements, we also believe there are several issues CPSC should consider with

[70] *See* UL 62368-1, section 4 at p. 72.
[71] *See* UL 62368-1, section 4.1.3 at p. 73.

respect to products in general. Some of the challenges faced by designers and manufacturers of all products when it comes to the labeling requirements proposed by the Commission include:

- Some product form factors may not be able to include warning marking requirements due to physical size or other limitations. CPSC addresses such products in proposed 16 CFR section 1263.4(d)(3).[72] The proposed regulation says such products may alternatively "contain a hangtag or sticker." Some might interpret this to mean the product, itself, must contain the hangtag or sticker vs. the product packaging. Also, some additional flexibility regarding the type of material used for the warning is desired. CTA believes proposed 16 CFR section 1263.4(d)(3)(ii) should be revised to read, "(ii) Have packaging containing a hangtag, sticker label or other collateral material with pertinent information for the packaging of consumer products containing batteries in § 1263.4(c)."
- In cases where a button or coin cell battery is inside a product that has a display, or inside a product that communicates with a product that has a display, manufacturers should be allowed to present the warning about the battery hazard electronically on the video display in lieu of a label, hangtag or other marking on the product.
- Some warnings and instructions are molded into plastic cases and this process does not permit the use of color.
- Some product manuals are produced with black and white printing and adding color would add significant cost and complexity to the process.
- Consumers can become fatigued and desensitized when exposed to too many warning labels.[73] To the extent labels are needed they should be applied only to products with user replaceable batteries.

Manufacturers must alert consumers to many dangers. On the subject of batteries, alone, there are warnings to make sure batteries are installed with their polarity oriented correctly, not to use metallic tweezers when handling batteries because doing so might cause a short circuit, not to recharge non-rechargeable batteries as this could lead to explosion, not to disassemble

[72] *See* Staff Briefing Package at OS 303.

[73] The California Proposition 65 warning about products containing chemicals known to the State of California to cause cancer is a good example. Vox reports: "'Every dry cleaner, every restaurant you walk in has a Prop 65 warning in the window,' says Tom Houston, who helped draft the initial bill as chief deputy to then-Los Angeles Mayor Tom Bradley. 'Everybody just ignores that. The major purposes have all been established. The major bad chemicals are off the market, the major bad actors have been corralled by the initiative. Now this is getting down to be almost ridiculous.'" (https://www.vox.com/the-highlight/2019/10/24/20918131/california-prop-65-toxic-water)

batteries as this could lead to explosion, not to dispose of batteries in fire as this could lead to explosion, not to replace batteries with anything other than a battery recommended by the manufacturer as doing so could damage the equipment or lead to explosion, and of course warnings about the choking and chemical burn hazards posed by coin cell batteries. CTA believes the consumer warnings accompanying products compliant with UL 62368-1 are addressing the coin cell battery hazard adequately. Adding additional warnings is likely to cause further "warning fatigue" among consumers, which may ultimately work against the Commission's objective in this proceeding.

CTA appreciates CPSC's efforts to use internationally recognized symbols in its required warnings. However, the icon CPSC proposes to represent a "button cell or coin battery"[74] does not match the international symbol for a button cell battery, or the international symbol for a coin cell battery.

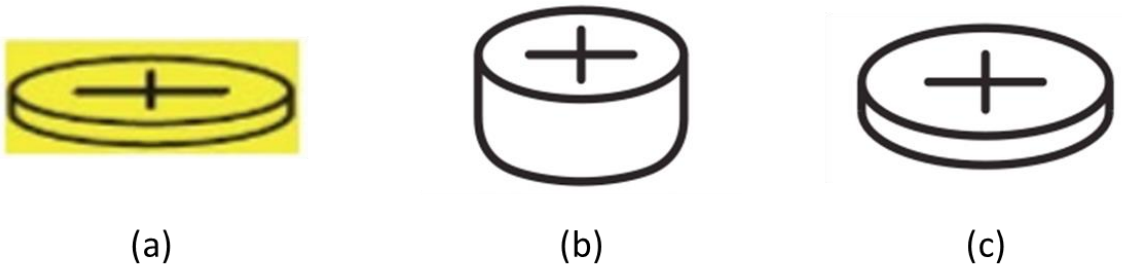

Figure 2: Button/coin cell battery symbols

Figure 2 (a) shows the proposed CPSC symbol for button and coin cell batteries. Figure *2* (b) shows the ISO 7000 / IEC 60417 symbol for a button cell battery,[75] and Figure 2 (c) shows the ISO 7000 / IEC 60417 symbol for a coin cell battery.[76] The proposed CPSC symbol includes

[74] *See* Staff Briefing Package at OS 303 (proposed 16 CFR section 1263.4(d)).
[75] *See* IEC 60417, *Graphical Symbols for Use on Equipment*, symbol 6368.
[76] *See* IEC 60417, *Graphical Symbols for Use on Equipment*, symbol 6367.

color while the internationally accepted symbols do not. The proposed CPSC symbol has a different aspect ratio and is rotated farther on the x axis than the internationally accepted symbols for coin and button cell batteries. To avoid consumer confusion CPSC's symbols should match internationally recognized symbols. To ensure its symbols match internationally recognized symbols CPSC should reference symbols from international standards instead of publishing symbols in its regulations.

VII. CPSC'S FINAL BUTTON/COIN CELL BATTERY RULES SHOULD INCLUDE TOLERANCES AND UPDATED TORQUE FIGURES

The Proposed Rules frequently specify specific values instead of values with tolerances. For example, the proposed crush test specifies 335 N instead of 330 N ± 5 N, the latter being the requirement in UL 62368-1.[77] All testing and dimensional requirements should be specified with tolerances and CTA urges CPSC to use the values and tolerances in UL 62368-1. Tolerances are important because they provide reasonable allowances for manufacturability and testability, and they do not have a significant impact on test results.

Also, in its proposed battery replacement test, CPSC references an outdated torque table (Table 20 from the UL 60065 standard) instead of the current torque table (Table 37 from the UL 62368-1 standard).[78] CTA urges CPSC to reference the current torque table.

[77] *See* UL 62368-1, section 4.8.4.6 at p. 93. *See also* Staff Briefing Package at OS 298.
[78] *See* Staff Briefing Package at OS 61. *See also* UL 62368-1, Table 37 at p. 214.

VIII. CONCLUSION

CPSC's Proposed Rules cover a subset of consumer electronics products offered by CTA members, and CTA is committed to working with CPSC on measures to effectively promote safety of those products. These comments have provided evidence that supports CTA's belief that products complying with UL 62368-1 should be exempt from the proposed 16 CFR Part 1263 requirements. These comments have also explained why CTA believes there is good cause to extend the effective date of the final rule resulting from this proceeding to 24 months after publication in the Federal Register.

Respectfully submitted,

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