



UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
4330 EAST WEST HIGHWAY
BETHESDA, MD 20814

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DATE: October 1, 2014

BALLOT VOTE SHEET

TO: The Commission
Todd A. Stevenson, Secretary

THROUGH: Stephanie Tsacoumis, General Counsel
Patricia H. Adkins, Executive Director

FROM: Patricia M. Pollitzer, Assistant General Counsel
Mary A. House, Attorney, OGC

SUBJECT: Petition Requesting Mandatory Standard for Corded Window Coverings

BALLOT VOTE DUE October 8, 2014

Parents for Window Blind Safety, Consumer Federation of America, Consumers Union, Kids in Danger, Public Citizen, U.S. PIRG, Independent Safety Consulting, Safety Behavior Analysis, Inc., and Onder, Shelton, O'Leary & Peterson, LLC (petitioners), submitted a request that the U.S. Consumer Product Safety Commission (Commission or CPSC) initiate a rulemaking to: (a) prohibit any window covering cords, where a feasible cordless alternative exists, and (b) for those instances where a feasible cordless alternative does not exist, require that all cords be made inaccessible through the use of passive guarding devices. Petitioners' request was docketed as petition CP 13-2. In the attached briefing package from the CPSC staff, staff recommends granting the petition.

Please indicate your vote on the following options:

I. Grant the petition.

(Signature)

(Date)

CPSC Hotline: 1-800-638-CPSC(2772) ★ CPSC's Web Site: <http://www.cpsc.gov>

II. Defer the petition.

(Signature)

(Date)

III. Deny the petition.

(Signature)

(Date)

IV. Take other action. (Please specify.)

(Signature)

(Date)

Attachment: Staff Briefing Package in Response to the Petition CP 13-2, Requesting Mandatory Safety Standards for Window Coverings



United States
Consumer Product Safety Commission

Staff Briefing Package

In Response to the Petition CP 13-2, Requesting
Mandatory Safety Standards for Window Coverings

October 1, 2014

For further information contact:
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ACKNOWLEDGMENTS

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EXECUTIVE SUMMARY

The U.S. Consumer Product Safety Commission (CPSC or the Commission) received a request from Parents for Window Blind Safety, Consumer Federation of America, Consumers Union, Kids in Danger, Public Citizen, U.S. PIRG, Independent Safety Consulting, Safety Behavior Analysis, Inc., and Onder, Shelton, O’Leary & Peterson, LLC (petitioners), to initiate rulemaking to develop mandatory safety standards for window coverings. Specifically, the petition seeks to prohibit window covering cords, when a feasible cordless alternative exists. In addition, for those instances in which a feasible cordless alternative does not exist, the petition requests that all window covering cords be made inaccessible through the use of passive guarding devices. Petitioners assert that the governing voluntary standard, ANSI/WCMA A100.1-2012, *American National Standard for Safety of Corded Window Covering Products*, is inadequate and that the standard continues to permit window coverings with hazardous accessible cords that injure and kill young children. Petitioners note that of the 250 incidents that reportedly occurred from 1996 through 2012, 102 injuries and deaths (approximately 40%) would not have been prevented by the current voluntary standard. In addition, petitioners claim that there is substantial noncompliance with the voluntary standard, and they reference a minimum of 16 recalls since 2007, which involved window coverings that petitioners allege were not manufactured in compliance with the voluntary standard.

The Office of the General Counsel docketed the request as a petition, CP 13-2. The Commission published a *Federal Register* notice on July 15, 2013, requesting public comments on the petition. The Commission received a total of 543 comments.

From 1996 through 2012, staff is aware of 184 reported fatal strangulations and 101 reported nonfatal strangulations involving window covering cords among children eight years and younger. Using separate data from the National Center for Health Statistics (NCHS) and a CPSC study, from 1999 through 2010, staff estimates that a *minimum* of 11 fatal strangulations related to window covering cords on average occurred per year in the United States among children under five years old. CPSC staff finds no observable trend in the data.

Staff evaluated the risk of a fatal or nonfatal strangulation to children involving window covering cords. Based on various CPSC data sources (e.g, newspaper clippings, consumer complaints, death certificates purchased from states, medical examiners’ reports, and in-depth investigation reports), staff found on average about 11 reported fatal strangulations and on average about 6 reported nonfatal strangulation incidents per year for children eight years and younger. Based on 2004 Census data, the overall risk of a reported fatal or nonfatal strangulation incident for children eight years and younger would be an average minimum of 0.47 incidents per million children per year.

Window coverings are household products that do not usually pose a risk to older children, teens, or adults in their intended use of operation. Staff found in a review of the 249 investigated window covering cord incidents that the predominant types of window coverings involved in the incidents were horizontal blinds (53%), followed by vertical blinds (17%). The most common cord types involved in the incidents were pull cords (101 incidents or 41%), followed by continuous loops (70 incidents or 28%).

The Window Covering Manufacturers Association (WCMA), the organization that developed the voluntary standard, responded to the petition, stating that the voluntary standard is adequate to address the risk of injury associated with corded window coverings. The WCMA states that the voluntary standard is the most stringent standard in the world, and notes that since the first voluntary safety standard was issued in 1996, substantial compliance with the standard has existed in the industry, with a significant reduction in the risk of fatalities to consumers. Additionally, WCMA claimed that the risk of injuries and fatalities will continue to decrease as older products are removed from consumers' homes and are replaced by products that comply with the voluntary safety standard.

Staff's assessment of the 2014 version of the ANSI/WCMA standard reveals that 57 percent of the incidents that were investigated by CPSC are not effectively addressed by the existing voluntary standard, although the standard does address the hazards in 25.7 percent of the investigated incidents. Insufficient information is available to draw any conclusions for the remaining 17.7 percent of the investigated incidents. Incidents involving pull cords and continuous loops on window coverings constitute the 57 percent of incidents that are not effectively addressed in the standard, according to the assessment by engineering staff. Staff concluded based on the human factors analysis that if cords are accessible and hazardous, window coverings will present a risk of strangulation to young children.

On July 22, 2014, CPSC staff sent a letter to the WCMA requesting that the WCMA reopen the ANSI standard to address pull cords and continuous loops that are predominantly associated with the incidents reported to CPSC.¹ Staff proposed a set of revised performance requirements in the letter and asked that WCMA consider including the revisions in the standard. On August 29, 2014, WCMA responded that the association would begin the process of opening the ANSI/WCMA window covering standard, but WCMA stated that the association did not agree to ballot any specific CPSC recommendations.² Additionally, WCMA did not provide any specific performance-based changes to revise the current standard, nor did WCMA provide a timetable for reopening the standard.

Based on deaths reported from 1999 through 2010, and medically attended injuries from 1996 through 2012, the societal costs associated with deaths and injuries involving window covering cords may have amounted to an average of about \$110.7 million annually. Staff estimates that the maximum benefits of a broad-based intervention as proposed by the petitioners to prevent all injuries and deaths involving window coverings would amount to no more than \$0.85 per corded window covering sold. Staff lacks information to assess the potential costs of alternative technologies to address the hazard.

The market for window coverings includes safer alternatives to products with hazardous cords, such as window covering products designed to function without an operating cord or cordless window coverings, cord shrouds, and cord retractors. These safer alternatives address the hazard

¹ http://www.cpsc.gov/PageFiles/170256/WCMA_Ltr_22_July_2014.pdf

² http://www.cpsc.gov/PageFiles/170642/WCMALettertoGBorlase8_29.pdf.

created by looping cords by eliminating cords (cordless, crank or wand), by eliminating access to operating cords (shroud), limiting the length of the cord, loop, or bead chain, or restraining the cord to keep the loop taut. Cordless window coverings, either manual or motor operating systems, are available for virtually every product. In general, retail prices for cordless window coverings are higher than retail prices for similar corded products. Aesthetics, price, technical applicability, and usability all play a role in determining if a safer option is offered with each type of window covering. Even though limitations exist in the availability of safer options due to large size or weight of a window covering, the majority of the window coverings involved in the incidents that were reported to CPSC could have included a technology to make the product safer, at least from a technical standpoint, if the products were manufactured today.

Based on the information provided by the petitioner and information presented in the briefing package, staff recommends that the Commission grant the petition to initiate rulemaking. Should the Commission decide to grant the petition, the Commission is not obligated to issue the precise rule requested by the petitioners. The Commission could focus the scope and requirements of any rule to address the hazard as identified by the staff's analysis of the incident data and other relevant information.



**United States
Consumer Product Safety Commission
Bethesda, MD 20814**

This document has been electronically
approved and signed.

Memorandum

October 1, 2014

TO : The Commission
Todd A. Stevenson, Secretary

THROUGH : Stephanie Tsacoumis, General Counsel
Patricia H. Adkins, Executive Director
Robert J. Howell, Deputy Executive Director for Safety Operations

FROM : George A. Borlase, Ph.D., P.E., Assistant Executive Director
Office of Hazard Identification and Reduction

Rana Balci-Sinha, Ph.D., CPE, Project Manager
Directorate for Engineering Sciences

SUBJECT : Petition requesting Mandatory Standards for Corded Window Coverings

I. Introduction

Parents for Window Blind Safety, Consumer Federation of America, Consumers Union, Kids in Danger, Public Citizen, U.S. PIRG, Independent Safety Consulting, Safety Behavior Analysis, Inc., and Onder, Shelton, O'Leary & Peterson, LLC (hereinafter petitioners), petitioned the U.S. Consumer Product Safety Commission (CPSC) for rulemaking under the authority and process set forth in 16 C.F.R. § 1051, *et seq.*, and requested that the Commission promulgate a mandatory standard that: (a) prohibits any window covering cords, if a feasible cordless alternative exists, and (b) for those instances where a feasible cordless alternative does not exist, requires that all cords be made inaccessible through the use of passive guarding devices. The Office of the General Counsel docketed the request as a petition, CP 13-2 (*see* TAB A). On July 15, 2013, the Commission published a *Federal Register* notice (78 Federal Register 42026), requesting public comments on the petition.

CPSC staff prepared this briefing package in response to the petition. The briefing package provides the Commission with information relevant to the petition, including a review of the public comments received in response to the *Federal Register* notice, and a discussion of options for Commission consideration.

II. Issue

The petitioners claim that the voluntary standard for corded window coverings, *ANSI/WCMA A100-1-2012, American National Standard for Safety of Corded Window Covering Products* (ANSI standard or voluntary standard), remains inadequate and continues to permit window coverings with hazardous accessible cords that injure and kill young children.³ The petitioners state that of the 250 incidents investigated that reportedly occurred from 1996 through 2012, 102 of the injuries and deaths (approximately 40%) would not have been prevented by the current voluntary standard. The petitioners believe that this ratio represents an unreasonable risk of injury to young children who become entangled on corded window coverings. The petitioners also claim that substantial noncompliance with the voluntary standard exists in the industry, and they refer to a minimum of 16 recalls since 2007, which involved window coverings that do not comply with the existing voluntary standard. Moreover, petitioners assert that feasible and economically viable safer solutions are currently available in the market, including cordless blinds and cord covers (*e.g.*, rigid cord shroud).

Based on the foregoing, the petitioners ask the Commission to promulgate a mandatory standard that:

- (1) prohibits any window covering cords, if a feasible cordless alternative exists, and
- (2) requires that all cords be made inaccessible through the use of passive guarding devices, if no feasible cordless alternative exists.

III. The Framework for Considering the Petition

To issue a *final* consumer product safety rule, the Commission would need to determine that the rule is reasonably necessary to prevent or reduce an unreasonable risk of injury. Therefore, the Commission's petition regulations 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; and
- (3) Whether failure to initiate rulemaking would expose the petitioner or others to the risk of injury the petitioner alleges the product presents.

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(a). Importantly, a finding of unreasonable risk is a determination the Commission would make at the end of the rulemaking process. When considering a petition, the Commission should be aware of this ultimate finding, but at the petition stage, the Commission is not making an unreasonable risk determination.

³ The most recent version of the standard is the 2014 version, which has been approved on July 21, 2014.

In addition, the Commission should be aware that the CPSA states that the Commission may not deny a petition on the basis of a voluntary standard unless:

- (1) The Commission determines that the voluntary standard is likely to result in the elimination or adequate reduction of the risk of injury identified in the petition, and
- (2) It is likely that there will be substantial compliance with the voluntary standard.

IV. Product Description

Window coverings comprise a wide range of products, including shades, blinds, curtains, and draperies. In general terms, “hard” window coverings, composed of slats or vanes, are considered blinds; and “soft” window coverings that contain a continuous roll of material are considered shades. Both blinds and shades may have inner cords that cause a motion, such as raising, lowering, traversing, or rotating the window covering to achieve the desired level of light control. Curtains and draperies do not contain inner cords but may be operated by continuous loop. The cord or loop that is manipulated by the consumer to operate the window covering is called an “operating cord” and may be in the form of a single cord, multiple cords, or continuous loops. Cordless window coverings are products designed to function without an operating cord but may contain inner cords. The most common types of window coverings, associated cords, and observed hazard scenarios with cords are all described in Appendix.

V. Incident Data (TAB B)

Based on NCHS (National Center for Health Statistics) data and a CPSC study⁴ the Directorate for Epidemiology staff estimates that a minimum of 11 fatal strangulations related to window covering cords on average occurred per year in the United States among children under five years old from 1999-2010. In addition, staff reviewed the emergency department-treated injury data (National Electronic Injury Surveillance System or NEISS). Based on this NEISS data, CPSC staff estimates that from 1996 through 2012, 1,590 children received treatment for injuries resulting from entanglements on window covering cords.

CPSC also received incident data through newspaper clippings, consumer complaints, death certificates purchased from states, medical examiners’ reports, and In-Depth Investigation (IDI) reports. Using data from these sources from January 1996 through December 2012, staff found a total of 285 reported fatal and nonfatal strangulation incidents involving window coverings among children 8 years of age or younger. Of the 285 incidents, 184 resulted in fatality. These 285 incidents do not constitute a statistical sample of known probability and do not necessarily include all window covering cord-related strangulation incidents that occurred during that period. Given that these reports are anecdotal, and reporting is incomplete, CPSC staff strongly

⁴ N. Marcy, G. Rutherford. “Strangulations Involving Children Under 5 Years Old.” U.S. Consumer Product Safety Commission, December 2002.

discourages drawing any inferences based on the year-to-year increase or decrease shown in the reported data.

Of the 285 total reported incidents involving window covering cords, CPSC staff reviewed the completed IDIs for 249 incidents. Staff found that the predominant types of window coverings involved in the incidents were horizontal blinds (53%), followed by vertical blinds (17%), and Roman shades (11%). The most common cord types involved in the incidents were pull cords (101 incidents or 41%), followed by continuous loops (70 incidents or 28%), and inner cords (47 incidents or 19%).

VI. Health Sciences Assessment (TAB C)

The Directorate for Health Sciences (HS) staff has provided a discussion on strangulation injuries. Strangulation due to mechanical compression of the neck involves both obstruction of the airway passage and occlusion of blood vessels in the neck. Strangulation can occur when a child's head or neck becomes entangled in any position, even in situations where the body is fully or partially supported, in the event that a lateral pressure is sustained at a level resulting in vascular occlusion. Permanent, irreversible damage can occur if the delivery of oxygen to tissues is reduced. The severity of oxygen deprivation ultimately governs the victim's chance for survival or the degree of neurological damage. Neurological damage may range from amnesia, loss of cognitive abilities due to hypoxic-ischemic injury to the hippocampus, mobility limitations, and loss of function, to long-term vegetative state. Experimental studies show that 2 kg (4.4 lbs.) of pressure on the neck may occlude the jugular vein⁵ and 3–5 kg (7–11 lbs.) may occlude the carotid artery.⁶ Minimal compression of any of these vessels can lead to unconsciousness within 15 seconds and death in two to three minutes (Digeronimo and Mayes, 1994; Hoff, 1978; Iserson, 1984; Polson, 1973).⁷ The vagus nerve, responsible for maintaining a constant heart rate, is also located in the neck, in close proximity to the jugular vein and carotid artery. If the vagus nerve is compressed, cardiac arrest can result, due to mechanical stimulation of the carotid sinus-vagal reflex.

Of the 285 incidents reviewed by the staff, 184 were fatalities, 19 required hospitalizations, 67 were minor injuries not requiring hospitalization, and 15 incidents reported no injuries. Of the 19 hospitalizations, nine patients suffered severe neurological outcomes, such as cerebral edema,

⁵ Brouardel P. *La pendaison, La strangulation, La suffocation, La submersion*. JB Bailliere et fil, Paris, France, 1897; pp. 38-40.

⁶ *Ibid.* and Polson CJ. Hanging In: Polson CJ and Gee DJ (eds.) *Essentials of forensic medicine* Oxford England, 1973 371-404.

⁷ Digeronimo RJ1, Mayes TC. Near-hanging injury in childhood: a literature review and report of three cases. *Pediatr Emerg Care*. 1994 Jun; 10(3):150-6.

Hoff BH. Multiple organ failure after near-hanging. *Crit Care Med* 1978; 6:366-9. Howell MA.

Iserson, K.V. Strangulation: A review of ligature, manual and postural neck compression injuries. *Ann. Emerg. Med.* 13:179-185, 1984.

Polson CJ. Hanging In: Polson CJ and Gee DJ (eds.) *Essentials of forensic medicine* Oxford England, 1973 371-404.

coma, loss of cognitive abilities, a loss of function or mobility, and quadriplegia. Some patients required intensive care, monitoring, lifelong care, and therapy. Four of the entanglement incidents occurred on the child's arm or wrist and did not involve the neck. In 78 incidents that were reported as minor or no injury involving the neck, the child was found entangled in a cord or with the cord wrapped around the neck, in some instances so tight that the child turned blue and had red marks or rope burns visible on the neck. Three children suffered temporary airway obstruction and were subsequently taken to the hospital. HS staff believes that all these nonfatal incidents could have had a more serious and even fatal outcome, if the child had not been released from the cord.

VII. Human Factors Discussion of the Incident Data and Childhood Behavior (TAB D)

The Division of Human Factors (ESHF) staff reviewed the characteristics of the population at risk of strangulation with window covering cords, supervision provided by caregivers, and consumers' attention to, and compliance with, the warning labels located on corded window coverings. In their first 5 years of life, children go from total dependence on others to independence. Starting from around 3 months of age, children begin to grasp objects placed in their hands and by 6 months of age most children master reaching and grasping objects within their reach. Children learn to stand by holding onto an object starting at around 8 months of age, and a month later, they can stand. At around 10 months of age, children learn to stand without holding on to an object. Between 12 to 18 months of age, children progress from walking, to running, to walking up stairs, to climbing. As children gain new skills (*e.g.*, sitting, standing, walking, running, climbing) they want to use and perfect those skills.⁸ The incident data show that children climbed on beds, chairs, tables, and other furniture to interact with the window coverings. In some incidents, children were reportedly imitating superheroes or using the beaded chains as necklaces.

Parents are advised to encourage children to start taking care of themselves beginning at around age 2 years so the children can learn independence and self-discovery. During these times of independence and exploration, children have less supervision. The degree of appropriate supervision is strongly linked to developmental level. Research shows that for preschool (birth to 4 years), constant supervision is required, except when children are in rooms in the home that are perceived as safe (living room/bedroom) or in rooms that are deemed fairly safe (bathroom/garage/kitchen).⁹ Children's bedrooms and living or play rooms are considered by caregivers to be the safest rooms in the home. A review of the incidents reported to CPSC shows that bedrooms, living rooms, family rooms, or TV rooms were the locations where most incidents occurred. These are rooms that caregivers perceive to be the safest rooms in the home, and thus, caregivers may be inclined to leave children alone in these rooms.

⁸ Frankenburg, W.K., Dodds, J., Archer, P. et al.: The DENVER II Technical Manual 1990, Denver Developmental Materials, Denver, Co.

⁹ Peterson, L., Ewigman, B., and Kivlahan, C., (1993) "Judgments Regarding Appropriate Child Supervision to Prevent Injury: The Role of Environmental Risk and Child Age." *Child Development*, 64, 934-950.

Research demonstrates that the more familiar caregivers are with a product, the lower their recognition is of the product's hazards.¹⁰ Increased familiarity, ease and frequency of use, and low price of a product reduce the likelihood that people will read warning labels. Consumers are highly familiar with window coverings and interact with window coverings daily. Even though no specific studies or surveys related to the use of safety devices for window coverings exist, research shows that the rate of compliance with instructions is lower when more effort and time (cost of compliance) are required to comply with the instructions.¹¹ In some incidents, parents had seen the warning labels and were aware of the hazards of hanging cords and continuous loops. Parents used cord cleats, tied the cords together, or used other means to keep the cords out of reach of the child; however, the child was still able to access the cords and strangle. In other cases parents did not use any safety devices. One reason for not using the safety devices is that the parents may have assumed the cords were not a problem because their child had not shown any interest in the window blind cords. In some incidents, safety devices, such as tie-down devices or cord cleats, were not used when the parents did not perceive a threat to the child. In a few cases, parents reported that they had observed their child's interaction with cords but did not think the cords were a danger.

ESHF concludes that if cords are accessible and hazardous, window coverings will present a risk of strangulation to young children. Children cannot be supervised 100 percent of the time, and they can strangle in a few minutes. Children will continue to explore their environment and interact with accessible window covering cords even when parents try to be conscientious and use safety devices on window coverings.

VIII. Existing Voluntary Standard (TAB E)

The 2014 version of the ANSI/WCMA standard establishes safety performance requirements for window coverings sold in the United States. The standard applies to all interior corded window covering products and includes, but is not limited to, cellular shades, horizontal blinds, pleated shades, roll-up style blinds, roller shades, Roman style shades, traverse rods, and vertical blinds. The standard was first published in 1996, and subsequently, was revised six times. The latest version was published in 2014.

International Standards and Alignment Initiative

Three international standards specify requirements for the safety of window coverings:
(1) *Competition and Consumer (Corded Internal Window Coverings) Safety Standard 2014* published in Australia (Australian standard),

¹⁰ Vredenburgh, A.G., & Zackowitz, I.B., (2006). Expectations. In M. S. Wogalter (Ed.), *Handbook of warnings* (pp. 345-354). Mahwah, NJ: Lawrence Erlbaum Associates.

¹¹ DeJoy, D.M., (1999). Attitudes and Beliefs. In M. S. Wogalter, D. M. DeJoy, & K. R. Laughery (Eds.), *Warnings and risk communication* (pp. 189-219). Philadelphia: Taylor & Francis

- (2) *Corded Window Covering Products Regulations (SOR/2009-11)* and *CAN/CSA-Z600-14 Safety of Corded Window Covering Products* published in Canada, which is based on the 2012 ANSI/WCMA standard with some modifications (Canadian standard), and
- (3) *EN 13120:2009+A1:2014 Internal blinds- Performance requirements including safety*, *EN 16433:2014 Internal blinds — Protection from strangulation hazards — Test methods*, and *EN 16434:2014 Internal blinds — Protection from strangulation hazards. Requirements and test methods for safety devices* published by European Committee for Standardization (European standard).

Engineering staff compared the ANSI/WCMA standard with the international standards and concluded that the ANSI standard developed by WCMA is one of strongest standards in the world.

In February 2012, participating staff of the Australia Competition and Consumer Commission, Health Canada, European Commission Directorate General for Health & Consumers, and the CPSC reached a consensus on a document that describes approaches to addressing the strangulation hazard related to corded window coverings. The document includes a hierarchy of the various solutions, recognizing that different approaches may be necessary for making different types of products safe:

“To achieve the greatest permanent reductions in strangulations from corded window covering products, the product designs should eliminate exposure to the hazard or eliminate the hazard entirely. At the top of the hierarchy of safe solutions for window coverings are the following:

- *The product has no accessible cords under any conditions of foreseeable use or misuse.*
- *The product has accessible cords that cannot form a hazardous loop under any conditions of foreseeable use or misuse, including failure to heed warnings or incorrect installation.*

The following approach provides for the next level in the hierarchy of solutions to reduce strangulation hazard:

- *The product is provided with safety devices to be installed ensuring that accessible cords cannot form a hazardous loop. Instructions and warnings are provided for correct installation.*

Due to variable factors, such as a consumer’s diligence and ability to follow all installation instructions and heed all warnings, there is a difference between this approach and the approach providing the highest level of safety. Finally, relying solely on warnings that the product contains hazardous loops that could strangle a child is considered insufficient to prevent fatalities.

Warnings and instructions for safe use however should continue to be present on all corded window coverings, their packaging, and their instructions. Public education efforts should

encourage the use of safe window coverings and removal of products with accessible cords that can form hazardous loops.”

Staff's work with WCMA

In 1995, CPSC staff began working with the WCMA on an ANSI standard to address accessible cords on window coverings. Consequently, WCMA published the first version of the ANSI standard in 1996. The 1996 standard sought to prevent strangulation incidents created by looped cords by requiring either: (a) separate operating cords, or (b) a cord release device on multiple cords ending in one tassel. The standard also required a tension device that would hold the cord or bead loop taut, when installed according to manufacturer's instructions. In 2001, CPSC staff sent a letter to the WCMA asking for revisions to the 1996 standard, including the addition of inner cord stops and the elimination of free-hanging cords or bead chains longer than the neck circumference of a fifth percentile 7–9-month-old child. In January 2002, CPSC staff sent a similar request by letter to WCMA. In August 2002, the published ANSI standard required inner cord stops. In 2007, the published ANSI standard required that tension devices partially limit the consumer's ability to control the blind if the tension device is not properly installed.

In 2009, WCMA published a provisional voluntary standard specifying descriptive requirements for Roman shades. CPSC staff sent a letter to the WCMA underscoring that the descriptive requirements still allowed inner cords to be accessible. In September 2010, WCMA published a stronger performance-based standard addressing Roman shade inner cords as another provisional standard. In November 2010, CPSC held a public meeting and WCMA announced it would establish a steering committee to oversee the activities of six task groups, including one intended for pull cords and another for continuous loops. At the meeting, WCMA reiterated its intent to minimize the risks associated with pull cords and continuous loops and to draft revisions to the voluntary standard for balloting by the end of October 2011.

On December 20, 2011, the WCMA balloted the proposed revisions to the voluntary standard. On February 6, 2012, staff sent WCMA a letter providing comments on the proposed revision. In these comments, CPSC staff reiterated that the hazardous loop determination should be made for all cords and that the length of an accessible operating cord should not be longer than the neck circumference of the youngest child at risk. In addition, staff raised concerns about the inability of tension devices to eliminate effectively or reduce significantly the risk of strangulation under certain foreseeable-use conditions. In November 2012, the WCMA announced the approval of the 2012 version of the ANSI/WCMA standard which includes: (1) requirements for durability and performance testing of the tension/hold down devices, including new requirements for anchoring; (2) specific installation instructions and warnings; (3) new requirements for products that rely on “wide lift bands” to raise and lower window coverings; (4) requirements for a warning label and pictograms on the outside of stock packaging and merchandising materials for corded products; and (5) expanded testing requirements for cord accessibility, hazardous loop testing, roll-up style shade performance, and durability testing of all safety devices.

A revised ANSI/WCMA A100.1 American National Standard for Safety of Corded Window Covering Products was approved on July 21, 2014.¹²

Recent Activities in Voluntary Standard Revision

On July 22, 2014, CPSC staff sent a letter to the WCMA requesting that the WCMA reopen the ANSI standard to address the hazard related to pull cords and continuous loops, which are the predominant hazard types in the incidents reported to CPSC.¹³ Staff suggested proposed language for a revision to the voluntary standard and asked that WCMA consider including the language in the standard. On August 29, 2014, WCMA responded that the association would begin the process of opening the ANSI/WCMA window covering standard, but WCMA did not agree to any specific CPSC recommendations.¹⁴

IX. Assessment of ANSI/WCMA Standard (TAB E)

The Division of Mechanical Engineering (ESME) reviewed the incident data to determine whether the 2014 version of the ANSI/WCMA standard would address the hazards presented in those incidents. A multidisciplinary team reviewed 249 completed IDIs related to incidents that occurred from 1996 through 2012. The following are the product types involved in the incidents:

- Horizontal blinds (53%),
- Vertical blinds (17%),
- Roman style shades (11%),
- Curtain/drapery (6%),
- Cellular shades (4%),
- Roll-up shades (2%),
- Roller shades (2%), and
- Unknown type (5%).

According to the ESME's assessment, the 2014 version of the ANSI standard addresses the hazards in 25.7 percent (64/249) of the investigated incidents, while hazards reported in 57 percent (141/249) are not addressed. Insufficient information is available to draw any conclusions for the remaining 17.7 percent (44/249) investigated incidents. Engineering staff determines that the voluntary standard is inadequate because 57 percent of the incidents that occurred could still occur with pull cords and continuous loops on window coverings that meet the current version of the ANSI/WCMA standard.

¹² Change is in Appendix E, Figure E1, Row 3.

¹³ http://www.cpsc.gov/PageFiles/170256/WCMA_Ltr_22_July_2014.pdf

¹⁴ http://www.cpsc.gov/PageFiles/170642/WCMALettertoGBorlase8_29.pdf

Table 1 summarizes the hazard types identified in the IDIs and ESME’s assessment of the hazard addressability with the current 2014 version of the voluntary standard. Appendix to this memorandum includes more detailed descriptions of each of these hazard scenarios.

Table 1. Addressability of the Hazards with the 2014 ANSI/WCMA Standard

Hazard Scenario	Number of Incidents	Investigated IDIs (%)	Section of the standard related to the hazard	Conclusion
1) <i>Entanglement from pull cords</i>	69	27.7		<i>Not addressed</i>
	14	5.6		<i>Addressed</i>
Entanglement in a loop created by knotted or tangled pull cord	38	15.3	Section 4.3.2 allows multiple cords in unspecified lengths	Not addressed
Entanglement in one or more long cords, which the child wrapped around the neck	25	10.0	Sections 4.3.2 and 4.3.9 allow accessible free hanging operating cords.	Not addressed
Entanglement in a loop above a single tassel of the cord	14	5.6	Sections 4.3.2 and 4.3.3 require either separate cords or cords with release devices in the loop	Addressed
Entanglement in a loop above the stop ball of the cord	4	1.6	Section 4.3.9 allows for an accessible loop when the bottom rail is fully raised.	Not addressed
Entanglement in a loop created when pull-cord was tied to another object, usually on the wall	2	0.8	Section 4.3.2 allows unspecified length of cords	Not addressed
2) <i>Entanglement in a continuous loop cord</i>	70	28.1	<i>Section 4.3.7 requires a cord tension device that will at least partially prevent the operation of the window covering, when not installed but still allows some operability.</i>	<i>Not addressed</i>
3) <i>Entanglement from inner cords</i>	47	18.9	<i>Section 4.4 addresses accessibility and hazardousness of inner cord loops</i>	<i>Addressed</i>
4) <i>Entanglement in the lifting loop of a roll-up shade</i>	3	1.2	<i>Section 4.4.5 addresses the accessible lifting loops of a roll-up style shade</i>	<i>Addressed</i>
5) <i>Entanglement in the tilt cords</i>	2	0.8	<i>Section 4.3.2 allows multiple cords in unspecified lengths</i>	<i>Not addressed</i>
6) <i>Unknown</i>	44	17.7		<i>Unknown</i>

Although the standard does address a portion of the hazards associated with pull cords, remaining pull cord hazards and continuous loop cords account for more than 50 percent of the

hazard scenarios that are not addressed by the standard. Below is the staff's assessment on these two hazards:

Continuous Loops. Continuous loops need to be kept taut so that the free-standing loop does not cause a hazard to young children. The voluntary standard requires a tension device be attached on the loop by the manufacturer. After receiving the product, the consumer must install the tension device on an external surface, such as a wall or window sill, per manufacturer's instructions. As explained in the ESHF memorandum, compliance with instructions declines if the effort and time required for the installation is high. The first publication of the voluntary standard (1996) required that a cord tension device be supplied and removal of it is a sequential process (i.e., requires two or more independent steps to be performed in a specific order). Once the tension device is installed, it becomes a passive device. In 2007, the voluntary standard introduced the "partial inoperability clause," which meant that if the tension device was not properly installed, the tension device should at least partially prevent the operation of the window covering. The latest version of the standard includes the same partial inoperability requirement, in addition to a new durability test procedure to prevent the tension device, if installed, from coming off the wall or breaking under the tested conditions. Engineering staff concludes that even with these changes the standard still allows accessible free hanging continuous loop cords that could strangle a child when the tension device is not properly installed. Thus, ESME staff does not believe that the hazard is effectively addressed by the voluntary standard.

Pull Cords. Engineering staff concludes that the voluntary standard does not address the following hazard scenarios: (1) loops resulting from knotted or entangled pull cords, (2) pull cords that are wrapped around the neck, (3) pull cords that are tied to another object, and (4) pull cords with loops above stop ball/cord connector. The recently published Canadian standard (*CAN/CSA-Z600-14 Safety of Corded Window Covering Products*) mainly adopts the requirements of the ANSI/WCMA standard with one change: adding cord cleats as a required component to mitigate the pull cord hazard. Staff understands that for the spirit of harmonization, WCMA will propose to include a similar requirement to the ANSI standard. A cord cleat is a device that can be attached to a wall or other structure and around which a cord can be wound. A cord cleat is not a passive device, meaning that it requires direct interaction of the user each and every time the window covering is raised or lowered in order to mitigate the hazard. In addition, whether or not a cord cleat is installed, the window covering operates as intended. In staff's opinion, cord cleats are not an effective safety mechanism because cord cleats need the active participation of the user every time the window covering is operated, and because the operability of the window covering does not depend on the cord cleat's proper installation. Because of these two factors, engineering staff believes that tension devices and cord cleat requirements in the voluntary standard do not effectively mitigate the strangulation hazard.

As suggested in the staff's letter sent to WCMA in July 2014, if the ANSI/ WCMA standard were updated to include provisions requiring that pull cords are either (a) not accessible or (b) accessible but not hazardous, then the risk associated with pull cords would be minimized. Similarly, if not installing the tension device completely prevented the operation of the window covering; consumers would likely install the device that keeps the continuous loop taut. With

such a requirement, the voluntary standard would reduce the hazard resulting from free standing continuous loops.

X. Conformance to Voluntary Standards

According to the WCMA, manufacturers of window coverings are in substantial compliance with the voluntary standard. Beyond WCMA's comments, staff has no data on the extent of compliance and cannot estimate the proportion of annual sales of window covering products that comply. Petitioners argue that the industry does not substantially comply with the voluntary standard, citing 16 recalls between 2007 and 2012 with products that were not manufactured in compliance with the voluntary standard. Staff reviewed the recalls cited by the petitioners and found that eight of the recalls included products that were compliant with the voluntary standard, whereas eight recalls included products that did not comply with the standard.

Staff has some anecdotal information on product compliance and incident hazard patterns that lends support to WCMA's contention that products substantially comply with the voluntary standard. For example, the 1996 version of the standard required that pull cords have separate tassels or a breakaway tassel to reduce the hazard with the loop above a single tassel. Among the incidents associated with the loop above a single tassel, staff's review of incidents showed that only one product out of 14 products involved in incidents was manufactured after the 1996 standard went into effect and did not comply with the requirement.

XI. Compliance Actions (TAB F)

The Office of Compliance and Field Operations (Compliance) provided information on the history of Compliance staff's efforts to work with industry to make window coverings safer for young children. Compliance staff began working with WCMA in 1994, when CPSC announced a joint recall with the WCMA on how to eliminate the loops on pull cords ending in one tassel. The WCMA created the larger Window Covering Safety Council (WCSC) to include window covering manufacturers and retailers to support the recall and to provide free repair kits to consumers. In 1999, after an extensive review of the incidents reported to CPSC, Compliance staff began a new investigation of window covering deaths resulting from inner cords of horizontal blinds. In 2000, CPSC and WCMA again announced a joint recall involving inner cord stops to reduce the risk of a child pulling on the inner cords and creating a hazardous loop.

In 2005, Compliance staff learned of a nonfatal incident involving the inner cord of a Roman shade. Subsequently, CPSC investigated a worldwide retailer following a child's death from the inner cord of a Roman shade. In 2008, CPSC and the retailer announced a joint recall for Roman shades, offering a full refund to consumers. In 2009, CPSC and 15 manufacturers and retailers in conjunction with the WCSC, announced individual recalls of Roman shades and roll-up blinds. In 2012, two more recalls occurred: one involving horizontal blinds manufactured without inner cord stops and vertical blinds manufactured without tension devices, and the second recall to repair and correct an assembly error in a breakaway cord connector.

XII. Public Education

Since the first safety alert was issued in 1985, CPSC has been warning parents of the danger of child strangulation due to corded window coverings. CPSC has identified window coverings as one of the top five hidden home hazards.¹⁵ Every October, CPSC participates jointly with WCSC in National Window Covering Safety Month to urge parents and caregivers to check their window coverings for exposed and dangling cords and to take precautions. Both CPSC and WCSC recommend cordless window coverings at homes where young children live or visit. In addition to traditional communication methods, CPSC reaches out to consumers using social media, such as safety blogs and online chats, to create awareness of the hazards associated with corded window coverings. Staff does not have information to assess the effectiveness of public education campaigns.

XIII. Market for Window Coverings (TAB G)

The Directorate for Economic Analysis (EC) provided information on the market for window coverings. Based on 2011 data, there were more than 350 manufacturers and more than 1,800 retailers of window coverings in the United States. Three manufacturers reportedly accounted for almost 70 percent of dollar sales in the U.S. window coverings market in 2008. Retail prices for corded window coverings have a wide range. The type of material, brands, and operating mechanism affect the price. Average prices for window coverings range from about \$50 to \$440 for shades and from about \$10 to \$360 for blinds. Retail prices for extremely large and custom-made window coverings can be as high as \$3,000.

Based on a study conducted by D&R International (D&R, 2013), shipments of residential window coverings from manufacturers may have amounted to about 100 to 150 million units in the United States in 2012.¹⁶ WCMA engaged the consulting firm D&R International to conduct the study. D&R International received funding for the study from WCMA and the U.S. Department of Energy (DOE), through Lawrence Berkeley National Laboratory (LBNL). D&R based these estimates on information (including shipment, pricing, retail and manufacturing data) provided by WCMA members, U.S. Census Bureau reports of vinyl blind imports, and data collected from a WCMA-funded internet survey of U.S. households, which D&R also conducted as part of the study. WCMA participated in designing and implementing the internet survey. D&R developed a research plan in consultation with WCMA, with input from LBNL. DOE, through LBNL, provided funding to analyze the internet survey and prepare the report.¹⁷ Augmenting the D&R estimates with U.S. housing statistics, there may be more than one billion window coverings in use in U.S. homes.

¹⁵ <http://www.cpsc.gov/PageFiles/165163/hidden.pdf>

¹⁶ D&R International, Ltd. (September 2013). *Residential windows and window coverings: A detailed view of the installed base and user behavior (DOE/EE-0965)*. U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Washington DC. September, 2013. Available at: <http://energy.gov/eere/buildings/downloads/residential-windows-and-window-coverings-detailed-view-installed-base-and>

¹⁷ Ibid.

Sales of cordless window coverings (or window coverings with inaccessible cords) are not known with any precision, but based on discussions with industry participants and review of a major retailer's website, sales of cordless window coverings may amount to as much as 25 percent of the market.

EC staff compared the *retail* sales prices of cordless and corded products and found that manually operated cordless window coverings may cost about \$15 to \$130 more than similar corded window coverings. The observed prices of motor-operated window coverings are more than \$100 higher than the prices of corded window coverings, and the price differences can exceed \$300. Some wand-operated vertical blinds cost about the same as corded versions; others appear to cost about \$10 more than corded vertical blinds. Staff has insufficient information to determine how the costs or retail prices of safer window coverings will change over time.

XIV. Preliminary Estimates of Societal Costs (TAB G)

EC staff provided information on the societal costs of deaths and injuries associated with corded window coverings. Based on deaths reported from 1999 through 2010, and medically attended injuries from 1996 through 2012, the societal costs associated with deaths and injuries involving window covering cords may have amounted to an average of about \$110.7 million annually. EC staff estimated that that an average of about 20 percent of the window coverings¹⁸ were cordless (or did not have accessible cords) during the 1996 through 2012 time period, which suggests that these injuries and deaths were associated with the roughly 832 million window coverings in use that had accessible cords.

Based on these estimates, the societal costs may have amounted to an average of about \$0.13 per corded window covering per year (*i.e.*, \$110.7 million ÷ 832 million window coverings) during the years since the late 1990s. Additionally, because window coverings remain in use for an average of about 7 years, the expected present value of the annual societal costs (discounted at a rate of 3.0 percent¹⁹) would average about \$0.85 per corded covering over its expected product life. If we disregard safety improvements in window coverings that have been achieved with the voluntary standard since the 1990s, this figure of \$0.85 would represent the maximum potential benefits of a safety remedy (*i.e.*, the potential benefits averaged over the pool of corded products), under the assumption that the safety remedy prevented all remaining deaths and injuries.

XV. Staff Response to Public Comments (TAB H)

¹⁸ Based on EC staff's estimate that about 25 percent of current market sales consist of cordless products, the increasing availability and sales of cordless products in recent years, and the assumption that only about one-third of curtains and draperies have cords.

¹⁹ See Tab G for details.

A request for comments on the petition was published in the *Federal Register* on July 15, 2013, with the comment period ending on September 13, 2013. A total of 543 comments were received by the Commission, the majority of which supported the petition. A total of 10 comments were against the petition (seven consumers and three trade associations).

Family, friends, and coworkers of families that lost a child due to corded window coverings filed 148 comments that mention a child's death. Commenters also sought a variety of outcomes from the Commission, including:

- inaccessible window covering cords (143),
- cordless window coverings (72);
- cordless or inaccessible cords (45);
- guarded window covering cords (37), and
- break away cords (2).

Many comments (155) included statements indicating a desire to prevent tragic deaths and asking for safer products, stating that it is time for change. Tab I presents the issues raised by the comments and the staff's responses. Below, we summarize the major issues.

Several comments were made about the ANSI/WCMA standard. Some commenters stated that the standard has been a model for the revision of Canadian, European Union, and Australian safety standards and that substantial compliance with the standard exists in the industry. Staff agrees that the ANSI/WCMA standard is one of the strongest standards in the world, but based on the data staff believes the voluntary standard still needs improvements to effectively address the hazards that resulted in a substantial portion of incidents (more than half) investigated by CPSC. Regarding substantial compliance with the standard, CPSC does not have information, other than WCMA's suggestion, that manufacturers are in substantial compliance with the standard.

Several commenters raised the issue of public education. Some commenters believe that public education is adequate to address the risk and is the key to reducing the risk of injury, while others believe that educational campaigns are not adequate to get the attention of consumers. Staff does not have information to be able to assess the effectiveness of public education campaigns.

Injury and death rates were subjects of public comment. Staff cannot draw any conclusions or trends on the data because: (1) non-NEISS incidents reported to CPSC are anecdotal; and (2) a trend analysis is not feasible, due to the very small sample sizes per year in the NEISS data. However, staff believes that the hazards that would be addressed in a mandatory standard would eventually reduce the number of related incidents.

Several commenters expressed opinions about the cost of cordless products or products with inaccessible cords. Some commenters stated that the cost to address the risk of injury would be neutral or minimal for redesigned products, while others suggested that costs would likely increase. Staff's review of the current market shows that retail prices for cordless products are generally higher than the retail prices for corded products. However, in some instances, the

prices for corded and cordless products are about the same; but the price for cordless products is never lower than comparable corded products. Staff has insufficient information to determine how the costs or retail prices of safer window coverings will change over time.

Several comments discussed the issue of rental homes and the responsibility of landlords for window coverings in their rental properties. CPSC regulates use of consumer products, wherever consumers may use such products (homes, schools, in recreation, or otherwise). Certain state and local authorities may have regulations in place with regard to rental homes. CPSC staff agrees with the commenters' concerns regarding window coverings included in rental units where tenants with young children may not have the option of choosing safer window coverings.

Several commenters also asked that corded window coverings be eliminated from areas such as foster homes, group homes, daycare facilities, and military housing. Certain state and local authorities may have the authority to implement regulations with regard to foster homes, group homes, and daycare facilities. For example, several states have banned corded window coverings from day care facilities and foster homes. CPSC collaborates with the Housing and Urban Development and Department of Defense²⁰ to ensure that building management professionals can make appropriate choices for installing window coverings in places such as military housing.

Consumer acceptance of cordless window coverings was another issue that received comments. Some populations, such as elderly people with disabilities, may have difficulty using a cordless window covering. However, there are other types of window coverings that may not cause accessibility issues and that meet the needs of these groups.

XVI. Petitioners' Request and the Voluntary Standard

Can Petitioners' Requested Action address the Hazard and is it Feasible?

Petitioners request that a mandatory standard should prohibit the use of cords on window coverings when non-cord design options are feasible. Additionally, if products exist for which accessible cords cannot be currently eliminated, due to the large size of the product or other reasons, the standard should require that such cords be made inaccessible through passive guarding devices, such as a cord cover.

Engineering staff agrees that the strangulation hazard can be addressed by the action requested by the petitioners and that there are technically feasible options to make most corded window coverings cordless. However, the request as proposed by the petitioners may lead to a design-

²⁰ <http://www.acq.osd.mil/ie/download/DoD-CPSC%20Home%20Child%20Safety%20-%20Apr%2029%202013.pdf>

specific standard and may overlook other technologies that can address the hazard, such as cord retractors or cord restraining devices.

Will the Voluntary Standard likely eliminate or adequately reduce the risk?

Engineering staff assesses that the voluntary standard is inadequate to address the risk of strangulation associated with young children and window covering cords because 57% of the investigated incidents could still occur with pull cords and continuous loops on window coverings that meet the current version of the ANSI/WCMA standard.

Is there Substantial Compliance with the Voluntary Standard?

According to the WCMA, manufacturers of window coverings are in substantial compliance with the voluntary standard. Beyond WCMA's comments, staff has no data on the extent of compliance and cannot estimate the proportion of annual sales of window covering products that comply. Staff has some anecdotal information on product compliance and incident hazard patterns that lends support to WCMA's contention that products substantially comply with the voluntary standard.

XVII. Options

1. Grant the petition

If the Commission concludes that available information indicates that deaths and injuries associated with window covering cords involving young children may present an unreasonable risk of injury, and that a mandatory rule could address the risk, the Commission may grant the petition. Granting a petition does not mean that the Commission would necessarily issue a rule in the specific form requested in the petition.

The Commission can grant the petition if it finds that the voluntary standard is unlikely to eliminate or adequately reduce the risk of injury identified in the petition, or if substantial compliance with the voluntary standard is unlikely.

Staff does not have sufficient information to gauge whether substantial compliance exists, but does not believe that the voluntary standard is adequate to address the risk of injury, strangulation to young children, identified in the petition. Staff's opinion is based on the fact that 57 percent of the investigated incidents would still likely have occurred if the window coverings met the existing voluntary standard.

2. Deny the petition

If the Commission determines that it lacks sufficient information showing that window covering cords may pose an unreasonable risk of injury or that a mandatory rule may be necessary, the Commission could deny the petition.

The Commission cannot deny the petition based on the voluntary standard unless the Commission determines that the voluntary standard is likely to result in the elimination or adequate reduction of the risk of injury associated with corded window coverings, and it is likely that there will be substantial compliance with the standard.

Engineering staff assesses that the voluntary standard is inadequate because approximately 57 percent of the incidents which occurred could still occur with pull cords and continuous loops on window coverings which meet the current version of the ANSI/WCMA standard.

3. Defer the decision on the petition

If the Commission concludes that more information is required before the Commission can decide whether to grant or deny the petition, the Commission may defer a decision and direct the staff to collect additional information or take other action, such as working on the voluntary standard or on an information and education campaign.

Specifically, the Commission could instruct the staff to participate in voluntary standards activities related to development of requirements that would effectively address the pull cords and continuous loops. Based on the WCMA's response to CPSC's letter sent in August 2014, the WCMA will begin the process of opening the ANSI/WCMA window covering standard. However, the WCMA stated that the association did not agree to ballot any specific CPSC recommendations. Additionally, the WCMA's response did not provide any specific performance based changes to revise the current standard, nor did the response provide a timetable for reopening the standard.

The Commission could direct the staff to develop an information and education campaign targeted to households with young children. A public awareness campaign would have to focus on not installing window coverings with hazardous cords where young children live or visit. This is similar to the message that is currently being communicated to the public, and has been over the years. Staff does not have information to be able to assess the effectiveness of public education campaigns.

XVIII. Staff Conclusion and Recommendation

CPSC staff recommends that the Commission grant the petition and begin a rulemaking proceeding that could result in a mandatory safety standard for corded window coverings to reduce the strangulation risk to children.

CPSC has identified corded window coverings as one of the top five hidden hazards in a home. From 1999 through 2010, staff estimates that a minimum of 11 fatal strangulations related to window covering cords on average occurred per year in the United States among children under five years old. Staff finds no observable trend in the data. Based on NEISS data, CPSC staff estimates that during 1996-2012, children—up to eight years old—received treatment in United States emergency departments for 1,590 injuries resulting from window covering cord-related strangulation injuries. Nonfatal incidents could have had a more serious outcome, if the child

had not been rescued from the cord. Some patients suffer severe neurological outcomes such as cerebral edema, coma, loss of cognitive abilities, a loss of function or mobility, and quadriplegia, requiring intensive care, monitoring, lifelong care, and therapy.

Strangulation with cords requires only a few minutes to occur and happens silently. Staff does not believe that parental supervision is likely to be effective to eliminate or reduce the hazard, because even young children are left unsupervised for a few minutes or more in a room that is considered safe, such as bedroom or family room.

CPSC has been warning parents of the danger of child strangulation due to corded window coverings since the first 1985 safety alert was issued. Both CPSC and WCSC recommend the use of cordless window coverings in homes where children live or visit. Even though corded window coverings warn the user against the risk of strangulation, warning labels have limited effectiveness for a product that is familiar, used frequently and contains a hidden hazard. The more familiar people are with a product, the lower its perceived hazardousness and the lower the perceived need for warnings. Consumers interact with window coverings in their homes on a daily basis. Increased familiarity and experience with a product decreases the likelihood that consumers will look for and read the product's warnings.

Safety literature describes a classic hierarchy of approaches that one should follow to control hazards, based primarily on the effectiveness of each approach in eliminating or reducing exposure to the hazard. Warnings are viewed universally as less effective than designing a hazard out of the product or guarding the consumer from a hazard.

A more effective solution to the window covering cord hazard is to ensure that window coverings that are accessed by young children do not have hazardous cords. CPSC has been working with the WCMA since 1994 to address the hazards associated with corded window coverings. Based on the assessment of the current voluntary standard, engineering staff assesses that the standard is inadequate to eliminate or reduce the hazard, because 57 percent of the incidents that occurred could still occur with pull cords and continuous loops on window coverings that meet the current version of the ANSI/WCMA standard.

Petitioners request that a mandatory standard should prohibit the use of cords on window coverings when non-cord design options are feasible and if there are products for which accessible cords cannot be currently eliminated, due to the large size of the product or other reasons, the standard should require that such cords be made inaccessible through passive guarding devices, such as a cord cover.

Although the strangulation hazard can be addressed by the action requested by the petitioners and there are technically feasible options to make most corded window coverings cordless, the design-specific and wide reaching scope of the rule requested by petitioners should be evaluated after staff gathers more information. Before submitting a proposed rule briefing package to the Commission, staff would gather additional information (*e.g.*, costs of safer alternatives) to clarify the scope of a proposed rule and determine associated performance requirements to address the hazard.

APPENDIX

WINDOW COVERING TYPES²¹

Horizontal blind (Figure 1): Product consisting of horizontal slats. Slats vary in their length and width and are manufactured using metal, vinyl, wood, fabric, and other materials. The inner cords of a horizontal blind are threaded through the slats and are attached to the bottom rail. Slats can be tilted with various mechanisms including tilt cords, tilt wand, or the bottom rail.

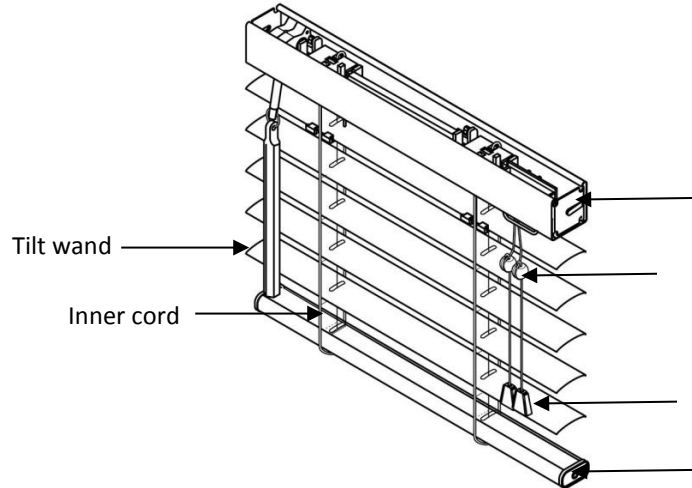


Figure 1. Horizontal Blind

²¹ The ANSI/WCMA A100.1-2014 American National Standard for Safety of Corded Window Covering Products is the reference for the line drawings shown in Figures 1 through 7.

Cellular shade (Figure 2): Shade made of multiple layers of material that is formed into tubes or cells in a horizontal orientation. The cellular shade, often referred to as a honeycomb shade, is constructed so an air pocket, which mimics the shape of a bee's honeycomb, is formed in the center of the shade. Inner cords are between the layers of material and are visible from the side openings only.

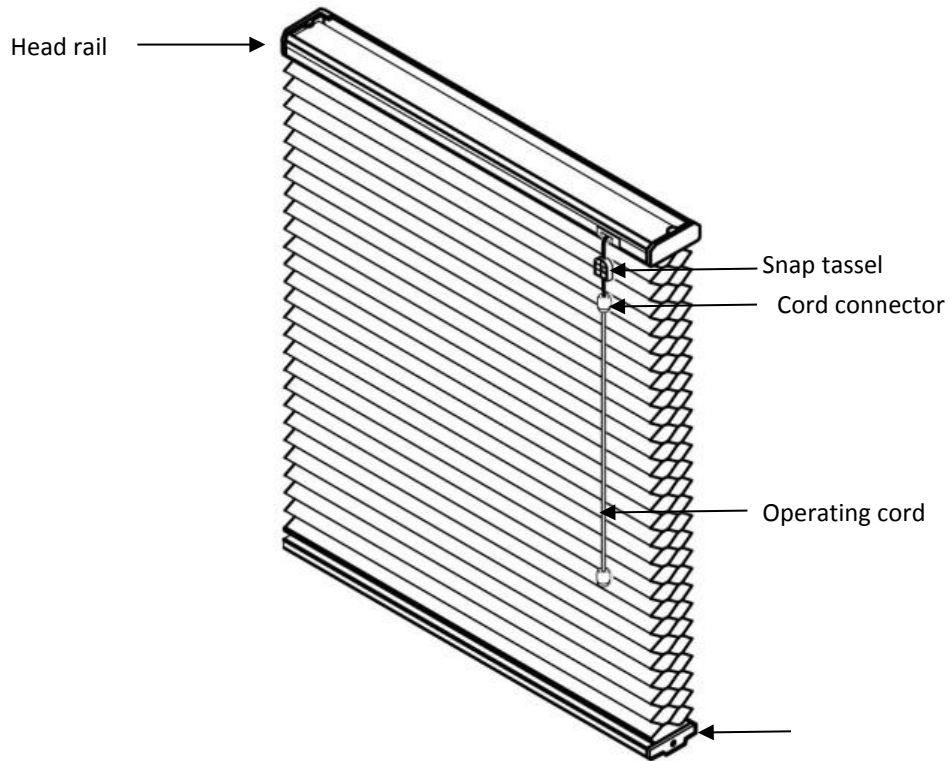


Figure 2. Cellular shade

Pleated shade (Figure 3): Product consisting of pleated material in a horizontal orientation. The pleated material can be raised and lowered similar to cellular shades. Unlike cellular shades, pleated shades do not have an air pocket.

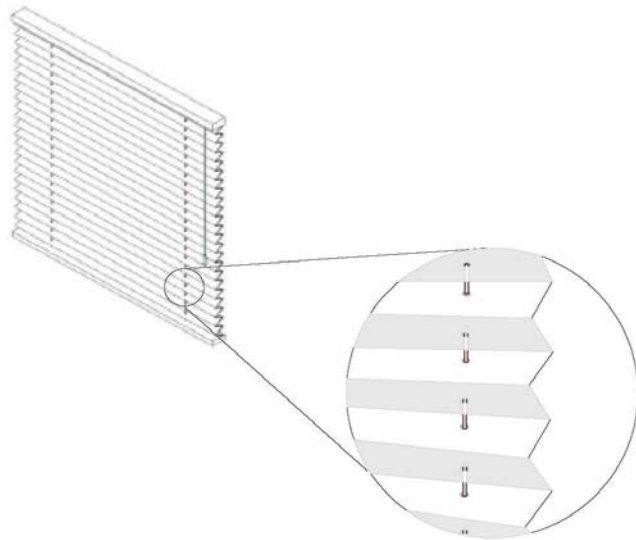


Figure 3. Pleated shade

Roller shade (Figure 4): Shade comprised of a roller, a means of supporting the roller, and flexible sheets of material attached to the roller. When shade is raised, the material is gathered on the roller located at the top of the shade.

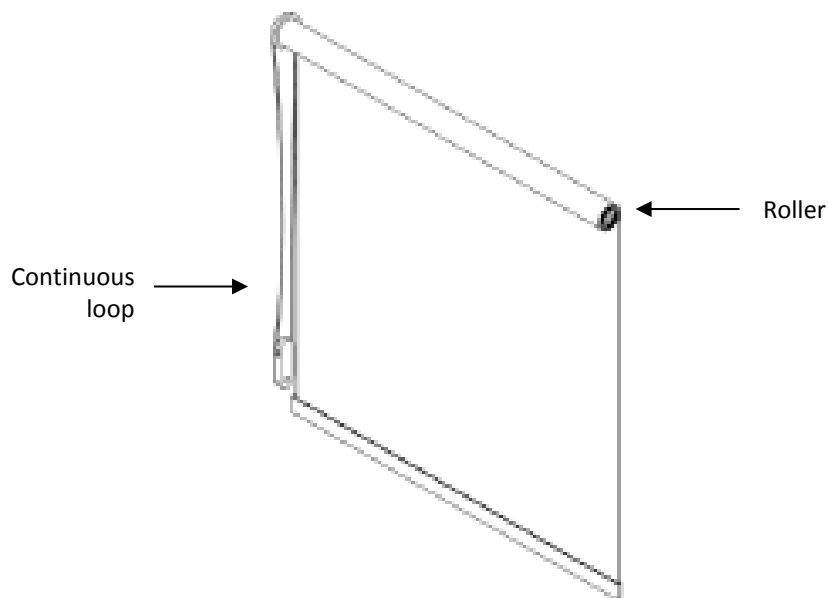


Figure 4. Roller shade

Roll up blind (Figure 5): Product consisting of a flexible material, which rolls up from the bottom of the blind when the blind is raised.

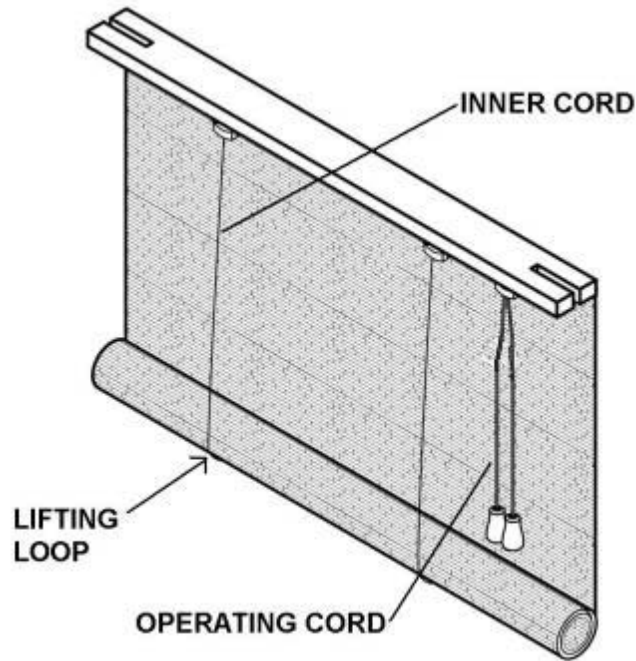


Figure 5. Roll-up blind

Roman shade (Figure 6): Product consisting of a fabric or other material that is suspended from a head rail. As the shade is raised, the material gathers from the bottom upwards towards the head rail.

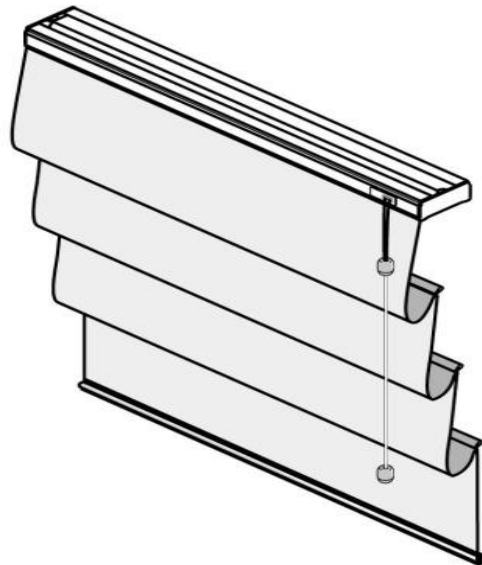


Figure 6. Roman shade

Vertical blind (Figure 7): Product consisting of slats in a vertical orientation that can be stacked to one or both sides of the head rail. The head rail houses mechanisms that allow slats to traverse and / or rotate.

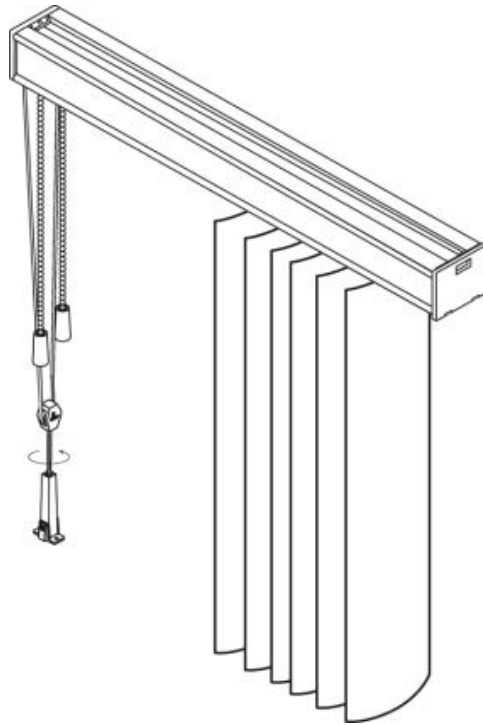


Figure 7. Vertical blind

Drapery/Curtain (Figure 8): Usually a fabric material that hangs in a window or other opening (e.g., sliding door).

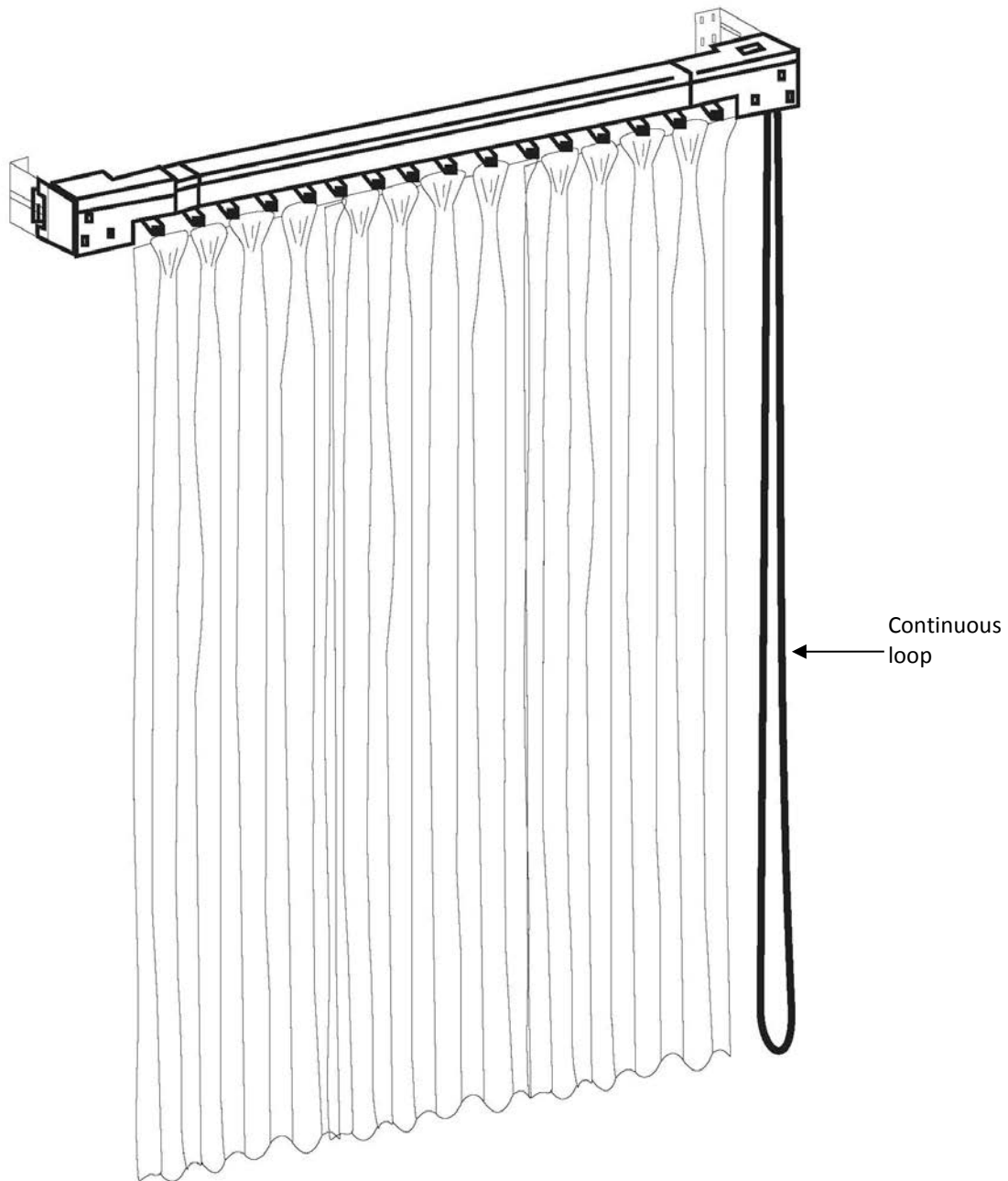
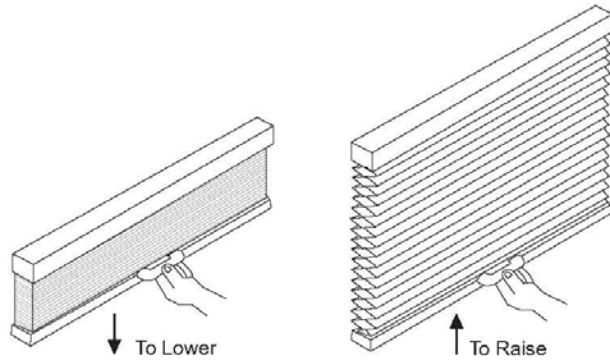
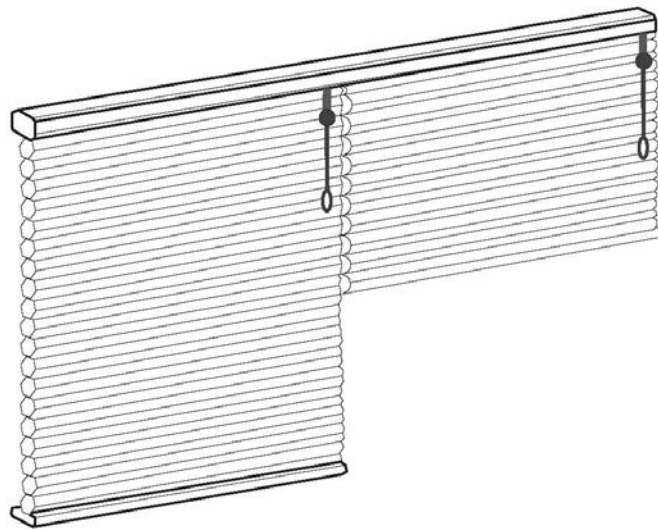


Figure 8. Drapery/Curtain

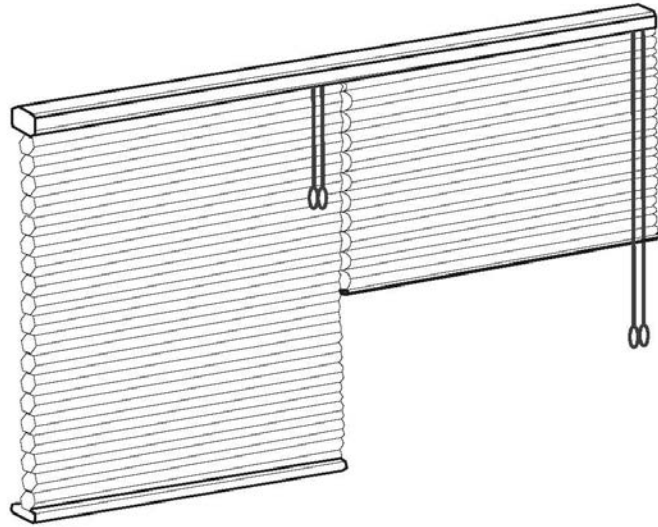
Manual operation of cordless window covering:



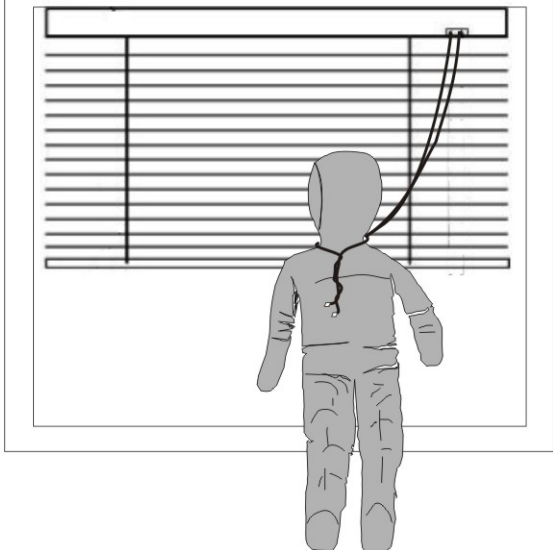
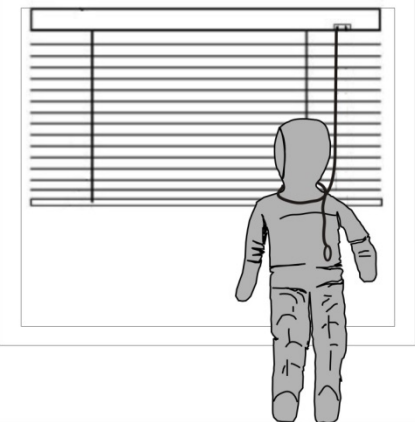
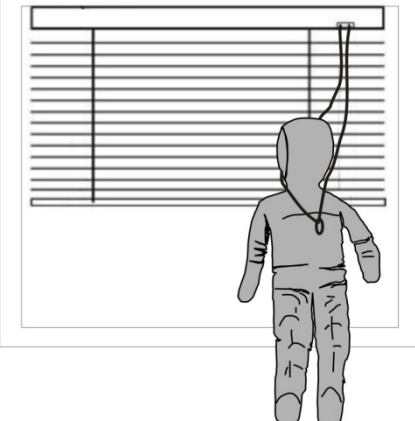
Position of cord with cord retractor when window covering is raised:

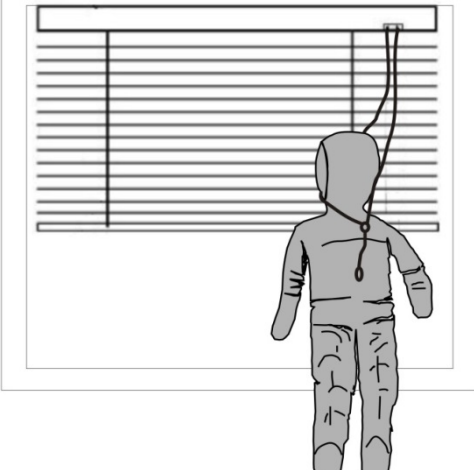
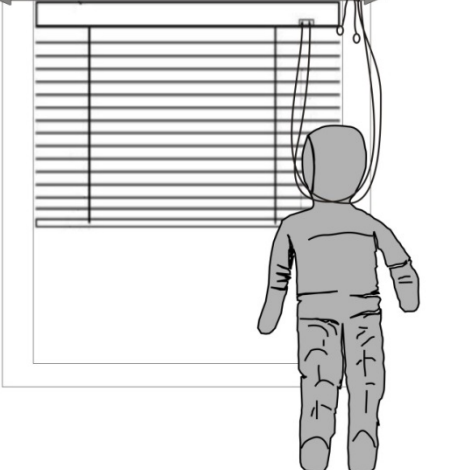
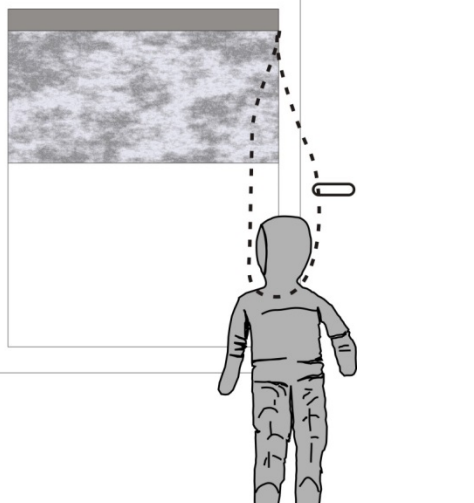


Position of multiple cords when window covering is raised:



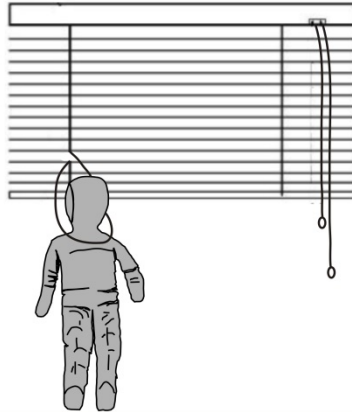
OBSERVED MODES OF ENTANGLEMENT

Scenario	Demonstration
<p>Loops created by knotted or tangled pull cords:</p> <p>Loose pull cords can get knotted or tangled and create a loop in which children can strangle.</p> <p>Blinds or shades with multiple cords can create this hazard.</p>	
<p>One or more pull cords wrapped by the child around his/her neck:</p> <p>Children can wrap one or more long pull cords around their necks and strangle.</p> <p>Blinds and shades with single or multiple cords can create this hazard.</p>	
<p>Loop above a single tassel of the pull cords:</p> <p>When pull cords end in a single tassel, children can strangle in the loop above the tassel.</p> <p>Blinds or shades with pull cords ending in one tassel can create this hazard.</p>	

<p>Loop above a stop ball of the pull cords:</p> <p>Children can insert their heads into the loop above the stop ball (or cord connector).</p> <p>Blinds or shades with stop ball (or cord connector) can create this hazard.</p>	
<p>Loop created when pull cord was tied to another object:</p> <p>Children can insert their heads and strangle into the loop created by tying the pull cord to another object such as a curtain rod creating a U-shaped opening.</p> <p>Blinds and shades with single or multiple cords can create this hazard.</p>	
<p>Continuous loop that is free hanging:</p> <p>Children can insert their heads into the cord loop or beaded chain loop, which is not kept taut with a tension device.</p> <p>Vertical blinds and shades that operate with continuous loop system can create this hazard.</p>	

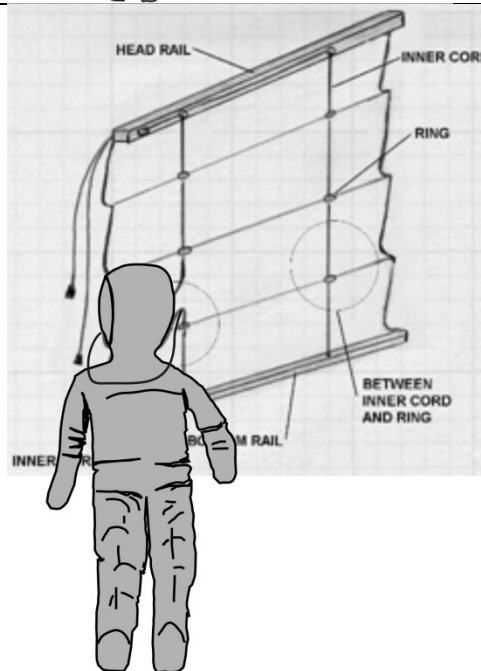
Loop created by pulling an inner cord of a horizontal blind:

Children can pull the inner cord of a horizontal blind and create a large enough of a loop in which they can insert their heads and strangle.



Opening between the Roman shade inner cord and the shade material:

Children can insert their heads between the inner cord of a Roman shade and the shade material and strangle.



TAB A: Window Coverings Petition

**T
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B
A**

UNITED STATES CONSUMER PRODUCT SAFETY COMMISSION

**In re: 16 CFR § 1051 Petition for Rulemaking
Eliminating Accessible Cords
On Window Covering Products**

Petitioners:

Parents for Window Blind Safety,
Consumer Federation of America,
Consumers Union,
Kids in Danger,
Public Citizen,
U.S. PIRG,
Independent Safety Consulting, Safety
Behavior Analysis, Inc., Onder,
Shelton, O’Leary & Peterson,

PETITION FOR RULEMAKING

Petitioners, Parents for Window Blind Safety, Consumer Federation of America, Consumers Union, Kids in Danger, Public Citizen, U.S. PIRG, Independent Safety Consulting, Safety Behavior Analysis, Inc., and Onder, Shelton, O’Leary & Peterson, LLC (hereinafter “Petitioners”), pursuant to 16 CFR § 1051 state to the U.S. Consumer Product Safety Commission as follows:

INTRODUCTION

The U.S. Consumer Product Safety Commission (hereinafter “CPSC”) has long recognized window covering cords as a hidden strangulation and asphyxiation hazard to children and today continues to include it as one of the top five hidden hazards in the home. (CPSC, 2007, CPSC 2013a) Since 1985, the CPSC has worked with and repeatedly pressed the window covering industry (hereinafter “Industry”) to eliminate these hazards, through public education, multiple corrective actions, and the voluntary standards development process. Despite these efforts, the voluntary standard (first passed in 1996 and most recently revised in 2012) remains inadequate and continues to permit window coverings with hazardous accessible cords that injure and kill young children.

The unresolved issue of window covering cord injuries and deaths is not limited to the United States. Indeed, global frustration over this on-going hazard resulted in the June

15, 2010 joint action by the CPSC, Health Canada and the European Commission wherein they joined together “in agreement on the need for immediate action,” and made a trilateral request to the Industry for “support [of] a swift and comprehensive process that concurrently eliminates the risk factors causing deaths and injuries from all types of corded window covering products.” (CPSC, HC, DG SANCO, 2010)

Acting upon the trilateral request, the Window Covering Manufacturers Association (hereinafter “WCMA”) undertook a fifth revision of the voluntary standard, ANSI/WCMA A100.1 American National Standard for Safety of Corded Window Covering Products. When it appeared that the renewed standards writing efforts were not satisfactorily addressing the major hazards responsible for injury and death, CPSC Chair Inez Tenenbaum wrote to the Industry on June 1, 2011, re-invoking the international call for a standard that eliminates window covering hazards, and stating, “I reaffirm to you my call for a comprehensive revised voluntary standard that eliminates – not just reduces – the strangulation risks from window coverings.” (CPSC, 2011a) Ultimately, the inadequacy of the voluntary standards process, as well as the inadequate result toward which it was clearly heading, led consumer organizations reluctantly to take the unusual step of walking out of the process. (CFA 2011)

Indeed, the call for a standard that would finally eliminate window covering hazards was disregarded. The voluntary ANSI standards development process failed again, when the fifth revision of the ANSI/WCMA A100.1 standard was approved in late 2012 with critical inadequacies. As will be shown below, 28 years after the CPSC first began working with Industry to address these hazards, the latest version of the standard still does not eliminate the major hazards that have caused approximately 40 percent of the deaths and injuries that have occurred since 1996. In fact, the new standard allows for increasing numbers of hazardous accessible cords to be loaded onto new window coverings. If the ANSI/WCMA A100.1 voluntary standard is allowed to stand as the de facto industry safety standard, children will continue to strangle and asphyxiate on unsafe corded window covering products.

Due to Industry’s failure to develop a standard that adequately mitigates the risk of strangulation on corded window coverings, the Petitioners hereby formally Petition for Rulemaking under the authority and process set forth in 16 CFR § 1051, *et seq.* and request the Commission to promulgate a mandatory standard that prohibits any window covering cords where a feasible cordless alternative exists, and for those instances where a feasible cordless alternative does not exist, requires that all cords be made inaccessible through the use of passive guarding devices.

HISTORY: THE FAILURE OF THE VOLUNTARY STANDARDS PROCESS

1985 Safety Alert

Following the reporting of 41 deaths on window covering cords between 1973 and 1980 and an additional report of another 35 deaths between 1981 and 1984, the CPSC approached Industry requesting its cooperative effort in issuing a joint Safety Alert. (CPSC, 1985a) CPSC staff met with representatives of Industry on September 13, 1985 and presented a proposed

Safety Alert that made several recommendations including the cutting of cord loops. (CPSC, 1985b)

A joint Safety Alert was issued on December 20, 1985, but the recommendation to cut cord loops was not included. In fact, Industry did not accept the recommendation to cut cord loops for another nine years. The recommendations that were incorporated into the 1985 Safety Alert were: 1) Keep cords out of the reach of children and utilize safety devices such as cord cleats; 2) Adjust cords to the shortest possible length for the application; and 3) Do not place cribs or other furniture near windows, for furniture gives children added height to reach cords. (CPSC, 1985c)

A year after the 1985 Safety Alert was issued, the WCMA created camera-ready warnings incorporating some of these safety recommendations and made them available for use by manufacturers as bottom rail labels, hang tags and warning sheets. (DWC, 1988) These warnings were used from 1986 until the adoption of the first voluntary standard in 1996, ANSI/WCMA A100.1- 1996.

Warnings alone failed and children continued to be injured and killed:

1985: 11 fatalities	2 non-fatalities ¹
1986: 9 fatalities	0 non-fatalities ²
1987: 8 fatalities	2 non-fatalities ³
1988: 8 fatalities	0 non-fatalities ⁴
1989: 11 fatalities	4 non-fatalities ⁵
1990: 11 fatalities	1 non-fatality ⁶
1991: 18 fatalities	1 non-fatality ⁷
1992: 19 fatalities	0 non-fatalities ⁸
1993: 13 fatalities	1 non-fatality ⁹

1994 Cord Loops Efforts and Voluntary Corrective Action Plan

Faced with continuing deaths, the CPSC once again engaged Industry, requesting that window covering hazards be addressed through design changes, including the elimination of cord loops as CPSC first brought to Industry's attention in 1985.

In September 1994, Industry, through the newly-created Window Covering Safety Council, (hereinafter "WCSC") agreed to enter into a CPSC Voluntary Corrective Action Plan (hereinafter "VCAP") consisting of public education and outreach, retrofit product distribution, and product design modifications eliminating looped outer cords on certain horizontal window coverings. (WCSC, 1994) Simultaneously, Industry agreed to "look at future design changes to all window covering products (i.e., multiple cord products, vertical, cellular and pleated designs) to incorporate [CPSC] staff approved changes" and "to work under the auspices of ANSI to formalize future design changes that incorporate safer design." (CPSC, 1994a)

In 1993 and 1994, both the CPSC and Industry safety consultants had warned that separating outer cord loops on some window coverings was not sufficient by itself to prevent further fatalities and injuries. Both CPSC Human Factors evaluations of the proposed separated tassel/safety tassel redesign, and private studies performed for manufacturers, indicated that

these limited redesigns would not eliminate cord risks or stop fatalities. (FAA, 1993; CPSC, 1994b; CPSC, 1994c; CPSC, 1994d; CPSC, 1994e) Industry was warned that pull cords would re-tangle and knot with use, recreating the cord loop hazard. Similarly, Industry was advised that single cords can wrap around a child's neck, resulting in serious injury or death. Accordingly, the VCAP indicated that it was simply an "interim solution" until better technology could be developed.

Industry codified the efforts of the VCAP into the voluntary standard, ANSI/WCMA A100.1-1996. The 1996 ANSI standard required the elimination of some outer cord loops, which was accomplished by most manufacturers through the use of outer cords with separated tassels and/or a breakaway safety tassel on limited types of window coverings. Also, tie-down devices were required on continuous loop operating systems.

Further, leading up to the 1996 ANSI standard, by letter dated November 21, 1995, the CPSC requested the new standard include warnings for not just outer cord hazards but inner cord hazards, as well. (CPSC, 1995) Industry rejected CPSC's recommendation to include a pictogram educating consumers about the existence of hidden inner cords and failed to create a design standard to prevent inner cord hazards. The only reference to inner cord hazards in the 1996 ANSI standard was the inclusion of a vague, unexplained warning statement about "cords that run through window coverings" on temporary hang tags (that are removed upon installation). The 1996 ANSI standard also did not address a number of other known hazards, including the loops on larger window coverings with more than two outer cords, unnecessarily long cords, multiple cord joiner hazards, exposed rear cords on roman shades, and lifting loops on roll-up shades. The 1997 standard also failed to establish warnings for many hazards that were not otherwise addressed.

As forewarned by the CPSC and safety experts, children continued to strangle on window covering cords with unaddressed hazards; the death and injury toll continued to rise:

1994: 16 fatalities	1 non-fatality ¹⁰
1995: 14 fatalities	4 non-fatalities ¹¹
1996: 17 fatalities	5 non-fatalities ¹²
1997: 16 fatalities	3 non-fatalities ¹³
1998: 12 fatalities	2 non-fatality ¹⁴
1999: 7 fatalities	0 non-fatalities ¹⁵
2000: 11 fatalities	5 non-fatalities ¹⁶

2000 Inner Cord/Lift Cord Efforts

By letter dated September 3, 1999, CPSC staff wrote to Industry renewing its concern regarding inner cord strangulation hazards, and pressed for action. Faced with 14 recent inner cord deaths and one injury, the CPSC demanded that Industry also address the hazards associated with inner cord loop formation through design. (CPSC, 1999)

In cooperation with the CPSC, Industry entered into a second Voluntary Corrective Action Plan in September of 2000, again involving public education and outreach, retrofit product distribution, and new product modification. (WCSC, 2000a) Under this VCAP, inner

cord stops were placed on outer cords near the head rail to prevent the formation of an inner cord loop. The retrofit and public education efforts renewed with the continued distribution of safety tassels and continuous loop tie-down devices.

Industry's public education and outreach efforts have consistently included the WCSC's website providing Industry safety recommendations adopted in 2000, including the recommendation that consumers "install only cordless" window coverings in homes with young children. (WCSC, 2011; WCSC, 2000b)

Industry's 2000 VCAP efforts were then codified into a 2002 revision of the voluntary standard, ANSI/WCMA A100.1-2002. This revision of the standard continued to leave many accessible window cords unaddressed.

The ANSI/WCMA A100.1 Standard was again revised in 2007, and then again in 2009 and 2010 following extensive CPSC recalls for un-addressed hazards of rear inner cords on roman shades and lifting loops on roll-up shades.

Piecemeal redesign, retrofit, warnings and public education efforts had limited success, and the toll of injuries and deaths continued to rise:

2001:	11 fatalities	7 non-fatalities ¹⁷
2002:	11 fatalities	9 non-fatalities ¹⁸
2003:	17 fatalities	2 non-fatalities ¹⁹
2004:	6 fatalities	4 non-fatalities ²⁰
2005:	9 fatalities	6 non-fatalities ²¹
2006:	7 fatalities	4non-fatalities ²²
2007:	9 fatalities	3 non-fatalities ²³
2008:	17 fatalities	9 non-fatalities ²⁴
2009:	14 fatalities	30 non-fatalities ²⁵
2010:	11 fatalities	14 non-fatalities ²⁶

While governmental pressures mount, the voluntary standard remains inadequate

Due to the continued inadequacies of the voluntary standard, the U.S. and foreign governments started to increase pressure on Industry. In the 2010 trilateral letter referenced at the start of this petition, the CPSC, Health Canada and the European Commission made clear their directive to Industry that current voluntary standard provisions were not enough and requested they "eliminate the risk factors causing deaths and injuries from all types of corded window covering products."

In 2010, safety experts and consumer organizations, including representatives from Parents for Window Blind Safety, Independent Safety Consulting, Consumer Federation of America, and Consumers Union, were for the first time allowed a limited role in the voluntary standards writing process. All held out great hope for the voluntary process. However, one year later, these safety experts and consumer representatives reluctantly walked out of a voluntary standards meeting and removed themselves from this process, because Industry was ignoring their recommendations and refusing to give them meaningful participation in the standards

writing process. (NYT, 2011)

During the standards writing process, it became clear that loopholes in the voluntary standard were responsible for many injuries and deaths, but were not going to be addressed by Industry. Accordingly, in an August 4, 2011 speech directed to Industry, CPSC Chair Tenenbaum again called Industry to task, declaring, “It is time to ‘eliminate’ the strangulation risk on window blind cords. Notice how I did not say, ‘reduce the hazard,’ I said eliminate the hazard.” (CPSC 2011b)

The Retailer Industry Leaders Association (hereinafter “RILA”) was likewise alarmed, and by letter dated September 12, 2011, urged Industry to adopt standards that eliminate operational cords capable of forming hazardous loops and to address continuous loop tie-down devices. RILA urged Industry to finally agree to address these hazards, requesting that the WCMA “address concerns of RILA, CPSC technical staff, and consumer advocacy groups as you work to develop the improved standard.” (RILA 2011)

CPSC Staff comments on the January 23, 2012 proposed version of the voluntary standard primarily addressed the serious remaining risks associated with operating cords and recommended the clear-cut solution of limiting the combined length of all accessible cords to no longer than the neck circumference of the youngest child at risk regardless of the position of the window covering (i.e., raised or lowered, opened or closed). However, as later noted by CPSC, these comments were largely ignored in the final version of the standard: “the major hazards associated with operating cords and looped cords remained the same as the originally proposed version.” (CPSC, 2012; CPSC, 2013)

When the ANSI/WCMA A100.1-2012 was approved on November 28, 2012, yet again this standard failed to adequately address the strangulation hazard posed by accessible cords on window coverings. As further detailed below, the standard continues to permit window coverings with hazardous accessible cords that injure and kill young children. After this standard was promulgated, an analysis of window covering incidents between 1996 (the date of the first voluntary standard) and 2012 was conducted. The purpose of this analysis was to identify both the cord characteristic of each window covering and the accident mechanism to determine what cord characteristic was involved, in order to determine whether the 2012 ANSI/WCMA voluntary standard would have prevented the incident from occurring. Based on this analysis, approximately 40% of incidents would not have been prevented. Further, the 2012 standard actually permits an increase in the number and types of hazardous accessible cords on some newer window coverings.

And so, 28 years after Industry agreed to work with CPSC to address this hazard, and having been given clear direction and multiple opportunities to develop a meaningful standard, and having been duly warned of the inadequacies of the proposed standard, even this latest version (the sixth attempt) of the ANSI/WCMA A100.1-2012 standard fails to eliminate or adequately reduce the risk of injury and death from accessible window covering cords.

In April of 1994, manufacturer Comfortex Window Fashions foreshadowed what has ultimately been borne out, namely that warning and redesign efforts will fail so long as they involve accessible cords. Comfortex warned, “Until all window coverings are free of cords for

their operation, there will be no true safety if cords are available to small children.” (Comfortex, 1994) Comfortex was right in 1994; those prophetic words have stood the test of time.

Recent injury data continues to reflect deaths and injuries from window coverings:

2011: 6 fatalities	2 non-fatalities (data set incomplete) ²⁷
2012: 5 fatalities	1 non-fatalities (data set incomplete) ²⁸

MANDATORY RULEMAKING IS APPROPRIATE TO ELIMINATE ACCESSIBLE CORDS ON WINDOW COVERINGS

By statute, efforts to address product hazards through voluntary consensus standards are necessary before a mandatory standard can be promulgated. According to CPSA Section 9(f)(3)(D), the promulgation of a mandatory standard is appropriate when:

“(i) Compliance with such voluntary consumer product safety standard is not likely to result in the elimination or adequate reduction of such risk of injury; or

(ii) It is unlikely that there will be substantial compliance with such voluntary consumer product safety standard.” (15 U.S.C. Section 2058)

Petitioners have carefully examined the injury and death data associated with window coverings and the record of compliance with the voluntary standard, and find that both of these criteria are met in the context of corded window coverings.

Failure of ANSI/WCMA A100.1-2012 to Eliminate or Adequately Reduce Risk

First, examination of available injury and death data reveals that a high number of incidents since passage of the first standard in 1996 would not have been prevented by even the most recent (2012) version of the ANSI/WCMA standard. (Exhibit 1) Of the total 293 incidents between 1996 and 2012, 250 had sufficient information available to make such a determination. Of these 250 incidents, 102 of the injuries and deaths (approximately 40%) would not have been prevented by the current voluntary standard, indicating that an unreasonable risk of injury on corded window coverings continues to exist:

55 Incidents on manufacturer separated outer cords (both pull cords and tilt cords) that caused injury or death via knotted/tangled loops, defective break-away devices, and cord wrap-around.

29 Incidents on window coverings with looped outer cords but where the manufacturer-created loop did not cause the incident. These incidents involved either wrap-around incidents or children caught in tangled/knotted loops.

5 Continuous loop cord incidents where a tension/tie-down device was present at the scene but was either not installed, had pulled out of the wall, or had broken. (CPSC staff has criticized the effectiveness of the active tension device provision, since it is foreseeable that “tension devices may not be installed at all, uninstalled for some reason, or installed incorrectly...” and therefore, “the proper installation of tension devices, a critical component for the safe use of the product, should not have to be done by consumers.”) (CPSC, 2012)

6 Other instances caused by a hazardous cord allowed by the standard – such as reverse inner cord incidents and incidents where the victim was caught in a cord joiner loop on a multi-corded window covering.

7 Incidents caused by the manufacturer’s failure to make the product according to the voluntary standard in effect at time of manufacture.

Second, even though Industry had already developed cordless window coverings in 1996, and by 2000 was recommending cordless window coverings for families with young children, the voluntary standard still allows corded window coverings.

Third, some manufacturers have taken advantage of weaknesses in the standard to actually increase the number and types of long, accessible cords on newer window coverings, thereby making blinds more hazardous than ever. For example, CPSC In-Depth Investigation (IDI) 120727CCC290 involves the 7/10/12 death of a 3-year-old girl who strangled when she wrapped the tilt cord of a 2010 faux wood horizontal blind around her neck. The blind was manufactured by a large, well-known window covering manufacturer, and was sold and installed by a major home-improvement retailer. Not only does this blind have the hazards of most corded window blinds, such as long pull cords, but it also has a number of newer and functionally unnecessary hazards allowed by the 2012 WCMA/ANSI standard. This blind is more dangerous than traditional corded blinds in at least five different ways:

- It has 2 tasseled tilt cords instead of traditional tilt wand to rotate the slats of the blind. This extra set of cords puts hazardous accessible outer cords on both the left and right side of the blinds (as opposed to only one side with standard pull cords).
- It has unnecessarily long tilt cords that are 2/3 the window’s height, even though only a few inches of cord are needed to perform the tilt function.
- It has large flat-topped tassels that are more likely to snag/catch on a single cord wrapped around a child’s neck to create deadly loop, and have been implicated by the CPSC in-depth-investigation as a cause of this 7/10/12 death and at least one other death (080915HNE3763).
- It has “inner cords” strung along the outside of both front and back of the blind, instead of through holes in the center of the slats, that are more accessible and attached in a less secure manner. This style of ‘inner cords strung on outside of blind’ was involved the 10/4/11 death of a child on a 2009 blind (CPSC IDI 111018CCC2027).
- It has doubled the number of pull cords used on each blind, because the traditional single inner cord that run through the slats was replaced with two cords, at both front and back of the slats.

Instead of this blind having two traditional outer cords and a tilt wand, it has six long outer cords, each with a large flat top tassel, that tangle easily, and has moved the inner cords from inside slats to the far more accessible, outside front and back locations. This example illustrates how the voluntary standard does not prohibit Industry from actually increasing the number of hazardous accessible window covering cords.

In all of these respects, the voluntary standard fails to eliminate or adequately reduce the unreasonable risk of injury or death associated with accessible cords on window coverings.

Lack of Substantial Compliance with Voluntary Standards

There is substantial non-compliance with the voluntary standard. A number of manufacturers have ignored basic safety provisions of the voluntary standard, and have manufactured non-compliant window coverings for years and even decades. Since 2007, there have been at least 16 CPSC recalls involving blinds that were not manufactured in compliance with the voluntary standard.

Disturbingly, most of these instances of non-compliance (13 of 16) appear to have been discovered unintentionally as a by-product of CPSC's 2008-2010 focus on roman shade and roll-up shade rear inner cord/lifting loop issues. While evaluating manufacturers' products for roman shade back cord hazards and roll-up shade lift loop issues, CPSC staff caught numerous other violations of the voluntary standard, including looped pull cords, no inner cord stops, no tension devices provided with continuous loop products, and failure to attach a tension device to a continuous loop cord. Almost all of these findings violated voluntary standard requirements that had been in effect since the first standard was published in 1996. Many of these non-complying products were on the market for years, and in one case, for two decades, before they were detected and recalled. (Exhibit 2)

The CPSC does not have the resources to maintain this level of enforcement. This example of how one short-term enforcement effort uncovered numerous standard violations implies that many more undiscovered instances of non-compliance by Industry exist, and that at least some portion of Industry cannot be relied upon to meet voluntary standards and to manufacture compliant products.

DESPITE FEASIBLE SAFE ALTERNATIVES, VOLUNTARY STANDARDS HAVE FAILED

Feasible Safe Alternatives

Safe alternatives exist and are feasible. For example:

Cordless technology

Cordless window covering designs that eliminate pull cords are available and

economically viable. Cordless window coverings, such as pleated shades, horizontal blinds, cellular shades, wood blinds, and roman shades, have been made by a number of firms since approximately 2000 (CPSC, 2000; Hunter Douglas, 2000; Levolor, 2001). Cordless products of up to 78 inches wide and 84 inches long are available in all designs. Our research indicates that the manufacturer's cost of such alternative cordless technology is only \$2.00 - \$3.00 more than the cost of an unsafe corded one-inch vinyl or aluminum blind. The manufacturer's cost for such cordless operating systems on a two-inch faux wood blind is in the \$7.00 - \$9.00 range. While the current design of cordless products may include size limitations, these sizes encompass the overwhelming majority of all applications.

Furthermore, feasible and cost-effective alternative designs exist which likewise address this issue. This issue can be solved by utilizing a wand-type device similar to those used to tilt slats for light control.

Cord cover designs

In the 1990s, major window covering manufacturers developed and patented cord cover devices to render the pull cords of window coverings inaccessible. (Springs, 1995a; Springs, 1995b; Newell, 1996) However, major manufacturers never brought products with this feature to market, and cord covers were essentially abandoned once the CPSC allowed separated cord tassels to serve as a compliant design alternative.

More recently, one manufacturer has created and brought to market a cord cover design aimed at eliminating accessible pull cords, at a price point that is affordable and cost effective for both new-product and retrofit applications. (Safe-T-Shade, 2010; Safe-T-Shade website) This cord cover design renders pull cords inaccessible, while at the same time eliminating concerns regarding the ability of cordless technology to meet very large applications, and applications where furniture is placed in front of window coverings. Such cord cover designs can accommodate any window size currently being served by cord-accessible products, and its positioning in the same location as traditional pull cords accomplishes the same functionality and accessibility as traditional corded products.

Voluntary standard efforts have failed

The economic reality is that the window covering industry is very competitive, particularly in the area of stock products. If one manufacturer wants to adequately address safety issues and render cords inaccessible at a slightly higher cost, it risks being undercut by another manufacturer willing to sell less safe but cheaper products. Big box retailer contracts can be lost over a matter of pennies, nickels, or dimes as major retailers seek the lowest possible entry level price point in the window covering market. Absent a mandatory standard, manufacturers seeking to introduce safer cordless and cord inaccessible products will suffer from a competitive disadvantage against manufacturers willing to sell unsafe corded products.

Further, the large window covering manufacturers who dominate the WCMA and ANSI standards writing process have a vested interest in maintaining low industry standards. Those manufacturers have advanced custom product designs featuring cordless and cord inaccessible

coverings, on which they are able to maintain premium pricing – but only so long as there is an absence of competition. Should standards mandate cordless or cord inaccessible product designs, this feature will no longer be able to command a premium price.

Absent mandatory rulemaking that eliminates accessible window covering cords, Industry has not and will not act alone. ANSI/WCMA A100.1-2012 was Industry's sixth attempt to address exposed operational cords, and it has again chosen not to do so meaningfully, despite extreme U.S. pressure and an international mandate.

For all these reasons, it is evident that the only way to achieve safety is to invoke CPSC rulemaking.

PETITION REQUEST

Despite the availability of feasible and cost effective design alternatives, Industry has failed to adopt a voluntary standard which engages the first tiers of the safety design hierarchy, i.e. to eliminate or guard against the hazard. It is only through design strategies that the cord hazard will be adequately addressed and true safety achieved. The repeated failure of Industry to adopt an effective voluntary standard over the last 28 years demonstrates that CPSC rulemaking is required to eliminate the hazard posed by accessible cords in window coverings.

As previously discussed, the latest voluntary standard is inadequate due to its allowance of products with accessible cords, even when cordless and/or inaccessible cord options are feasible. We believe a mandatory standard should eliminate all accessible cords:

The standard should prohibit the use of cords on window coverings when non-cord design options are feasible. For example, cords are not necessary for the tilting operation of horizontal blinds since wands can perform this function. Also, exterior pull cords on window coverings are unnecessary for products that have cordless options – currently all products measuring less than 78 inches wide and 84 inches long.

If there are products for which accessible cords cannot be currently eliminated, due to the large size of the product or other reasons, the standard should require that such cords be made inaccessible through passive guarding devices, such as a cord cover.

We defer to the CPSC as to what is the best approach for this standard. For example, one approach would be to ban all accessible cords, and to develop a mandatory standard to define what constitutes an accessible cord. Since the CPSC staff has been working on this issue in earnest since at least 1994, there is vast in-house expertise in this subject matter.

In closing, due to Industry's repeated failure to develop a standard that adequately mitigates the risk of strangulation on corded window coverings, the Petitioners hereby formally Petition for Rulemaking under the authority and process set forth in 16 CFR § 1051, *et seq.* and request the Commission to promulgate a mandatory standard that prohibits any window covering cords where a feasible cordless alternative exists, and for

those instances where a feasible cordless alternative does not exist, requires that all cords be made inaccessible through the use of passive guarding devices.

The Petitioners appreciate the Commission's consideration of this request. We are available to discuss this petition at your convenience.

Respectfully submitted,

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Interest of Petitioners

This petition is brought by nine organizations on behalf of all children and their families affected by window covering cords:

Parents for Window Blind Safety (PFWBS) is a nonprofit organization that supports parents whose children have been seriously injured or killed by dangerous cords, educates consumers about the dangers of accessible window covering cords in homes, daycare facilities, and military housing, helps create safer standards in the industry, encourages innovation of safer products in the industry, and tests window covering products for safety.

Consumer Federation of America (CFA) is the nation's largest consumer advocacy organization representing more than 260 state, local, and national consumer organizations that was established in 1968 to advance the consumer interest through research, advocacy, and education.

Consumers Union (CU) is the policy and advocacy division of Consumer Reports, an expert, independent, nonprofit organization, whose mission is to work for a fair, safe, and just marketplace for all consumers.

Kids In Danger (KID) is a nonprofit organization dedicated to protecting children by improving children's product safety. KID was founded in 1998 by the parents of sixteen-month-old Danny Keysar who died in his Chicago childcare home when a portable crib collapsed around his neck.

Public Citizen is a nonprofit consumer advocacy organization based in Washington, D.C. founded more than 40 years ago and with more than 300,000 members and supporters nationwide.

U.S. PIRG, the Public Interest Research Group, is a non-profit, non-partisan public interest advocacy organization that takes on powerful interests on behalf of its members, working to win concrete results for our health and well-being.

Independent Safety Consulting (ISC), through its principal, Carol Pollack-Nelson, provides

human factors consulting specializing in consumer product safety, by evaluating product designs, warnings and instructions in order to identify hazards and reduce risks to consumers. Ms. Pollack-Nelson was a Human Factors Psychologist at the CPSC from 1988 through 1993.

Safety Behavior Analysis, Inc. (SBAI), through its principal, Shelley Waters Deppa, provides human factors consulting on the safety of consumer products, with a specialty in children's hazards, such as choking, suffocation, and strangulation. SBAI analyzes injury data, evaluates product designs, and develops and tests safety labels for effectiveness. Ms. Deppa worked in the CPSC's Human Factors Division from 1979 through 1992.

Onder, Shelton, O'Leary & Peterson, LLC pursues this petition on behalf of the over 50 families with whom they have worked whose children have strangled on window covering cords, that window covering cord hazards might be eliminated.

Exhibits

Exhibit 1 - 2013-04-26, SBAI, Incidents That Would Not Have Been Prevented By ANSI/WCMA A100.1.

Exhibit 2 - 2013-4-26, SBAI, Standard Is Not Adequate Because Manufacturers Are Ignoring The Voluntary Standard.

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Exhibit 1

Incidents That Would Not Have Been Prevented by ANSI/WCMA A100.1-2012

Analysis by Safety Behavior Analysis, Inc. (4/26/13)

TOTAL NUMBER OF WINDOW COVERING INCIDENTS

293 Total number of window covering incidents between 1996 and 2012 (2010 - 2012 information incomplete):

- 43 Incidents where unknown/inadequate info to indicate whether in the outer cord loop, inner cord loop, or wrap-around and therefore can't tell whether separate cords/tassels would have made a difference.

= **250** Incidents with enough information to determine whether outer cord loop, inner cord loop, or wrap-around was involved

KNOWN INCIDENTS BETWEEN 1996 - 2012 (2010 to 2012 info incomplete) THAT WOULD NOT HAVE BEEN PREVENTED BY CURRENT VOLUNTARY STANDARD

55 (Table A) Incidents on manufacturer separated outer cords, including those with breakaway tassels or breakaway cord joiners, which caused injury or death via knotted/tangled loop, defective break away, or wrap-around.

A(1) Incidents on pull cords with separate tassels = 51

A(2) Incidents on tilt cords with separate tassels = 4

29 (Table B) Incidents on looped outer cords where the manufacturer created loop did not cause the incident, This includes following categories

B(1) incidents on looped outer cords where child not caught in manufacturer created loop but was wrap-around = 16

B(2) incidents in looped outer cords where child not caught in manufacturer created loop but caught in tangle/knot above tassel = 13

5 (Table C) Continuous loop incidents where a tension/tie-down device was present but either not installed, had pulled out of wall or broken (number doesn't include 1 possible but unverified incident listed on sub-table)

6 (Table D) Other instances where caused by a hazardous cord allowed by the standard - such as reverse inner cord incidents, caught in cord joiner loop on multi-corded window coverings

7 (Table E) Incidents which occurred where manufacturer's failure to make according the voluntary standard contributed to the cause of incident

= **102** Incidents would not have prevented by the voluntary standard.

More than 40% (102 of 250) of all incidents would not have prevented by the current 2012 voluntary standard.

Injury Data Table A (1996-2012 w/2010-2012 dataset incomplete)- Known Outer Cord Incidents Involving Manufacturer Separated Cords
i.e. Separate Tassels, Breakaway Tassels, Breakaway Cord Joiners & Tilt Cords
(in knotted/tangled loop, defective break away, or wrap-around)
 55 total incidents (32 fatal, 4 severe injuries, 19 other injuries)

A(1) Incidents occurring on pull cords with separate tassels, breakaway tassels or breakaway cord joiners

Case #	Date	Age/ Sex	Outcome
970319CCC1026 Rome, NY	10/29/96	4 yrs/ F	Injury
970418CEP9001 Chicago, IL	4/8/97	21 mos / M	Injury
981001CCC4014 El Cajon, CA	4/17/97	14 mos / M	Fatal
970808CCC3288 Kirkland (Bellevue), WA	7/28/97	4 yrs/ M	Injury
990121CBB2205 Roselle (Chicago) (Glendale Heights), IL	1/16/99	15 mos / M	Fatal
010628CCC3361 0008006909 Douglas, WY Denver, CO	3/20/00 or 3/21/00	4 yrs/ F	Fatal
000518CNE5554 Columbia, TN	4/16/00	15 mos / M	Injury
000831CNE5737 Ambridge (Pittsburgh), PA	8/26/00	2 yrs / M	Fatal
001108CCC0089 Peabody, MA	10/19/00	2.5 yrs/ M	Injury
010614CBB2575 Sealy (Austin), TX	4/22/01	1 yr/ F	Fatal
010723CCC2641 Utica, MI	7/21/01	4 yrs / M	Injury

Case #	Date	Age/ Sex	Outcome
010815CNE6651 Newnan, GA	8/10/01	6 yrs/ F	Fatal
020301CCC1368 X0210720A Old Bridge, NJ	10/27/01	20 mos / M	Fatal
020107CCN0223 Lincoln, NE	1/5/02	3 yrs / M	Injury
020610CCC1605 Carriere (Picayune), MS	4/8/02	8 mos / F	Fatal
020812CNE7432 Bridgewater, MA	8/8/02	18 mos / M	Injury - Severe
020905CCN0794 Corinth, TX	9/3/02	4 yrs / M	Fatal
030707CWE4337 Phoenix, AZ	1/7/03	17 mos / M	Fatal
030418CCN0479 Sheboygan, WI	4/16/03	14 mos / M	Fatal
030708CCC3335 San Francisco, CA	6/16/03	4 yrs/ M	Fatal
030828CNE8057 Charlotte, NC	8/26/03	16 mos / M	Fatal
030902CCN0848 Middletown (Cincinnati) (Butler County), OH	08/31/03	4 yrs/ M	Fatal
040423CCC3268 0344194240-S 0341024944 Eugene (Portland), OR	9/30/03 (DC 10/1/03)	17 mos / M	Fatal
050303CCC1535 Naples (Golden Gate), FL	2/4/05 2/5/05	3.5 yrs / F	Fatal
050426CCC3334 Pacifica, CA	4/21/05	3 yrs / M	Injury

Case #	Date	Age/ Sex	Outcome
X1050632A Parent email to PWBS El Cajon, CA	11/18/05	4 yrs / M	Injury
060328CCC2466 Gulfport, MS	3/10/06 <i>(IDI - typo, says 3/10/04)</i>	2 yrs / M	Injury
060502CCC3480 Elk Grove, CA	4/11/06	15 mos / F (14 mos)	Fatal
100106CCC2286 Minonk, IL	8/8/07	2 yrs / M	Injury
070828CCC2757 Helena, AL	8/20/07	14 mos / F	Fatal
080122HNE3082 Crystal Lake, IL	1/17/08	3 yrs / M	Fatal
090204CCC1402 Essex, MD (Baltimore), MD)	7/5/08	4 yrs / M	Fatal
090602CCC3635 Phoenix, AZ	3/1/09	2.5 yrs / M	Injury
090410CCC2531 Ft. Benning, GA	4/8/09	5 yrs / F	Injury
090528CCC3624 Garland, TX	4/29/09	3 yrs / M	Fatal
090817CNE4677 Gaithersburg, MD Washington, DC	8/9/09 (DC - 8/11/09)	2 yrs / M	Fatal
100217CCC3328 Colorado Springs, CO	1/30/10 or 1/31/10	2 yrs / F	Injury
100219CCC2387 X1020251A Saltillo, MS	2/14/10	3 yrs / M	Injury

Case #	Date	Age/ Sex	Outcome
100519CWE2035 CPSC Release #11-036, 11/10/2010 Cedar Falls (Iowa City), IA	5/16/10 (5/25/10)	22 mos / M	Fatal
100708CWE2246 Great Falls, MT	6/9/10	3 yrs / F	Fatal
100915CBB3131 X1090325A League City (Dickinson), TX	9/10/10	5 yrs / M	Injury - Severe
101123CCC2136 Medway (New Carlisle) (Dayton), OH	10/30/10	21 mos / F (DC - 18 mos / F)	Fatal
101104CCC1094 Burlington (Burlington TWP), NJ	11/2/10	22 mos / F	Injury - Severe
110103CCC3322 Albany, OR	11/10/10	4 yrs / M	Injury
110103CCC3319 Spring, TX	12/31/10	12 mos / F	Injury
110601CNE0001 Richlands (Camp Lejuene), NC	3/3/11	2-½ yrs / F	Injury - Severe
110315CCC1402 Ellicott City (Columbia) (Baltimore City), MD	3/5/11 (DC- 3/11/11)	11 mos / F	Fatal
110404CCC2425 Delavan (Geneva), WI	3/18/11	20 mos / M	Fatal
111206CCC3198 Seattle, WA	8/27/11	2 yrs / M	Fatal

Case #	Date	Age/ Sex	Outcome
111018CCC2027 Bonaire, GA	10/4/11	3 yrs / M	Fatal
120918HWE3109 Kenosha, WI	9/3/12	5 yrs / M	Fatal

A(2) Incidents occurring on the separate tilt cords (not pull cords) of horizontal blinds

Case #	Date	Age/ Sex	Outcome
080915HNE3763 Miramar (Pembroke Pines), FL)	9/13/08	3 yrs / M	Fatal
090728CCC2797 Rockford, IL	3/5/09	2 yrs / M	Injury
100308CCC2444 Elk River, MN	3/5/10	4 yrs / M	Injury
120727CCC2904 Clarksville, TN	7/10/12	3 yrs/F	Fatal

**Injury Data Table B (1996 -2012 w/2010 to 2012 incomplete): Window Coverings -
Incidents on window coverings with looped pull cords but involving wrap-around or knot
in loop cord**

29 incidents total

B(1) Wrap-Around Incidents includes one that may be a combination cord joiner/wrap around (16 total, 8 fatal, 1 severe injury, 6 other injuries, 1 no injury)

Case #	Date	Age/ Sex	Outcome
960304HCN0685 Veedersburg (Crawfordsville), IN	2/6/96 or 2/5/96 or 2/7/96	4.5 yrs/ F or 3 yrs / F	Fatal
961107CCC5040 Hunt Valley (Baltimore), MD	9/16/96 or 9/1/96	2 yrs/ F	Fatal
980305CBB5364 Eddyville, IA	2/4/98	2.75 yrs /M	Fatal
H0130329A Ft. Leavenworth, KS	2/1/01	3 yrs / M	Injury
010625CCN0689 Michigan City, IN	6/7/01	4 yrs / M	No injury
020417CEP9003 Everett, WA	3/28/02	22 mos / M	Injury
030515CEP9003 Lake Stevens, WA	3/13/03	3 yrs / M	Injury
030723CCC1740 Philadelphia, PA	3/29/03	10 mos / F	Fatal
050407CCC3309 Broomfield, CO	3/17/05	4 yrs/ M	Injury
101210CCC1179 X10C0115A La Plata, MD	10/11/05	13 mos / M	Injury - Severe

Case #	Date	Age/ Sex	Outcome
051206CCC3182 Bothell (King County), WA	12/1/05	18 mos / F 12 mos	Fatal
080530CCC2699 Loganville (Snellville), GA	5/17/08	14 mos / M	Fatal
080625CCC3646 Mesa, AZ	6/9/08	12 mo/ M (15 mo M)	Fatal
090407CCC3500 Oklahoma City, OK	3/29/09	8 mos / M	Fatal
X09B0059A 11/4/09 email to PWBS Lynden, WA	11/4/09	3½ yrs / M	Injury
120501CCC1644 Jacksonville, NC (Camp LeJeune)	4/13/12	2 yrs / M	Injury

**B(2) Incidents involving a knotted or /tangled cord above manufacturer created loop
- where child caught in loop above knots
(13 incidents - 10 fatal, 1 severed injury, 2 other injuries)**

Case #	Date	Age/ Sex	Outcome
980109CCC2177 Mendota Heights (St. Paul), MN	11/27/97 or 12/01/96 (DC)	20 mos / F	Fatal
980326CCC0231 Miami, FL	2/28/98	20 mos / F	Fatal
980528CCC6842 Tacoma, WA	05/14/98	3 yrs/ M	Fatal
981222CCC2128 Roseville (Columbus), OH	9/1/98	5 yrs/ F	Fatal
001013CBB0041 Antrim (Peterborough) (Manchester), NH	10/26/98	17 mos / F or 16 mos / F	Fatal
001102CNE5849 Willingboro, NJ	11/1/00	13 mos / M or 14 mos / M	Fatal
010510CNE6334 Fayetteville, NC	5/8/01	3 yrs / M	Fatal
010723CCC2641 I0170330A Utica, MI	7/21/01	4 yrs / M	Injury
020604CNE7347 Richmond, VA	5/28/02	17 mos / M (or 19 mos/ M)	Fatal
030402CCC1421 Union City (Union), TN	2/27/03	3 yrs / M (2 days short of 3 rd b'day)	Fatal
040722CCC2648 Ennis (Waxahachie), TX	7/6/04	2.5 yrs / M	Fatal
041119CCC2143 Wildwood (Chicago), IL	9/30/04	2 yrs / M	Injury

Case #	Date	Age/ Sex	Outcome
Sheriff's Report, Photo & parents depositions Shelton, WA	11/13/08	3 yrs / F	Injury - severe

Injury Data Table C (1996- 2012 w/20120 - 2012 data set incomplete) - Window Coverings
Continuous loop incidents where there is a tension device present that
was not installed/pulled out of wall or broken

(5 confirmed incidents followed by sub-table of listed but
not counted 1 possible unverified incident - all 6 incidents are fatal)

Case #	Date	Age/ Sex	Outcome
021016CCC3022 Wheatland, WY	1/7/02	3 yrs/ F	Fatal
050804CCC1029 Portsmouth (Yorktown) (Langley AFB), VA	7/5/05 7/15/05 7/17/05	3 yrs / M	Fatal
060811CCC3785 San Bernadino, CA	7/30/06 (DC - 8/7/06)	18 mos / M (17 mos)	Fatal
090921CCC1076 Norfolk, VA	9/11/09	3 yrs / M	Fatal
110516CCC3728 Mill Creek, WA	4/8/11	5 yrs/M	Fatal

Possible but unverified incidents:

Case #	Date	Age/ Sex	Outcome
060830CCC1755 Virginia Beach (Norfolk), VA	12/31/05	2 yrs / M	Fatal

Injury Data Table D (1996 -2012 w/2010 to 2012 data set incomplete): Window Coverings
Other incidents caused by a cord that met the standard - such as reverse inner cord
incidents, caught in cord joiner loop on multi-corded window coverings
6 incidents total (5 fatal, 1 injury)

Case #	Date	Age/ Sex	Outcome
990325CCC0369 Whiteville, NC	1/3/99	1 yr/ F	Fatal
000714CNE5665 Irvington, NY Mt. Pleasant, NY	3/17/00 or 3/18/00	2 yrs/ M	Fatal
060124CCC1326 Orlando, FL	1/3/06	2 yrs / M (3 yrs)	Injury
081112HWE7844 Wahiawa, HI Schofield Barrack, U.S. Army Military housing	4/8/08	3 yrs / M	Fatal
090121CCC2276 Sartell, MN	12/29/08 (12/30/08)	2 yrs / M	Fatal
090921CCC1076 Norfolk, VA	9/11/09	3 yrs / M	Fatal

**Injury Data Table E (1996 - 2012 w/2010 to 2012 dataset incomplete): Window Coverings -
Incidents caused or partially caused due to failure of manufacturer to comply with the
voluntary standard**

7 incidents (4 fatal, 3 non-fatal)

Case #	Date	Age/ Sex	Outcome
060602CCC1567 CPSC Release # 09-329 Pensacola, FL	5/19/06	4 yrs / F	Fatal
080702CCC1707 CPSC Release #09-051 Bristol, CT	6/26/08 (RI - N 10/21/08)	2 yrs / F	Injury
090921CCC1073 CPSC Release # 09-325 (8/26/09) Philadelphia, PA	1/1/09	2 yrs/M	No Injury
090901CCC3939 CPSC Release #10-307 Tacoma, WA	5/1/09	5 yrs / M	Injury
090710CCC3731 police reports, photos, ME report Mesa, AZ	5/21/09	2 yrs 5 mos/ F	Fatal
090629CNE4548 CPSC release 12-273 Commerce Township, MI	6/26/09	2 yrs / F	Fatal
N1010309A; X1010430A 1008003099 Firestone, CO	1/21/10	3 yrs / M	Fatal

Exhibit 2
Standard is Not Adequate Because Manufacturers Are Ignoring The Voluntary Standard
Compiled by Safety Behavior Analysis, Inc. (4/26/13)

There are numerous recalls (16) involving blinds that were not manufactured in compliance with the voluntary standard. Most of these non-compliances (13 of 16) appear to have been found as a by-product of CPSC’s 2008-2010 focus on roman shade & roll-up shade inner cord/lifting loop issues. While checking on manufacturers products for roman shade back cord hazards, and roll-up shade lifting loop issues; CPSC caught other violations of the voluntary standard including looped pull cords, no inner cord stops, no tension devices provided with continuous loop products and/or failure to attach a tension device to a continuous loop cord. Almost all of these violations were for standard requirements that were passed with the first voluntary standard in 1996. Many of these violations went on for years and in one case 2 decades before they were caught and recalled.

CPSC Release/ Recall #	Recall Date:	Violation of Voluntary Standard	Year vol standard req. passed	Dates manufactured and/or sold	Length of time made/sold in violation of the Standard
#07-262	8/3/2007	CPSC and Springs Window Fashions announce recall of Basic Blinds ® Window Blinds sold exclusively at Lowes which “have a <u>pull cord that is looped, posing a strangulation hazard to young children.</u> CPSC File No. RP070430, p. 75 et seq.	1996	Manufactured November 2006 to July 2007.	8 months
#09-051	11/20/2008	“Near Strangulation of Child Prompts Recall to Repair Window Blinds by Green Mountain Vista” Roller Shades have a <u>continuous looped bead chain that was either sold without a tension device or tension device not attached to the continuous looped cord.</u>	1996	Sold nationwide from June 2005 through September 2008	over 3 years

CPSC Release/ Recall #	Recall Date:	Violation of Voluntary Standard	Year vol standard req. passed	Dates manufactured and/or sold	Length of time made/sold in violation of the Standard
#09-090	1/13/2009	Risk of Strangulation Prompts Recall of Window Blinds Sold at Cost Plus and World Market Stores nationwide from February 2006 through August 2008. Roman Shades and Roll-up blinds <u>have a looped pull cord</u>	1996	sold nationwide from February 2006 through August 2008.	2 ½ years
#09-329	8/26/2009	“Strangulation Death of a Child Prompts Recall To Repair Window Blinds By Vertical Land” Hazard: Horizontal Blinds: The <u>blinds do not have inner cord stop devices</u> to prevent the accessible inner cords from being pulled out.	2002	sold in Panama City and Pensacola, Fla. from January 1992 through December 2006	4 years
#09-325	8/26/2009	“Near Strangulation Prompts Recall of Roman Blinds; Sold Exclusively at IKEA” MELINA Roman Blinds have a <u>continuous looped pull cord that did not have the tension device attached or was sold without a tension device.</u>	1996	sold nationwide from August 2006 through June 2008.	1 yr, 10 mos.
#09-328	8/26/2009	“Risk of Strangulation Prompts Recall to Repair Roller Shades by Lutron Shading Solutions <u>Roller shade apparently sold either without a tension device or without a tension device attached to the continuous looped bead chain.</u>	1996	Sold January 2000 through April 2009	9 yrs, 3 mos

CPSC Release/ Recall #	Recall Date:	Violation of Voluntary Standard	Year vol standard req. passed	Dates manufactured and/or sold	Length of time made/sold in violation of the Standard
#10-074	12/15/2009	Risk of Strangulation Prompts Recall of Roman Shades by Draper Inc. <u>Roman shade with continuous loop clutch operation system. In addition to exposed inner cords, there was either no tie-down provide and/or the tie-down was not attached to the shade.</u>	1996	Sold nationwide from March 2000 through September 2009.	9 yrs, 6 mos.
#10-071	12/15/2009	“Near Strangulation Prompts Recall to Repair Roman and Roller Shades Sold at Pottery Barn, Pottery Barn Kids, and PB Teens” <u>Roller shade without tension device attached.</u>	1996	sold January 2003 through October 2009.	6 yrs, 10 mos.
#10-070	12/15/2009	“Risk of Strangulation Prompts Recall to Repair Matchstick Roll-up Shades by International Merchandise; Sold Exclusively at Big Lots” <u>Looped pull cords</u>	1996	from January 2009 through June 2009.	6 mos.
#10-711	12/17/2009	“Risk of Strangulation Prompts Recall to Repair Faux wood blinds by American Vintage Group.” Hazard: Strangulation can occur when a child places his/her neck between the cords of the pull cord above the <u>breakaway device and the device fails to breakaway.</u>	1996	Sold in Texas from April 2009 through September 2009.	6 mos
#10-149	3/2/2010	“Risk of Strangulation Prompts Recall to Repair Roman Shades by Lutron Electronics” <u>Sold without tension device attached to continuous looped cord.</u>	1996	Sold nationwide from January 2000 through August 2009.	9 yrs, 8 mos

CPSC Release/ Recall #	Recall Date:	Violation of Voluntary Standard	Year vol standard req. passed	Dates manufactured and/or sold	Length of time made/sold in violation of the Standard
#10-261	6/10/2010	“IKEA Recalls Roller Blinds, all Roman Blinds and all Roll-up Blinds Due to Risk of Strangulation” This recall involves <u>roller blinds that do not have a tension device attached to the bead chain</u> , all Roman blinds and all roll-up blinds.	1996	Sold nationwide from January 1998 through June 2009.	11 yrs, 6 mos
#10-307	7/22/2010	“Near Strangulation Prompts Recall of Roman and Roller Shades by Smith+Noble” This recall involves all <u>roller shades that do not have a tension device attached to the continuous loop cord</u> and all custom, made-to-order Roman shades.	1996	Sold nationwide from 1998 through April 2010.	12 yrs
#11-306	11/10/2010	“Strangulation Death of a Child Prompts Recall of Roman Shade, Roll-up Blinds, and Roller Blinds by Hanover Direct Domestications” This recall involves all styles of Roman shades with inner cords, all styles of roll-up blinds, and <u>roller blinds that do not have a tension device</u> .	1996	Sold from January 1996-through October 2009.	13 yrs, 10 mos
#12-273	9/6/2012	“Death of Child Prompts Recall of Window Blinds by Blind Xpress Two-year-old strangles in cord” This recall involves all Blind Xpress custom-made <u>vertical blinds that do not have a cord-tensioning device that attaches to the wall or floor</u> , as well as all <u>horizontal blinds that do not have inner cord stop devices</u> .	1996 (attached cord tension device) 2002 (inner cord stops)	Sold in Michigan, Ohio and Indiana from January 1995 through December 2011.	Vertical blinds 22 yrs horizontal blinds 9 yrs

CPSC Release/ Recall #	Recall Date:	Violation of Voluntary Standard	Year vol standard req. passed	Dates manufactured and/or sold	Length of time made/sold in violation of the Standard
#13-707	11/21/2012	Hunter Douglas Recalls to Repair Custom Cellular and Pleated Window Coverings Due to Strangulation Hazard. No incident. <u>Some of the cords inside the breakaway cord stop were tied in a single knot which can prevent the cord stop from functioning as designed to break away.</u> A child can become entangled in a cord loop and strangle. Standard cordlock top-down/bottom-up Duette and Applause honeycomb shades; standard cordlock top-down/bottom-up Hunter Douglas pleated shades; Hunter Douglas Brilliance Privacy View pleated shades and standard cordlock Duette and Applause Duolite shades	1996	Sold nationwide from January 2011 through August 2012.	1 yr, 8 mos.

TAB B: Fatal and Nonfatal Strangulations Associated with Window Covering Cords

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**United States
Consumer Product Safety Commission
Bethesda, MD 20814**

Memorandum

Date: August 4, 2014

TO : Rana Balci-Sinha
Project Manager, Window Covering Cords Petition
Division of Human Factors, Directorate for Engineering Sciences

THROUGH: Kathleen Stralka
Associate Executive Director
Directorate for Epidemiology

Stephen Hanway
Director, Division of Hazard Analysis
Directorate for Epidemiology

FROM : Risana Chowdhury
Division of Hazard Analysis
Directorate for Epidemiology

SUBJECT : Fatal and Nonfatal Strangulations Associated with Window Covering Cords

Introduction

Parents for Window Blind Safety, Consumer Federation of America, Consumers Union, Kids in Danger, Public Citizen, U.S. Public Interest Research Group, Independent Safety Consulting, Safety Behavior Analysis, Inc., and Onder, Shelton, O'Leary & Peterson, LLC, (petitioners), filed a petition requesting that the Consumer Product Safety Commission (CPSC) promulgate a mandatory standard that: (a) prohibits any window covering cords where a feasible cordless alternative exists, and (b) where a feasible cordless alternative does not exist, require that all cords be made inaccessible through the use of passive guarding devices. Petitioners' request for rulemaking stems from concern about the continued strangulation hazard posed to young children by window covering cords, which petitioners allege is primarily attributable to the inadequacy of the current voluntary standard. CPSC staff conducted a data search and analysis on incidents involving window covering cords for the Commissioners' consideration in responding to the petition. This memorandum summarizes CPSC staff's incident analysis for window covering cords.

Methodology

CPSC staff's search focused on fatal and nonfatal strangulations suffered by young children due to window covering cords. Whenever feasible, staff limited the time frame to 1996-2012, in order to match the time frame cited in the petition. CPSC staff searched five databases for identification of window covering cord incidents: the Injury or Potential Injury Incident file (IPII), the Death Certificates file (DTHS), the In-Depth Investigation file (INDP), the National Electronic Injury Surveillance System (NEISS), and the Multiple Cause of Deaths data file. The first four sources are CPSC-maintained databases. The Multiple Cause of Deaths data file is available from the National Center for Health Statistics (NCHS). The appendix at the end of this memorandum details information about the CPSC data sources and the selection criteria used for this data search.

Results

Estimates of Window Covering Cord-Related Strangulation Deaths Using NCHS Data

NCHS compiles all death certificates filed in the United States into multiple cause mortality data files. The mortality data files contain demographic information on the deceased, as well as codes to classify the underlying cause of death and up to 20 contributing conditions. NCHS compiles the data in accordance with the World Health Organization's instructions, which request member nations to classify causes of death by the current Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death. The ninth revision of the International Classification of Diseases (ICD) was implemented in 1979, while the tenth revision was implemented in 1999. Given that many of the mappings from ICD9 to ICD10 codes are not one-to-one, the data coded from the two time periods may not be comparable. Furthermore, the latest year for which mortality data is available is 2010. As such, CPSC staff derived the strangulation fatality estimates for 1999-2010, which is a different time frame than that used in the petition.

Based on CPSC staff's review of the death certificates maintained in the DTHS database, staff identified three ICD10 codes which are likely to be used for classification of strangulation fatalities:

- W75 (*accidental suffocation and strangulation in bed*),
- W76 (*Other accidental hanging and strangulation*), and
- W83 (*Other specified threats to breathing*).

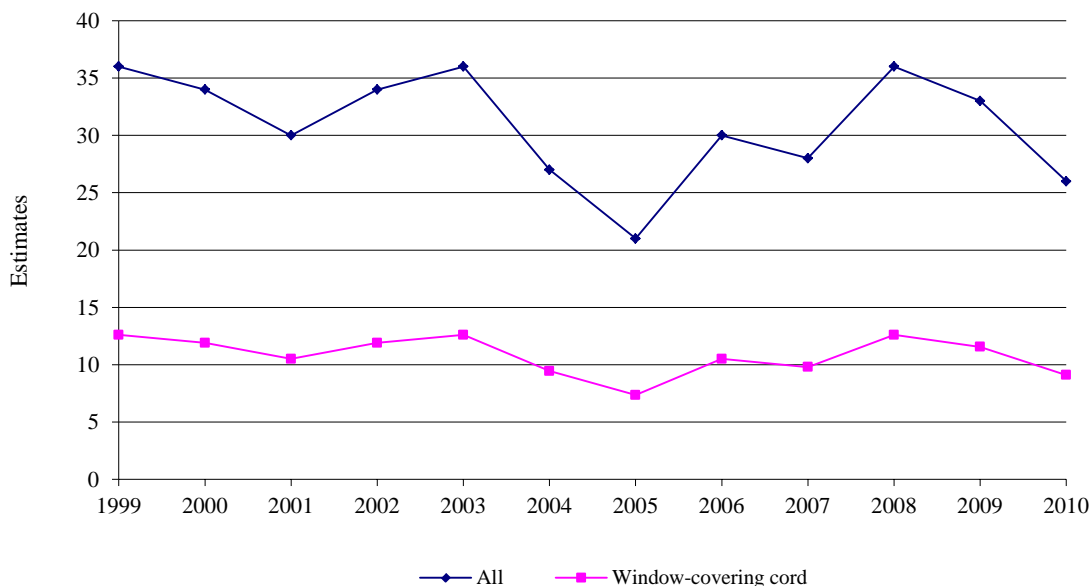
Among these three ICD10 codes, W76 appeared to be the most commonly used.

Using the ICD10 code value of W76, staff identified a total of 371 strangulation fatalities among children under age five in the multiple cause mortality data from NCHS from 1999 through 2010, which yields an annual average of 31 deaths. Three hundred seventy-one strangulation fatalities is most likely an underestimate of all strangulation deaths because CPSC staff did not search using the other two ICD10 codes (W75 and W83). An unknown proportion of strangulation deaths is likely coded under ICD10=W75 as well as ICD10=W83 which cannot be

isolated from the non-strangulation deaths and added to the total. Hence, staff’s annual average estimate of 31 strangulation deaths is a minimum.

A CPSC report by Marcy *et al.*,¹ which reviewed CPSC databases in 2002, found that 35 percent of all strangulation fatalities among children less than five years old were associated with window covering cords. Assuming that this 35 percent proportion applies to the entire 1999-2010 period, CPSC staff estimates that a minimum of 11 strangulation fatalities (35 percent of 31) occur on average annually on window covering cords among children under five years of age. Figure 1 presents the yearly details.

Figure 1: Estimated Annual Minimum for Fatal Strangulations Among Children under Five Years of Age



Source: Multiple Cause of Death data, NCHS, 1999 – 2010.

Note: The estimates for the window covering cord fatalities are based on the assumptions that 35% of all strangulation fatalities are due to window covering cords and that this percentage remained unchanged over 1999-2010.

Estimates of Window Covering Cord-Related Strangulation Injuries Treated in Hospital Emergency Departments

According to the emergency department-treated injury data (NEISS), CPSC staff estimates that from 1996 to 2012, children received treatment for 1,590 injuries (sample size = 63, cv=0.24) resulting from entanglements on window covering cords. The injury estimates for individual

¹ N. Marcy, G. Rutherford. “Strangulations Involving Children Under 5 Years Old.” U.S. Consumer Product Safety Commission, December 2002.

years are based on very small samples and are not reportable.² Moreover, due to the unreliability of the yearly estimates, a trend analysis is not feasible. The ages of the injured ranged from 14 months to eight years. It is worth noting here that the upper limit for the age selection criterion was set at eight years whenever feasible because of multiple incident reports received by CPSC staff that involved children up to that age.

Based on the injuries reported to NEISS hospitals, the notable characteristics were as follows:

- Disposition of the children –
 - Treated and released (70%)
 - Treated and transferred to another facility (13%); final outcome was unknown.
 - Hospitalized (12%)
 - Fatality (3%), and
 - Held over for observation (3%).

- Severity of the injuries –
 - Among the patients who were DOA (dead on arrival) or died in the emergency-department, 65% were 5-year-olds and 35% were 3-year-olds.
 - The hospitalizations occurred among 1-year-olds (59%), 4-year-olds (38%), and 3-year-olds (3%), and
 - The older age groups, 6-, 7-, and 8-year-olds, suffered less severe outcomes.

Incidents from Other CPSC Sources

Based on newspaper clippings, consumer complaints, death certificates purchased from states, medical examiners' reports, and in-depth investigation reports, CPSC staff found a total of 285 reported fatal and nonfatal strangulation incidents on window covering cords that occurred among children up to eight years old from January 1996 through December 2012. These 285 incidents do not constitute a statistical sample of known probability and do not necessarily include all window covering cord-related strangulation incidents that occurred during that period. However, these 285 incidents do provide at least a minimum number for such incidents during that time frame. Table 1 provides the breakdown of the incidents by year. Because reporting is ongoing, the number of incidents presented here may change in the future. Given that these reports are anecdotal and reporting is incomplete, CPSC staff strongly discourages drawing any inferences based on the year-to-year increase or decrease shown in the reported data.

Sixty percent of the children involved in the reported incidents were males and 40 percent were females.

² According to the NEISS publication criteria, an estimate must be 1,200 or greater, the sample size must be 20 or greater, and the coefficient of variation must be 33% or smaller.

Table 1
Reported Fatal and Nonfatal Strangulation Incidents Involving Window Covering Cords
Among Children Eight Years and Younger
1996 - 2012

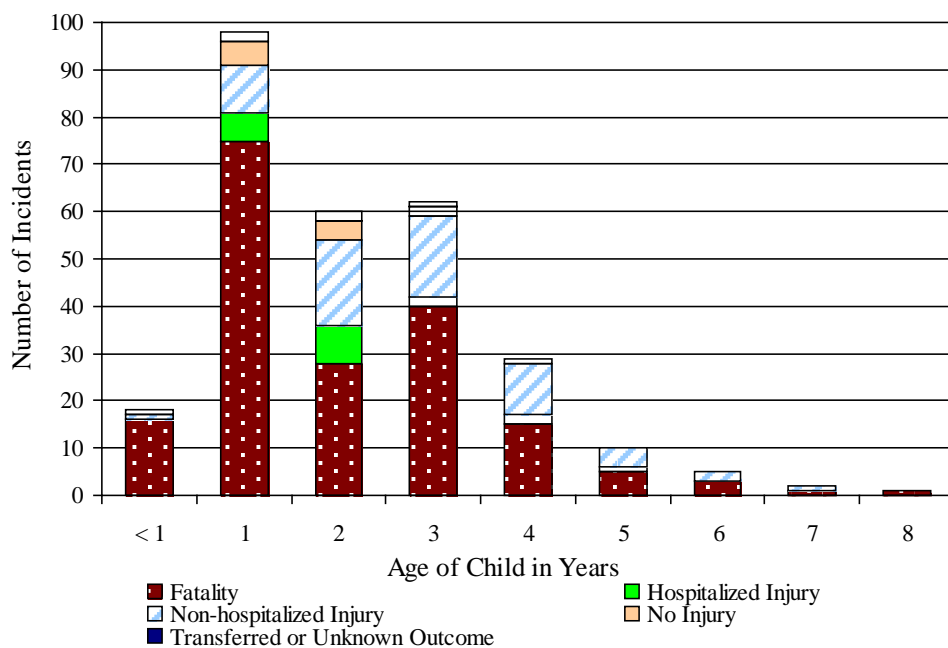
Incident Year	Number of Reported Incidents		
	<i>Total</i>	<i>Fatal Strangulations</i>	<i>Nonfatal Strangulations</i>
1996	23	17	6
1997	17	14	3
1998	13	12	1
1999	7	7	--
2000	16	11	5
2001	16	10	6
2002	18	11	7
2003	19	17	2
2004	10	6	4
2005	13	7	6
2006	12	7	5
2007	14	10	4
2008	26	18	8
2009	41	13	28
2010	24	11	13
2011*	8	6	2
2012*	8	7	1
Total	285	184	101

Source: CPSC epidemiological databases IPII, INDP, and DTHS.

Note: * indicates data collection is ongoing

One hundred and eighty-four of the 285 incidents (65 percent) reported a fatality. Over the 1996-2012 timeframe, this averages to about 11 deaths per year. This is in agreement with the estimated annual average of a minimum of 11 deaths—based on NCHS data from 1999-2010—reported earlier. Among the nonfatal incidents, 19 involved hospitalizations (7 percent). The long-term outcomes of these 19 injuries varied from a scar around the neck, to quadriplegia, to permanent brain damage. In addition, 67 incidents (24 percent) involved less-severe injuries, some of which required medical treatment but not hospitalization. In the remaining 15 incidents (5 percent) a child became entangled in a window covering cord but was able to disentangle him or herself from the cord and escape injury. Figure 2 shows the number and disposition of the incidents by the child’s age.

Figure 2: Reported Fatal and Nonfatal Strangulation Incidents Among Children Eight Years and Younger 1996-2012



Source: CPSC epidemiological databases IPII, INDP, and DTHS.

Hazard Patterns Based on In-Depth Investigation Review

I. All Investigated Incidents

Of the 285 total reported incidents on window covering cords, CPSC Field staff completed follow-up in-depth investigations for 249 incidents. Based on a review of the in-depth investigation reports, the most common types of window-coverings involved in the 249 incidents, and the types of cords associated with each, are presented below:

- Horizontal Blinds (includes Venetian and mini-blinds)
Associated cords: continuous loop cord/beaded-chain (free-standing, *i.e.*, not mounted on a tension device), inner cord, pull cord (with loops or long cords), and tilt cord
- Vertical Blinds
Associated cords: continuous loop cord/beaded-chain (free-standing)
- Roman Shades
Associated cords: continuous loop cord/beaded-chain (free-standing), inner cord, and pull cord (with loops or long cords)
- Roller Shades
Associated cords: continuous loop cord/beaded-chain (free-standing)
- Roll-up Shades
Associated cords: pull cord (with loops or long cords) and lifting loop

- Other Shades (includes pleated, cellular-honeycomb)
Associated cords: continuous loop cord/beaded-chain (free-standing) and pull cord (with loops or long cords)
- Curtains/Draperies
Associated cords: continuous loop cord/beaded-chain (free-standing).

From a review of the 249 in-depth investigations, staff found that horizontal blinds were involved in more than half (53 percent) of the incidents. For the remaining incidents, the breakdown of the number of incidents by window covering type was: vertical blinds - 17 percent; Roman shades - 11 percent; curtains/draperies - 6 percent; cellular shades - 4 percent; roller shades - 2 percent; and roll-up shades - 2 percent. Staff was unable to identify the type of window covering involved in the remaining (5 percent) incidents due to lack of information.

Within each window covering type, staff identified one or two types of cords predominantly involved in the incidents. Among the horizontal blind-related incidents, 69 percent involved a pull cord, and 18 percent involved an inner cord. Among vertical blind-related incidents, 95 percent involved a continuous loop cord/beaded-chain, which was free-standing. For Roman shades, inner cords were involved in 89 percent of the incidents. All but one of the curtain/drapery-related incidents involved free-standing continuous loop cord/beaded-chains. The above-described breakdown of all 249 investigated incidents by type of window coverings and type of cords is presented in Table 2.

Table 2: Distribution of Investigated Incidents by Types of Window Coverings and Associated Cords 1996-2012

	Pull cord	Continuous loop cord/beaded-chain	Inner cord	Lifting loop	Tilt cord	Unknown	Total (Percentage)
Horizontal	90	3	23	--	2	13	131 (53%)
Vertical	--	41	--	--	--	2	43 (17%)
Roman	2	1	24	--	--	--	27 (11%)
Curtain/drapery	--	13	--	--	--	1	14 (6%)
Cellular	5	5	--	--	--	--	10 (4%)
Roller	--	6	--	--	--	--	6 (2%)
Roll-up	2	--	--	3	--	--	5 (2%)
Unknown	2	1	--	--	--	10	13 (5%)
Total	101	70	47	3	2	26	249 (100%)

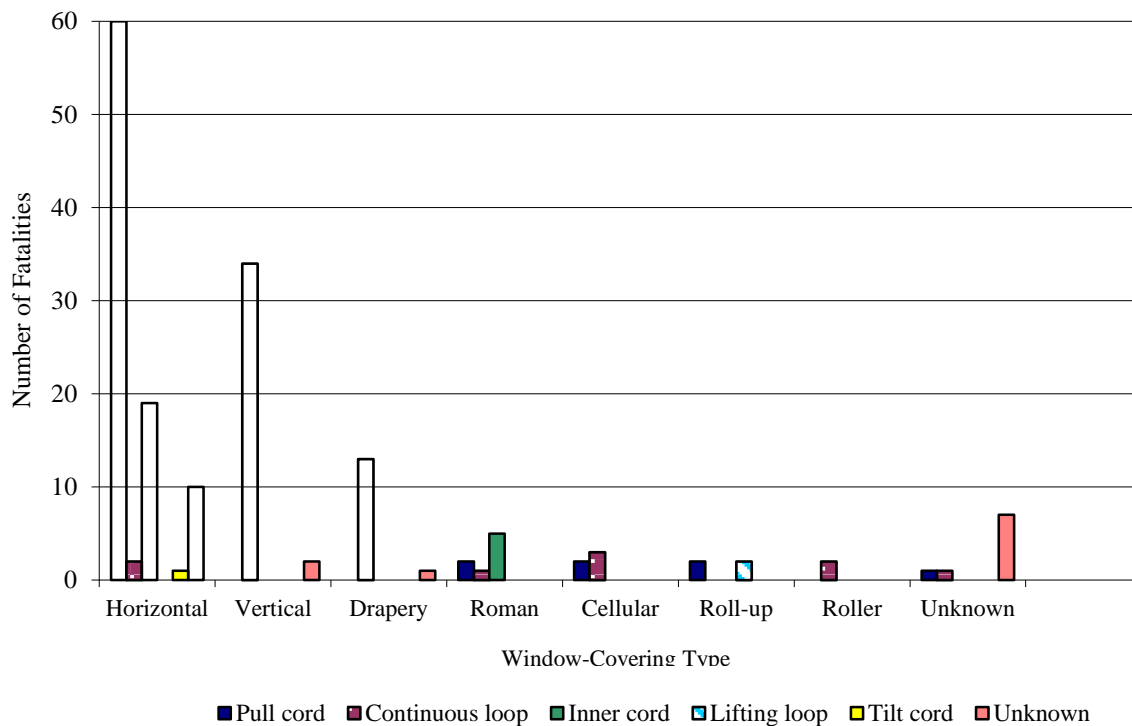
Source: CPSC In-Depth Investigation File (INDP).

II. Investigated Fatal Incidents

Of the 249 investigated incidents, 170 involved a fatality. Ninety-two (54 percent) of these fatal incidents involved a horizontal blind, 36 (21 percent) involved a vertical blind, 14 (8 percent)

involved a curtain/drapery, eight (5 percent) a Roman shade, five (3 percent) a cellular shade, four (2 percent) a roll-up shade, and two (1 percent) a roller shade. Staff was unable to identify the window covering type in 9 (5 percent) of the 170 fatalities. Figure 3 illustrates the distribution of these fatal incidents by types of window coverings and associated cords.

Figure 3: Distribution of Investigated Fatal Incidents by Types of Window Coverings and Associated Cords 1996-2012



Source: CPSC In-Depth Investigation File (INDP).

III. Investigated Incidents by Associated Cord Types

Pull Cord: Based on a review of the 249 investigated window covering cord incidents, staff identified pull cords as the predominant type of cord in which children have become entangled. Among the investigated incidents only, this operating mechanism was responsible for 41 percent of the incidents, 39 percent of the deaths, and 49 percent of the injuries, including hospitalizations. A closer look at pull cord-related incidents revealed several ways in which children have strangled or nearly-strangled. The common modes of entanglement are:

A. *Loops created by knotted or tangled cord:* Staff’s review revealed that prior to the incidents, the pull cords had been tied together or had been coiled and tucked away (out of children’s reach), but had later become accessible. When pull cords were tied together, a loop was created above the knot where the cords were tied and that is where the child later became entangled. When the cords were coiled, the cords also became tangled and created a loop, which later acted as a noose. Among all pull cord-related incidents, 38 (38 percent) of the

incidents, 29 (43 percent) of the fatalities, and 9 (27 percent) of the injuries, including hospitalizations, occurred on loops created by knotted or tangled cords.

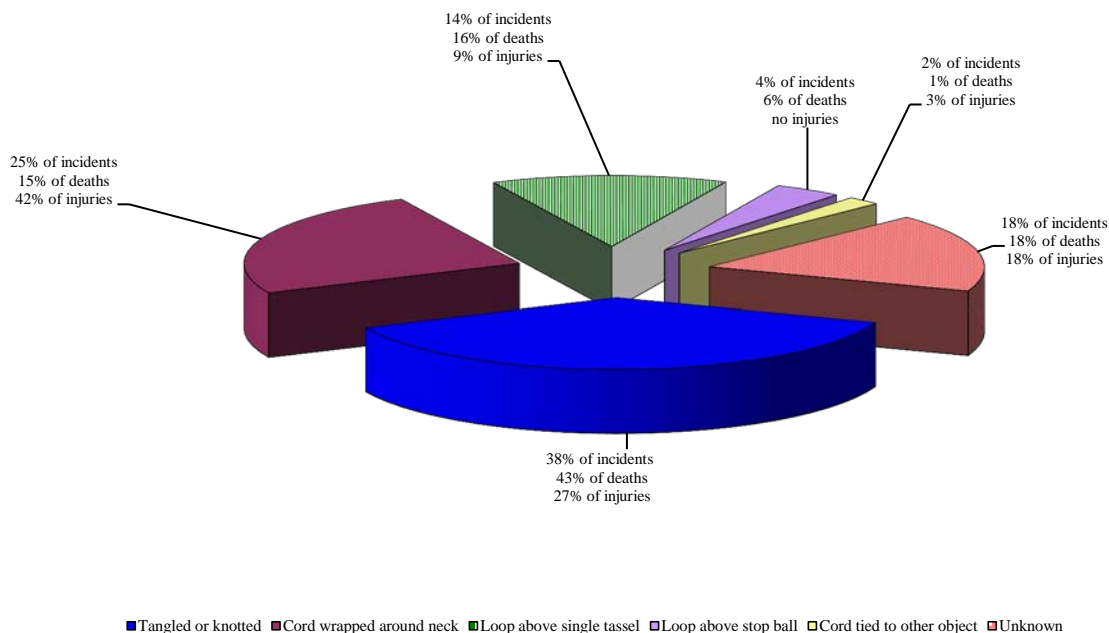
- B. *One or more long cords which the child wrapped around the neck:* In these scenarios, the child had wrapped the long pull cord(s) multiple times around the neck. When the child fell or tried to pull away from the window covering, the cord pulled back, causing the child to strangle or nearly-strangle. Among all pull cord-related incidents, this category included 25 (25 percent) of the incidents, 10 (15 percent) of the fatalities, and 14 (42 percent) of the injuries, including hospitalizations.
- C. *Loop above a single tassel of the cord:* Some pull cords consist of multiple cords that hang from the window covering's head rail and are joined at a point, by a plastic or wooden tassel. In such configurations, a loop exists above the tassel. In the cases reviewed, staff determined that these loops were within the child's access and led to fatal or nonfatal strangulations. When considering pull cord-related incidents only, this category consisted of 14 (14 percent) of the incidents, 11 (16 percent) of the fatalities, and 3 (9 percent) of the injuries.
- D. *Loop above the stop ball of the cord:* Some pull cords consist of multiple cords that hang from the window covering's head rail and are joined at a point, by a stop ball. The pull cord then continues down as a single cord. Similar to the single tassel case, a loop exists above the stop ball. In some of the staff-reviewed investigations, this loop acted as a noose where a child was caught. Among pull cord incidents only, this category consisted of 4 (4 percent) of the incidents and 4 (6 percent) of the fatalities; there were no injuries involving these loops.
- E. *Loop created when pull-cord was tied to another object, usually on the wall:* In 2 (2 percent) of the pull cord-related incidents, 1 (1 percent) of the fatalities, and 1 (3 percent) of the injuries associated with pull cords, staff found that the pull cord was tied to another object (e.g., a curtain rod). Tying the pull cord to another object created a "U" shaped opening where a child later strangled or nearly-strangled.
- F. *Unknown manner:* Eighteen (18 percent) of the pull cord-related incidents did not report sufficient information to allow CPSC staff to determine the manner in which the child was entangled. Twelve (18 percent) of the fatalities and 6 (18 percent) of the injuries involving a pull cord were included in this category.

The distribution of the pull cord-related investigated incidents by the common modes of entanglement and outcome of the incident is presented in Figure 4.

Continuous Loop Cord: Based on the review of the 249 investigated window covering cord incidents, staff identified continuous loop cords or beaded-chains, which were not mounted with a tension device or which broke loose from a tension device at the time of the incident, to be the next major type of cord in which children become entangled. Vertical blinds and curtains/drapes are the predominant type of window coverings associated with strangulations and near-strangulations on continuous loops. Some of the incident reports mentioned the child's prior interest in wearing the beaded-chain as a necklace. Among the investigated incidents only, this

operating mechanism was responsible for 28 percent of the incidents, 33 percent of the deaths, and 16 percent of the injuries, including hospitalizations.

Figure 4: Distribution of Pull Cord-Related Investigated Incidents by Mode of Entanglement and Disposition of Incident 1996-2012



Source: CPSC In-Depth Investigation File (INDP)

Inner Cord: Based on the review of the 249 investigated window covering cord incidents, staff identified inner cords on horizontal blinds and Roman shades to be the third major type of cord in which children become entangled. In these scenarios, the child pulled out the inner cord from between the slats of the horizontal blinds or from behind the Roman shades, which were in the lowered position. Subsequently, the child got caught in the loop created by the pulled-out portion of the inner cord. In some Roman shade incidents, children inserted their heads into the opening between the inner cord and the shade material. Among the investigated incidents only, these cords were responsible for 19 percent of the incidents, 14 percent of the deaths, and 22 percent of the injuries, including hospitalizations.

Other: Among the less prevalent cord types, the lifting loop of a roll-up blind was involved in three incidents, including two deaths and one injury. Children inserted their heads or arms into the lifting loop that came off the roll-up material resulting in the strangulation incidents. Tilt cords that are used to swivel the slats on a horizontal blind were involved in two incidents resulting in one death and one injury.

Summary

Based on NCHS data and a CPSC study, staff estimates that a *minimum* of 11 fatal strangulations related to window covering cords on average occurred per year in the United States among children under five years old from 1999-2010. CPSC staff finds no observable trend in the data.

Based on NEISS data, CPSC staff estimates that during 1996-2012, children—up to eight years old—received treatment in United States emergency departments for 1,590 injuries resulting from window covering cord-related strangulation injuries. Most were nonfatal strangulation injuries, while some were fatal. CPSC staff cannot report estimates for individual years or any trend analysis due to the unreliability of such estimates.

Based on CPSC's DTHS, IPII, and INDP data, staff found that a total of 285 fatal and nonfatal strangulations, involving children up to eight years, were reported from 1996 through 2012. Nearly two-thirds of the incidents were reports of fatalities, while one-third were nonfatal strangulations. Some of the reported non-fatal incidents involved severe injuries with long-term consequences, such as quadriplegia or permanent brain damage.

Using 2004³ Census data (Table 3) and the annual number of strangulation incidents (285/17=16.765 incidents per year), the overall risk of a reported fatal and nonfatal strangulation incident for children eight years and younger would be an average minimum of 0.47 incidents per million children per year ((16.765/35,967,000)*1,000,000).

**Table 3: U.S. Population
Intercensal Resident Population by Age as of July 1, 2004**

Total Population (July 1, 2004)	293,046,000
Under 5 years	20,243,000
5-9 years *	19,655,000
Total (0-8 years)	35,967,000

Source: U.S. Census Bureau⁴

*Note: Zero to 8 year-old population calculated by adding 'Under 5 years' population and 80 percent of '5 to 9 years' population. For example, 20,243,000 + (0.80 * 19,655,000) = 35,967,000. This assumes equal distribution of population by year.

CPSC Field staff completed in-depth investigations for 249 of the 285 incidents involving window covering cords. A review of these investigated incidents reveals that more than half of the completed investigations involved horizontal blinds; vertical blinds, followed by Roman shades, were the next most common products involved. Among horizontal blinds, the predominant types of cords involved in the incidents were pull cords and inner cords. Among

³ July 1, 2004 is the mid-point of the incident data time frame, 1996-2012.

⁴ U.S. Census Bureau, Population Division, "Annual Estimates of the Resident Population by Sex and Five-Year Age Groups for the United States: April 1, 2000 to July 1, 2009 (NC-EST2009-01)," June 2010.
<http://www.census.gov/prod/2011pubs/12statab/pop.pdf>

vertical blinds, the predominant type of operating cord was continuous loop cord/beaded-chain. Finally, among Roman shades the predominant type of cord involved was the inner cord. Among the investigated incidents, irrespective of the window covering type, CPSC staff found that the largest proportion (101 out of 249) of the incidents involved pull cord(s) as the operating mechanism. Staff was able to determine the manner of entanglement for about two-thirds of the pull cord cases. Staff found that most incidents involved tangled or knotted cord(s), followed by incidents involving one or more long cords wrapped around the child's neck. Cords with a loop above a single tassel ranked third among the pull-cord incidents.

Appendix

CPSC Data Sources

NEISS: The National Electronic Injury Surveillance System. The injury data is collected from a stratified probability sample of about 100 hospitals nationwide, which are equipped with 24-hour emergency departments with more than six beds. The sample is stratified by the hospital size. Each record in the database includes the date of treatment of the injury, age of the injured, diagnosis for the injury, disposition of the injury, codes to identify the product involved, the sample incident weight, and a narrative describing the incident, among other information. NEISS data is used for calculating national estimates of injuries treated in emergency departments and can be used for trend determination, when feasible.

DTHS: The Death Certificates file. This database contains death certificates that are bought by CPSC from all 50 states as well as Washington D.C., New York City, and some territories. Following the system of International Classification of Diseases (ICD), the external cause of death is coded on each death certificate; the CPSC criteria for selecting the external codes to purchase depend on projects of interest. Moreover, there is usually a lag in time—a couple of years, on average—between the death occurrence and the receipt of the death certificate by CPSC. This database is neither a statistical sample nor a complete census of all product-related deaths. Each record in the database includes the date of death, state/city of death, age of the decedent, ICD code for the death, codes to identify the product, a narrative describing the incident, as well as other information.

IPII: The Injury or Potential Injury Incident file. This database contains information from newspaper clippings, consumer complaints, medical examiners and coroners' reports, letters from law firms, manufacturer and retailer reports, and similar sources. Beside information such as the date of incident, age of person involved, state/city and disposition of incident, records in this database often include scenario specific detail, product related detail such as manufacturer/model name and date of purchase.

INDP: The In-Depth Investigation file. The reports in this database are follow-up in-depth investigations of incidents contained in the other three CPSC databases described above. In other words, IPII, DTHS, and NEISS reports are the source documents for INDP reports. These are mostly on-site or occasionally telephone investigations completed by CPSC Field investigators. These investigators often visit next-of-kin to obtain first-hand information, collect the product involved in the incident, and collect all official documents (from state, county, and/or local authorities) as supporting documents. This database contains, by far, the most complete information about incidents reported to CPSC. Each record in this database contains basic information on the incident, person, product, as well as a detailed report usually containing photographs of the incident scene and the product(s), and other official supporting documents.

Data Selection Criteria

- Date of occurrence: January 1, 1996 – December 31, 2012.
- Product codes involved: 0638 (*Window shades, venetian blinds or window shutters*), and 0617 (*Draperies, curtains or shower curtains (fabric or plastic)*).
- Age of child: 0-8 years. The upper limit for the age selection criterion was set at 8 years for the CPSC databases because of multiple incident reports received by staff that indicate involvement of children up to that age.
- Hazard: Strangulation or near-strangulation incidents. Included a few incidents where the child was entangled in the window covering cord at the arm or foot.
- Excluded: Unless incidents occurred in a U.S. military base, all incidents that occurred outside the United States. Also, any reports of safety issues but no occurrence of strangulation or near-strangulation.
- In the analysis under *Incidents from Other CPSC Sources*, multiple reports were identified that pertained to the same incident. All of these reports were associated to prevent any double-counting.
- Any report of window covering cord involvement in a source document which was contradicted by follow-up investigation findings was excluded. Conversely, any investigation that reported involvement of a window covering cord, even though the source document did not, was included.

TAB C: Health Sciences Assessment for Window Coverings Petition

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**United States
Consumer Product Safety Commission
Bethesda, MD 20814**

Memorandum

Date: August 6, 2014

TO : Rana Balci-Sinha, Ph.D., CPE
Project Manager, Window Coverings Petition
Division of Human Factors
Directorate for Engineering Sciences

THROUGH: Mary Ann Danello, Ph.D., Associate Executive Director
Directorate for Health Sciences

Jacqueline Ferrante, Ph.D., Director
Division of Pharmacology and Physiology Assessment

FROM : Suad Wanna-Nakamura, Ph.D., Physiologist
Division of Pharmacology and Physiology Assessment

SUBJECT : Health Sciences Assessment for Window Coverings Petition (CP 13-2)

Introduction

On May 23, 2013, Parents for Window Blind Safety, Consumer Federation of America, Consumers Union, Kids in Danger, Public Citizen, U.S. Public Interest Research Group, Independent Safety Consulting, Safety Behavior Analysis, Inc., and Onder, Shelton, O'Leary & Peterson, LLC (petitioners), petitioned the Commission to promulgate a mandatory standard to eliminate accessible cords on window covering products 78 FR 42026. The petitioners requested that the Consumer Product Safety Commission (CPSC) address the continuing hazard of strangulation to young children posed by window covering cords by: (a) promulgating a mandatory standard that prohibits any window covering cords when a feasible cordless alternative exists; and (b) requiring that all cords be made inaccessible through the use of passive guarding devices when a feasible cordless alternative does not exist. This memorandum provides information on deaths and injuries associated with window covering cords, and the risk and injury potential associated with a child becoming suspended or entangled in window covering cords.

Background

Unintentional, self-strangulation of young children can result from entanglement with loose wires, cords, and other ligatures commonly found around the house, often in close proximity to

sleeping and play areas (Busuttill and Keeling, 2008). The Division of Hazard Analysis (EPHA) conducted searches of CPSC epidemiological databases¹ for all strangulation incidents associated with window coverings under product codes 0638 (Window shades, venetian blinds or window shutters) and 0617 (Draperies, curtains or shower curtains (fabric or plastic) involving victims from birth to eight years of age. The search, which covered a 17-year period from January 1, 1996 through December 31, 2012, retrieved a total of 285 incidents that included 184 fatalities, 19 hospitalizations, 67 minor injuries, and 15 incidents with no reported injuries (Chowdhury, 2014). CPSC staff completed in-depth-investigations (IDIs) on 249 of the 285 incidents.

Pathophysiology of Strangulation

Strangulation due to mechanical compression of the neck is a complex process resulting from multiple mechanisms and pathways that involve both obstruction of the airway passage and occlusion of blood vessels in the neck. Strangulation can lead to serious injuries with permanent debilitating outcomes or death. If sustained lateral pressure occurs at a level resulting in vascular occlusion, strangulation can occur when a child's head or neck becomes entangled in any position, even in situations where the body is fully or partially supported.

Strangulation is a form of asphyxia that can be partial (hypoxia) when there is an inadequate oxygen supply to the lungs. Total asphyxia occurs (anoxia) when there is total impairment of oxygen transport to tissues, which can be accompanied by carbon dioxide retention. A reduction in the delivery of oxygen to tissues can result in permanent irreversible damage. Brain tissue is particularly sensitive and thus the brain is often the most affected organ, (Feldman and Simms, 1980; DiMaio and DiMaio, 2001; Spitz, 2006; Oehmichen et. al., 2005; Saukko and Knight, 2004; Gordon and, Shapiro, 1982; McNie, 1980; and Adams et al., 2006). Two blood vessels transport blood to and from the brain. The carotid artery carries oxygenated blood to the brain. The jugular vein returns the deoxygenated blood back to the lungs via the heart. Both blood vessels are located in soft tissue on each side of the neck, which leaves them vulnerable to compression. Experimental studies show that only 2 kg (4.4 lbs.) of pressure on the neck may occlude the jugular vein (Brouardel, 1897) and 3-5 kg (7-11 lbs.) may occlude the common carotid arteries (Brouardel, 1897 and Polson, 1973). Minimal compression of any of these vessels can lead to unconsciousness within 15 seconds and death in two to three minutes, (Digeronimo and Mayes, 1994; Hoff, 1978; Iserson, 1984; Polson, 1973). A pressure of 15kg (33 lbs.) is required to occlude the trachea (Brouardel, 1897).

The vagus nerve is also located in the neck in close proximity to the jugular vein and carotid artery. The vagus nerve is responsible for maintaining a constant heart rate. Compression of the vagus nerve can result in cardiac arrest due to mechanical stimulation of the carotid sinus-vagal reflex. In addition, the functioning of the carotid sinuses may be affected by compression of the blood vessels. The carotid sinuses are involved in the control and maintenance of various physiological homeostatic mechanisms in the body. They are baroreceptors that monitor heart activity and can adjust blood pressure and heart rate. While they respond primarily to

¹ CPSC databases: the Injury or Potential Injury Incident file (IPII), the Death Certificates file (DTHS), the In-Depth Investigation file (INDP), the National Electronic Injury Surveillance System (NEISS).

intravascular pressure acting on vessel walls due to normal physiological conditions, they can also be activated by longitudinal forces, such as compression that may stretch and deform the blood vessel walls (Feldman and Simms, 1980; Hoff, 1978; Gresham, 1993; Iserson 1984; Shepherd, 1990). Thus, stimulation of the sinuses can result in a decrease in heart rate, myocardial contractility, cardiac output, and systemic arterial pressure in the absence of airway blockage.

Strangulation proceeding along one or more of these pathways can rapidly progress to anoxia, associated cardiac arrest, and death. The prognosis for hypoxic victims due to strangulation is dependent primarily on the extent of oxygen deprivation, the duration of unconsciousness, and the speed of resuscitation. Rapid reversal of the hypoxic state is essential to prevent or limit the development of pulmonary and cerebral edema. Thus, victims who are oxygen deprived for short durations or quickly receive cardiopulmonary resuscitation to reestablish cerebral blood flow have the most favorable prognosis and recovery. In near hanging, children who are found alive and are resuscitated immediately before the full onset of anoxia have a good chance to recover fully (Digeronimo and Mayes, 1994; Feldman and Simms, 1980; Iserson 1984). In contrast, victims who are not resuscitated within a few minutes or respond poorly to such efforts rarely have a favorable outcome (Digeronimo and Mayes. 1994; Feldman and Simms, 1980; Hoff, 1978). The severity of oxygen deprivation ultimately governs the victim's chance for survival or the degree of neurological damage. Neurological damage may range from amnesia, to long term vegetative state. Continued deterioration of the nervous system can lead to death (Howell and Gully, 1996; Medalia et. al., 1991). Preexisting health conditions at the time of the incident may also be a factor (Robert, et. al., 1996).

Health Sciences (HS) Review of Fatalities and Injuries and Discussion of Hazard Patterns

HS staff reviewed the incident reports for the 285 cases identified by EPHA staff. The age of the victims ranged from seven months to eight years old. Sixty percent were males and 40% females. Of the 285 incidents involving entanglement with a window covering cord, there were 184 fatalities, 19 hospitalizations, 67 minor injuries not requiring hospitalization, and 15 incidents with no reported injuries. Four of the entanglements occurred on the child's arm or wrist and did not involve the neck. Of the hospitalizations, nine patients suffered severe neurological outcomes, which included cerebral edema, coma, loss of cognitive abilities, a loss of function or mobility, and quadriplegia. Some patients required intensive care, monitoring, lifelong care, and therapy. In the remaining 78 incidents that were reported as minor or no injury, the child was found entangled in a cord or had the cord wrapped around the neck, in some instances so tight, that the child turned blue and had red marks or rope burns visible on the neck. Three children suffered temporary airway obstruction and were subsequently taken to the hospital. HS staff believes that all these non-fatal incidents could have had a more serious, and even fatal, outcome, if the child had not been released from the cord. In almost all non-fatal instances, an adult or older sibling was present in the same room with the victim at the time of the incident.

Hazard pattern

Three main systems control the operation of window coverings:

- (1) The conventional pull cord lifting system with an operating cord and inner cord loop found on horizontal blinds, Roman shades, and roller shades (Fig 1A, B and C)
- (2) A lifting loop found on roll-up shades (Fig 1C); and
- (3) continuous loop systems found in vertical blinds and drapes that open and close from side to side (some cellular shades and Roman shades may also have this system) (Fig 1D).

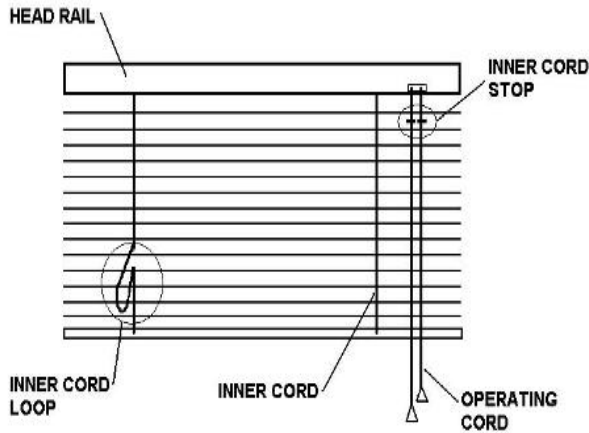


Figure 1A. Horizontal blind. Inner cord loop formed by pulling out on the inner cord

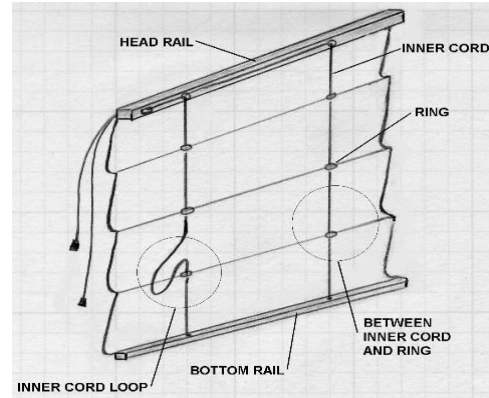


Figure 1B. Roman shade showing inner cord loop

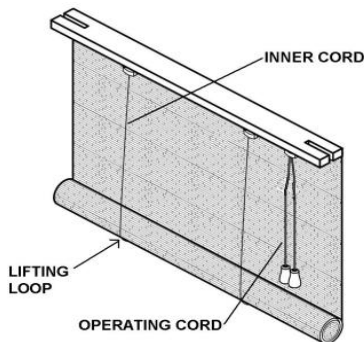


Figure 1C. Roll-Up with Cord Loop Lift System²

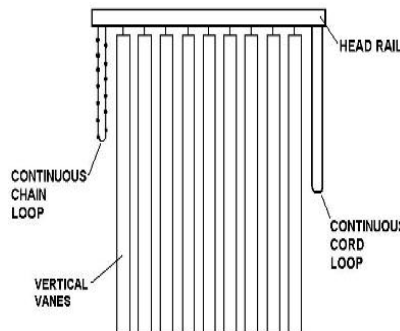


Figure 1D. Vertical Blind with Continuous Loop system

The operating pull cord was involved in 101 incidents, the inner cord loop was involved in 47 incidents, and the continuous loop was involved in 70 incidents. The most common type of neck entanglements were head insertion in loops formed by knotted or entangled cords, loops above a single tassel of a cord, loops above the stop ball of a cord, continuous loop by design, or when the pull cord was tied to another object such as an adjacent wall. The second type was entanglement from wrapping one or more long cord around the neck, (Figure 2A-B). As horizontal blinds are raised, the operating cord length increases and may reach close to the

² Image source Figure 1. B Window Covering Manufacturers Association (WCMA)

ground when the blind is in the fully raised position. In such instances, the cord may be within easy reach of a child standing on the floor.

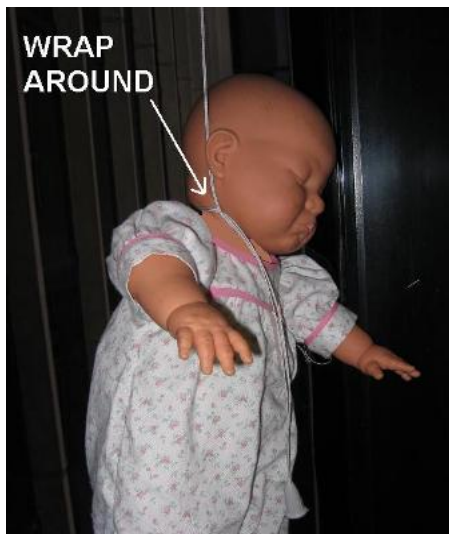


Figure 2A. Doll in a wraparound-type suspension.



Figure 2B. Doll with head through loop; insertion type.

Of the 249 incidents, 170 involved fatalities that occurred mostly in horizontal blinds (92) followed by vertical blinds (36), Roman shades (8), fabric/cloth curtains (14), cellular shades (5), roll-up shades (4), and roller shades (2). In nine of the incidents, the information was not available. Among the horizontal blind-related incidents (131), the pull cord was involved in 90 incidents and the inner cord was involved in 23. For the vertical blinds, the continuous loop accounted for 41 of the 43 incidents. For the Roman shade incidents, the inner cord accounted for 24 of the 27 incidents.

The incident records also report where the child was found and provide clues about the possible involvement of other structures, in addition to the cord, that contributed to strangulation (Table 1). The records indicate that in 285 incidents, the children gained access to the cords while standing on a bed (72), crib (50), and furniture and other objects (101) that were located next to a window with a window covering. In 33 incidents, the cord was accessed directly from the floor next to a window and in 29 incidents the location was not reported. Most children appear to have become entangled around the neck with the cord when they lost footing from some elevated surface.

Table 1. Child’s Location at Time of Incident

	In Bed	In Crib or play yard	Climbed on Furniture and other objects	On Floor	Unknown	Total
Fatal	50	45	59	10	20	184
Nonfatal	22	5	42	23	9	101
Total	72	50	101	33	29	285

Conclusions

Loose cords, ropes, and wires within reach of a child can present strangulation hazard. Infants and toddlers can put their heads in loop openings, get caught, or become entangled around the neck in long hanging cords. External compression of the neck by ligature can lead to severe anoxia/ischemic brain injuries, resulting in severe neurological disorders and death.

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TAB D: Human Factors Response to Window Coverings Petition

**T
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**United States
Consumer Product Safety Commission
Bethesda, MD 20814**

Memorandum

August 8, 2014

TO: Rana Balci-Sinha, Ph.D., CPE, Window Coverings Petition Manager,
Division of Human Factors, Directorate for Engineering Sciences

THROUGH: Bonnie B. Novak, Director,
Division of Human Factors, Directorate for Engineering Sciences

FROM: Celestine T. Kish, Sr. Engineering Psychologist,
Division of Human Factors, Directorate for Engineering Sciences

SUBJECT: Human Factors Response to Window Coverings Petition

Introduction

Parents for Window Blind Safety, Consumer Federation of America, Consumers Union, Kids in Danger, Public Citizen, U.S. Public Interest Research Group, Independent Safety Consulting, Safety Behavior Analysis, Inc., and Onder, Shelton, O’Leary & Peterson, LLC (hereinafter “petitioners”), petitioned the U.S. Consumer Product Safety Commission (CPSC) for rulemaking under the authority and process set forth in 16 CFR § 1051, *et seq.* and requested that the Commission promulgate a mandatory standard that prohibits any window covering cords where a feasible cordless alternative exists, and for those instances where a feasible cordless alternative does not exist, require that all cords be made inaccessible through the use of passive guarding devices.

Background

Children’s behaviors

In the beginning years of life, children develop rapidly in their physical and cognitive growth and parents are often surprised by their child’s capabilities. According to the Denver Developmental Screening Test II,¹ around 3 months of age, children begin to grasp objects placed in their hand, and by 6 months of age most children have actually mastered reaching for and grasping objects within their reach. Starting around 8 months of age, children are learning to stand while holding on to something. By 9 months, they are learning to pull to a stand. So, by 9 months, these children, who have learned to grasp and reach items within reach, are standing. Around 10

¹ Frankenburg, W.K., Dodds, J., Archer, P. et al.: The DENVER II Technical Manual 1990, Denver Developmental Materials, Denver, CO.

months of age, children are learning to stand without holding on. During this stage, they are very unstable. Between 12 and 18 months of age, children progress from walking, to running, to walking up stairs. Children are also learning to climb between 12 and 18 months of age. Curiosity and desire to learn and explore result in more opportunities for children to get into new, and often dangerous, predicaments.

Children between 2 and 5 years of age are becoming more independent and are given more opportunities to care for themselves. As noted in numerous parent guidance websites and according to the Denver II,² between 2 and 5 years of age, children are learning to dress themselves, prepare cereal, and play board/card games. Parents are advised to encourage children to start taking care of themselves so the children can learn independence and self-discovery.

Between 6 and 8 years of age, children are taking on more responsibilities in school and at home. They are ready for greater challenges and are creative in their play. According to CPSC's Age Determination Guidelines (2002),³ children's imaginary play is elaborate and detailed allowing them to master more specialized physical skills. They are much stronger and have greater endurance. Common games outside include hide-n-seek, cops and robbers, capture and escape, tag, and sports of all kinds. Children this age often want to focus on and develop specific skills, and are adept at a variety of activities requiring great dexterity.

In the first five years of life, children go from total dependence on others to independence. In the 6 to 8 years their independence is expected. During these times of independence and exploration children have less supervision.

Supervision

Numerous studies have been conducted on supervision of children. While all of the studies agree that children need to be supervised to prevent injuries and deaths, few agree on the level or even definition of "supervision." Studies show that parents recognize 100% supervision is not possible; therefore, parents take actions to try to limit potential hazards in and around the home. In a study conducted by Garling and Garling (1993),⁴ mothers' perceptions of risk of unintentional injury in the home were examined by rating the level of risk based on room in the home, age of the child, and level of supervision by the mother. The study found that mothers anticipated the following injuries (listed in order of highest percentage): falls, burns, hurting oneself on something, pulling something down, being caught, a cut, poisoning, and suffocation.

² Ibid.

³ Therrell, J. A., Brown, P. -S., Sutterby, J. A., & Thornton, C. D. (2002). *Age determination guidelines: Relating children's ages to toy characteristics and play behavior* (T. P. Smith, Ed.). Washington, DC: U.S. Consumer Product Safety Commission.

⁴ Garling A., Garling T. (1993) "Mothers' supervision and perception of young children's risk of unintentional injury in the home." *Journal of Pediatric Psychology*, 18, 105-114.

Based on the mothers' responses,⁵ the household rooms were ordered from the perceived least to most dangerous room: bedroom, living room, kitchen, and bathroom. In another study conducted by Peterson, et al., parents, social service workers, and medical personnel were surveyed with regard to supervision for young children. The study found clear consensus among those surveyed on appropriate supervision for young children, which was strongly linked to developmental level. For preschool (birth to 4 years), constant supervision is required, with the only exception being in rooms in the home perceived as safe (living room/bedroom) or fairly safe (bathroom/garage/kitchen).⁶ Note that the two studies contain a discrepancy with regard to rooms perceived to be safe without supervision. In one study, bathroom/garage/kitchen was viewed as "fairly safe," while in the other study these rooms were found to be "most dangerous." The discrepancy between the studies is likely related to the scope of the studies. The Peterson, et al. study accounted for other areas in the children's environments, such as streets, yards, neighborhoods, and cars, while the Garling & Garling study only looked at rooms in the home. Overwhelmingly, these two studies demonstrate that children's bedrooms and living or play rooms are considered by caregivers to be the safest rooms in the home.

Caregiver awareness of the hazard

As reported in "*Recall Effectiveness Research: A review and summary of the literature on consumer motivation and behavior*" (2003),⁷ hazard perception has been found to be a predictor of compliance with warning labels. Friedmann (1988)⁸ and Otsubo (1988)⁹ both found that increased hazard perception was associated with increased warning label compliance. Wogalter, Desaulniers, and Brelsford (1986)¹⁰ found that the level of precaution taken by consumers was highly correlated to product hazardousness. However, research also demonstrates that the more familiar people are with a product, the lower the product's perceived hazardousness and the lower the perceived need for warnings.¹¹ In addition, when products are judged to be more familiar, easier to use, safer, cheaper, or are used more frequently, people report they are less likely to read labels. This familiarity with one product can influence expectations about similar products.¹² Consumers interact with window coverings in their homes on a daily basis. Consumers' familiarity with window coverings is high and consumers' interaction with these

⁵ Ibid.

⁶ Peterson, L., Ewigman, B., and Kivlahan, C., (1993) "Judgments Regarding Appropriate Child Supervision to Prevent Injury: The Role of Environmental Risk and Child Age." *Child Development*, 64, 934-950.

⁷ *Recall Effectiveness Research: A review and summary of the literature on consumer motivation and behavior*, (2003) Prepared for the U.S. Consumer Product Safety Commission CPSC Order No. CPSC-F-02-1391, Contract No. GS23F9780H by XL ASSOCIATES and Heiden Associates.

⁸ Friedmann, Keyla, *The Effect of Adding Symbols to Written Warning Labels on User Behavior and Recall*, Human Factors, 1988, 30 (4): 507-515.

⁹ Otsubo, Shirley M., *A Behavioral Study of Warning Labels for Consumer Products: Perceived Danger and Use of Pictographs*, Proceedings of the Human Factors Society 32nd Annual Meeting, 1988, pp. 536-540.

¹⁰ Wogalter, Michael S.; Desaulniers, David R.; and Brelsford, Jr., John W., *Perceptions of Consumer Products: Hazardousness and Warning Expectations*, Proceedings of the Human Factors Society 30th Annual Meeting, 1986, pp. 1197-1200.

¹¹ Vredenburgh, A.G., & Zackowitz, I.B., (2006). Expectations. In M. S. Wogalter (Ed.), *Handbook of warnings* (pp. 345-354). Mahwah, NJ: Lawrence Erlbaum Associates.

¹² Ibid.

products is almost automatic. Riley (2006)¹³ and Wogalter & Leonard (1999)¹⁴ show a strong finding in the warnings literature that increased familiarity and experience with a product decreases the likelihood that consumers will look for and read the product's warnings.

Effectiveness of warning labels

Safety and warnings literature consistently describe a classic hierarchy of approaches that one should follow to control hazards, based primarily on the effectiveness of each approach in eliminating or reducing exposure to the hazard. Warnings are viewed universally as less effective than designing a hazard out of the product or guarding the consumer from a hazard; therefore, the use of warnings is lower in the hazard control hierarchy than these other two approaches (Vredenburg & Zackowitz, 2005¹⁵; Wogalter, 2006¹⁶; Wogalter & Laughery, 2005¹⁷). Warnings are less effective primarily because they do not preclude consumer exposure to the hazard, and, instead depend on persuading consumers to alter their behavior in some way to avoid the hazard. Thus, one should view warnings as "last resort" measures that supplement, rather than replace, redesign, or guard against the hazard, unless these higher level hazard-control efforts are not feasible.

Discussion

CPSC staff is aware of 285 fatal and nonfatal strangulations involving window covering cords between 1996 and 2012. In the cases where the location of the incident was known, bedroom, living room, family room, TV room, or sun room were identified in the majority of cases. As discussed, these are the very rooms that research demonstrates that caregivers perceive as being the "safest" rooms in the home. These are the rooms where parents believe they can leave their young child alone, unsupervised for a few minutes or longer. One study found that the "mean amount of time parents were willing to leave their child where they could neither see nor hear the child in outdoor situations and high-risk indoor situations was ≤ 2 minutes per scenario."¹⁸ So, it is very likely that parents are willing to leave their child unsupervised for longer than 2 minutes

¹³ Riley, D. M. (2006). Beliefs, attitudes, and motivation. In M. S. Wogalter (Ed.), *Handbook of warnings* (pp. 289–300). Mahwah, NJ: Lawrence Erlbaum Associates.

¹⁴ Wogalter, M. S., & Leonard, S. D. (1999). Attention capture and maintenance. In M. S. Wogalter, D. M. DeJoy, & K. R. Laughery (Eds.), *Warnings and risk communication* (pp. 123–148). Philadelphia: Taylor & Francis.

¹⁵ Vredenburg, A. G., & Zackowitz, I. B. (2005). Human factors issues to be considered by product liability experts. In Y. I. Noy & W. Karwowski (Eds.), *Handbook of human factors in litigation* (Chapter 26). Boca Raton, FL: CRC Press.

¹⁶ Wogalter, M. S. (2006). Purposes and scope of warnings. In M. S. Wogalter (Ed.), *Handbook of warnings* (pp. 3–9). Mahwah, NJ: Lawrence Erlbaum Associates.

¹⁷ Wogalter, M. S., & Laughery, K. R. (2005). Effectiveness of consumer product warnings: Design and forensic considerations. In Y. I. Noy & W. Karwowski (Eds.), *Handbook of human factors in litigation* (Chapter 31). Boca Raton, FL: CRC Press.

¹⁸ Garzon, D.L., Lee, Dr. R.K., and Homan, S.M. (2007) "There's No Place Like Home: A Preliminary Study of Toddler Unintentional Injury." *Journal of Pediatric Nursing*, 22, 368 – 375.

in rooms that they consider “safe.” CPSC Directorate for Health Sciences staff reports¹⁹ that a child can strangle in less than three minutes.

Young children are curious and explore to learn and play. As they acquire new skills (sitting, standing, walking, running, climbing, *etc.*) they want to use and perfect those skills. The incident data show that children climbed on beds, chairs, tables, and other furniture to interact with the window coverings. Some of the reported reasons for the interaction were imitating superheroes, such as paratroopers and Spiderman, in pretend play, and using the beaded chains as necklaces.

In some cases, parents had seen the warnings for window coverings, and the parents were aware of the hazards with hanging cords and continuous loops. Parents used cleats, tied the cords together, or used other means to keep the cords out of reach of the child, but the child was still able to access the cords and strangle. In other cases, however, parents did not have any safety devices in use. The parents may have had a false sense of security because their child had not shown any interest in the window covering cords; so, the parents may have assumed the cords were not a problem and safety devices such as tie-down devices or cleats were not needed.²⁰

Research shows the rate of compliance with safety devices is lower when the cost of compliance (e.g., effort and time) is higher.²¹ The more steps, or increasingly more difficult steps, that are required to install and use these devices, the less likely consumers will comply. For example, to install a cleat, the consumer will need a screwdriver or maybe even a drill to make a permanent hole in the wall or window frame. Once the cleat is installed, the consumer must wind, unwind, and wind the cords again, each time the window coverings need to be raised and lowered. The more time the consumer uses the cleat with the window coverings with no observed interaction between the child and the window coverings, the “safer” the consumer feels. If the consumer stops using the cleat on occasions, and the child does not interact with the cords, then the consumer starts to believe the cleat is not really needed because the child is not “playing” with the cords anyway.

As the research indicates, a warning label alone does not remove the hazard; it only alerts the reader of the warning label to the hazard. In the case of young children and window coverings, children are not reading the warning labels, they are playing and exploring without any knowledge of the dangers. Parents may become habituated to seeing the warning label on a product that they interact with daily and perceive as safe, and stop reading it. Consumers that are exposed to warning labels on products that they interact with often can likely remember that a product has a warning label, but not exactly what the label says.

¹⁹ Memorandum from Suad Wanna-Nakamura to Rana Balci-Sinha, “Health Sciences Assessment for Window Coverings Petition (CP 13-2)” US Consumer Product Safety Commission, Bethesda, MD.

²⁰ *Recall Effectiveness Research: A review and summary of the literature on consumer motivation and behavior*, (2003) Prepared for the U.S. Consumer Product Safety Commission CPSC Order No. CPSC-F-02-1391, Contract No. GS23F9780H by XL ASSOCIATES and Heiden Associates.

²¹ DeJoy, D.M., (1999). Attitudes and Beliefs. In M. S. Wogalter, D. M. DeJoy, & K. R. Laughery (Eds.), *Warnings and risk communication* (pp. 189–219). Philadelphia: Taylor & Francis.

Conclusion

CPSC Division of Human Factors staff has reviewed the incident and fatality data for window covering cords, child development stages and milestones, and literature and research on warnings and product design. Based on this information, corded window coverings will always present a hazard to young children as long as cords and loops are part of the design and are hazardous. Children cannot be supervised 100% of the time. As diligent as parents try to be with safety devices on window blinds, children will continue to explore their environment and will be exposed to hazardous window covering cords.

TAB E: Mechanical Engineering Response to Window Coverings Petition

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**United States
Consumer Product Safety Commission
Bethesda, MD 20814**

Memorandum

August 11, 2014

To: Rana Balci-Sinha, Ph.D., CPE, Project Manager, Window Coverings Petition
Division of Human Factors, Directorate for Engineering Sciences

Through: Joel Recht, Ph.D.
Associate Executive Director, Directorate for Engineering Sciences

Mark Kumagai, Director,
Division of Mechanical Engineering, Directorate for Engineering Sciences

From: Kevin Lee, Mechanical Engineer,
Division of Mechanical Engineering, Directorate for Engineering Sciences

Subject: Mechanical Engineering Response to Window Coverings Petition

I. Introduction

Parents for Window Blind Safety, Consumer Federation of America, Consumers Union, Kids in Danger, Public Citizen, U.S. Public Interest Research Group, Independent Safety Consulting, Safety Behavior Analysis, Inc., and Onder, Shelton, O'Leary & Peterson, LLC (petitioners), filed a petition requesting that the Consumer Product Safety Commission (CPSC) promulgate a mandatory standard that: (a) prohibits any window covering cords where a feasible cordless alternative exists, and (b) where a feasible cordless alternative does not exist, require that all cords be made inaccessible through the use of passive guarding devices. This memorandum provides information on:

- the ANSI/WCMA A100.1-2014, *American National Standard for Safety of Corded Window Covering Products* (ANSI/WCMA standard or voluntary standard),
- whether the ANSI/WCMA standard adequately addresses the risk of injury associated with window covering cords,
- existing international standards for window coverings, and
- the available technologies to address the hazards associated with window covering cords.

II. ANSI/WCMA Voluntary Standard

In 1994, CPSC staff was aware of approximately 140 deaths (that had occurred since 1981) associated with the operating cords of window covering products¹. At that time, the Window Covering Manufacturers Association (WCMA) agreed to work with CPSC staff to develop a voluntary standard for window covering safety under the American National Standard Institute (ANSI) standards process. This standard was published in 1996 and was designated as ANSI/WCMA A100.1-1996 *American National Standard for Safety of Corded Window Covering Products*. The 1996 ANSI/WCMA standard included:

- requirements to minimize cord loops,
- requirements to provide a tension device for continuous loops and chains,
- requirements for Labeling and Operational Tags.

The standard has been revised six times since 1996. In 2002, the standard was revised to include provisions to address strangulation in the inner cord. In 2009 and 2010, additional product requirements were added to address strangulation in Roman style shades and roll-up style shades. (See Appendix in this memo for the detailed history of the ANSI/WCMA standard). The current 2014 version of the ANSI/WCMA standard applies to all interior corded window-covering products. The items covered include, but are not limited to, cellular shades, horizontal blinds, pleated shades, roll-up-style blinds, roller shades, Roman style shades, traverse rods, vertical blinds, and horizontal blinds.

Product Requirements

Section 4.3 of the standard specifies that window coverings with an exposed operating cord or continuous loop operating system shall meet **one** of the following requirements:

- 4.3.1: Product shall have no accessible operating cords
- 4.3.2: Product shall have one or more separate operating cords
- 4.3.3: Product shall contain a cord release device in the loop or head rail
- 4.3.4: Product shall contain a permanently attached cord retraction device
- 4.3.5: Product shall contain a cord shear device
- 4.3.6: Product shall contain a cord shroud device
- 4.3.7: Product shall contain a cord tension device
- 4.3.8: Product shall contain a loop cord or bead chain-restraining device
- 4.3.9: If the product requires a cord connector, i.e. stop ball, the exposed loop above the cord connector shall be limited to less than 3 in below the bottom of the cord lock when the bottom rail is fully lowered.

Thus, the voluntary standard allows for separate operating cords, cord release devices, cord retractors, cord shrouds, cord tensioners, and loop/bead chain restraining device.

¹ <http://www.cpsc.gov/en/Recalls/1995/CPSC-And-Industry-Redesign-Products-To-Save-Lives/>

Section 4.4 of the standard specifies that window coverings containing inner cords shall meet **one** of the following requirements:

- 4.4.1: Product shall have no inner cords
- 4.4.2: Product shall have no accessible inner cords
- 4.4.3: Products that have accessible inner cords shall incorporate an inner cord stop device or cord connector positioned 3 inches or less below head rail when bottom rail is fully lowered.
- 4.4.4: Product shall have an inner cord shroud.
- 4.4.5: If the product is a roll up style, blind, accessible inner cords shall have a cord release device.

Thus, the voluntary standard allows for inner cord with cord stops positioned 3 inches or less below the head rail when the bottom rail is fully lowered, inner cords with a cord shroud, inner cords with a cord release, and inner cords which are not accessible and hazardous determined using a probe.

III. Adequacy of ANSI/WCMA A100.1-2014 Requirements to Address Incident/Hazards

CPSC's Directorate for Epidemiology reviewed 285 incidents related to window coverings, reported to have occurred between 1996 through 2012.² CPSC completed 249 in-depth investigations of the 285 total reported incidents. This section summarizes the staff's engineering assessment that ANSI/WCMA standard addresses the hazards in 25.7% (64/249) of the investigated incidents, while hazards reported in 57% (141/249) of the investigated incidents are not addressed in the ANSI/WCMA standard. Insufficient information is available to draw any conclusions for the remaining 17.67% (44/249) investigated incidents. Engineering Sciences staff assesses that the voluntary standard is inadequate because 57% of the incidents which occurred could still occur with pull cords and continuous loops on window coverings which meet the current version of the ANSI/WCMA standard. These numbers are determined in detail for each of 13 hazard patterns below (Table 1). The following is a breakdown of the number of investigated incidents by window covering type identified in incident reports in order of frequency:

- Horizontal blinds (53%),
- Vertical (17%),
- Roman (11%),
- Curtain/drapery (6%),
- Cellular (4%),
- Roll-up (2%),

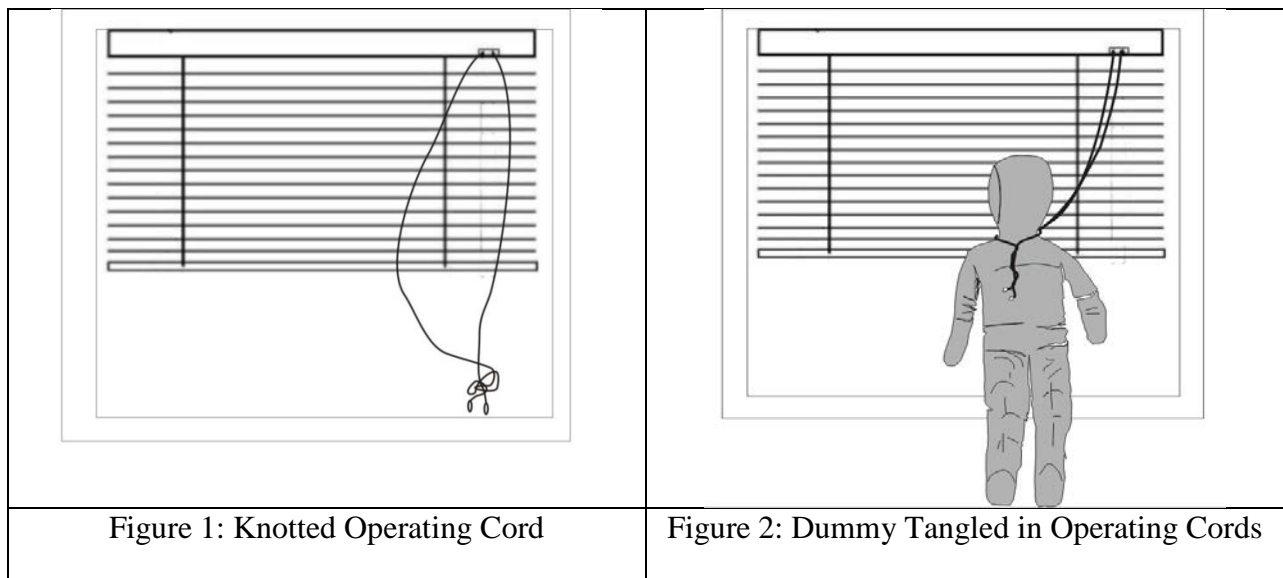
² CPSC databases: the Injury or Potential Injury Incident file (IPII), the Death Certificates file (DTHS), the In-Depth Investigation file (INDP), the National Electronic Injury Surveillance System (NEISS).

- Roller (2%),
- Unknown (5%).

Table 1: Hazard Scenarios

Hazard Scenario	Number of Incidents	Investigated IDIs (%)
1) <i>Entanglement from pull cords</i>	69	27.7
	14	5.6
Entanglement in a loop created by knotted or tangled pull cord	38	15.3
Entanglement in one or more long cords, which the child wrapped around the neck	25	10.0
Entanglement in a loop above a single tassel of the cord	14	5.6
Entanglement in a loop above the stop ball of the cord	4	1.6
Entanglement in a loop created when pull-cord was tied to another object, usually on the wall	2	0.8
2) <i>Entanglement in a continuous loop cord</i>	70	28.1
3) <i>Entanglement from inner cords</i>	47	18.9
4) <i>Entanglement in the lifting loop of a roll-up shade</i>	3	1.2
5) <i>Entanglement in the tilt cords</i>	2	0.8
6) <i>Unknown</i>	44	17.7

Hazard 1. Loops created by knotted or tangled cord. This hazard scenario occurs when cords are tied up or become tangled to form a loop as shown in Figures 1 and 2. Around 15% (38/249) of the investigated incidents are associated with this hazard pattern.



Requirements in the ANSI/WCMA Standard to Address Hazard 1

The CPSC staff's In-depth Investigation (IDI) review showed that 24 of the window coverings associated with Hazard 1 – *Loops created by knotted or tangled cord* appeared to meet section 4.3.2 of the ANSI/WCMA standard: *The product shall have one or more separate operating cords*. Section 4.3.2 of the WCMA standard was intended to separate multiple operating cords to prevent the presence of an accessible loop. Individual free hanging cords are a common method used to meet section 4.3.2 as shown in Figure 1 of the briefing memo's Appendix. Section 4.3.2 of the WCMA standard does not, however, prevent the hazard created when multiple operating cords become knotted or tangled together to form an accessible loop. "Parents can tie the cords together ... to keep the cords out of reach of the child" as reported in IDI 030418CCN0479:

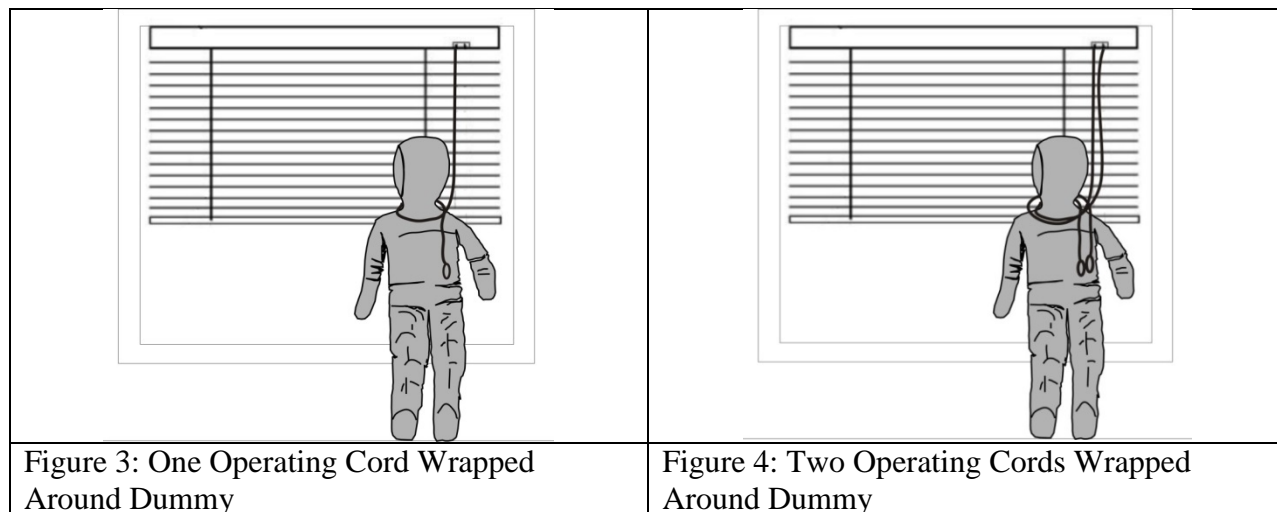
"The mother responded that she did not recall that the pull cord had been that significantly knotted prior to the incident, but did relate that she had put a knot in the pull cord to stop the blind from descending past the window sill."

Daily use of cords can cause the cords to tangle amongst themselves as reported in IDI 050426CCC3334:

"The product's cords, which measure approximately sixty-eight inches (from head rail to tassels), consistently became entangled."

Staff believes that the ANSI/WCMA standard does not effectively address Hazard 1 - *Entanglement in a loop created by knotted or tangled cord* because the standard allows accessible free hanging cords that can become knotted or tangled to form a hazardous loop as seen in the incident data.

Hazard 2. One or more long cords which the child wrapped around the neck. This hazard scenario occurs when a child wraps one or more cords around his/her neck as shown in Figures 3 and 4. Approximately 10% (25/249) of all investigated incidents are associated with this hazard pattern.



Requirements in the ANSI/WCMA Standard to Address Hazard 2

The CPSC staff's IDI review showed that several of the window coverings associated with Hazard 2 - *Entanglement in one or more long cords, which the child wrapped around the neck*, appeared to meet one of the following sections of the ANSI/WCMA standard:

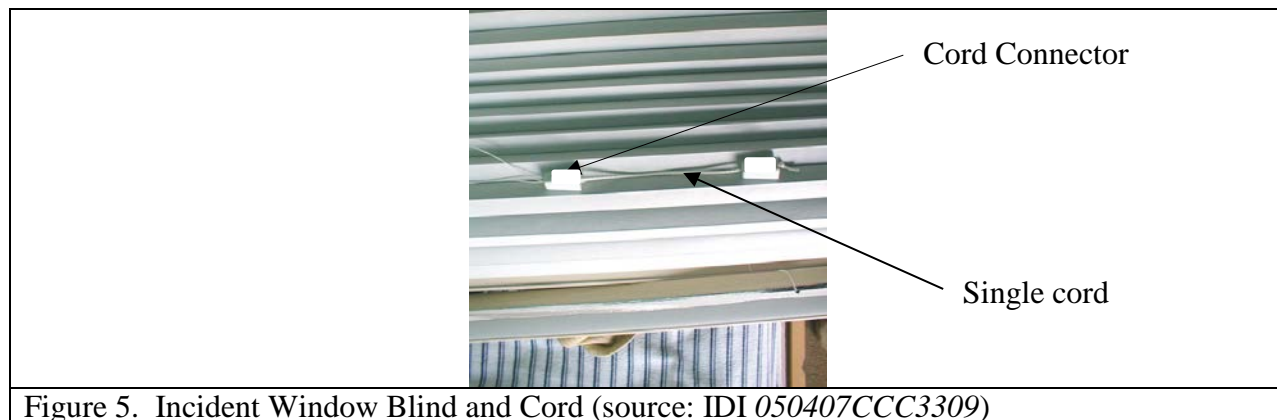
4.3.2 The product shall have one or more separate operating cords.

4.3.9 The product shall, if it requires a cord connector, limit the exposed loop above the cord connector to less than 3 inches below the bottom of the cord lock when bottom rail is in the fully lowered position.

Section 4.3.2 of the voluntary standard allows products to have accessible free hanging operating cords as shown in Figure 1. Section 4.3.9 of the voluntary standard allows products to have accessible free hanging operating cords and an exposed loop as shown in Figure 8. Even a single accessible operating cord can expose a child to this hazard by allowing the child to wrap a long cord around their neck as reported in IDI 050407CCC3309:

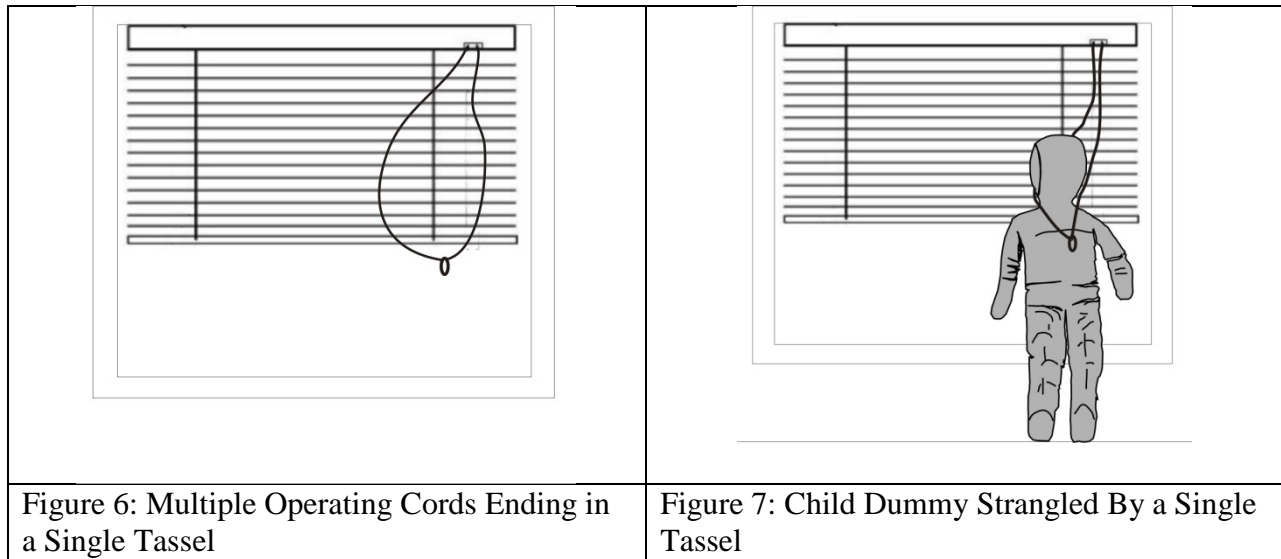
“A four year old boy moved a small plastic table over near the window, climbed upon the table and reached up and removed the shortened pull cord for the window covering from the "safety" cleat. He pulled the cord out and wrapped it around his neck. He then jumped off of the table. The cord broke and he fell to the floor. His parents were able to remove the cord from his neck. The boy recovered from his injuries.”

Figure 5 shows the incident blind and the cord and cord connector that meets section 4.3.9 of the ANSI/WCMA A100.1-2012 standard.



Engineering staff believes that the ANSI/WCMA standard does not effectively address Hazard 2 - *One or more long cords which the child wrapped around the neck* because accessible, free hanging cords can be wrapped around the neck of a child as incident data demonstrates.

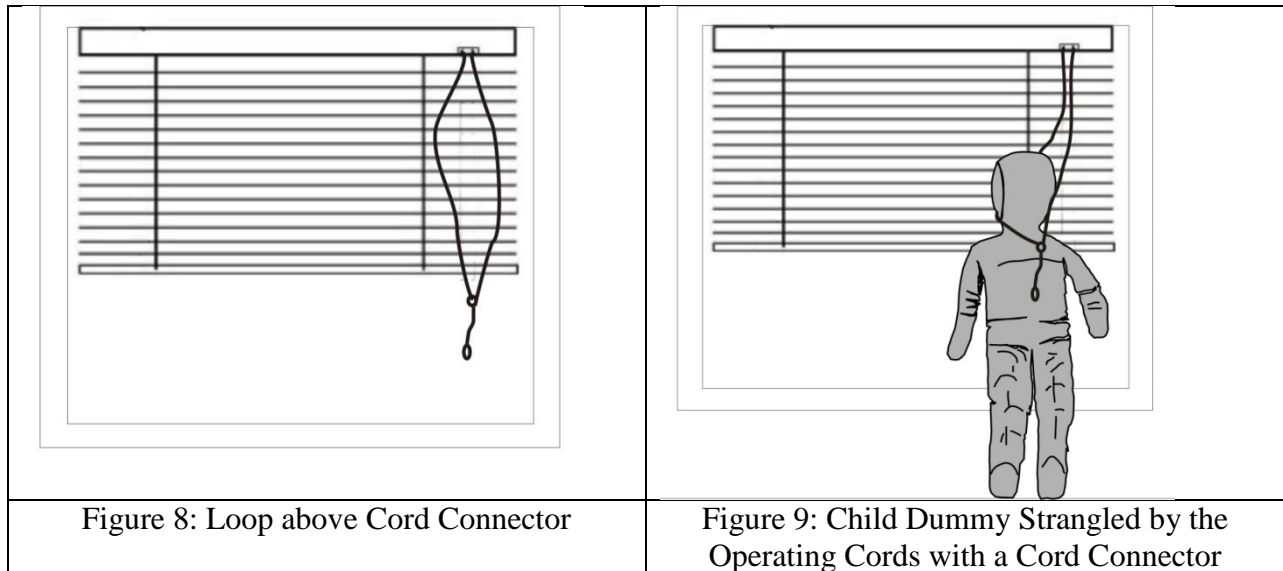
Hazard 3. Loop above a single tassel of the cord. This hazard occurs when multiple cords are connected to a single tassel forming a loop as shown in Figures 6 and 7. Approximately 6% (14/249) of all investigated incidents are associated with this hazard pattern.



Requirements in the ANSI/WCMA Standard to Address Hazard 3.

Window coverings with an exposed loop created by multiple cords connected by a single tassel do not meet the requirements specified in sections 4.3.2 and 4.3.3 of the ANSI/WCMA standard. The CPSC staff’s IDI review showed that the window coverings associated with this hazard scenario appeared to be older products that were manufactured before the 1996 standard. Engineering staff believes that the current ANSI/WCMA standard effectively addresses the exposed loop created by multiple cords connected by a single tassel hazard by requiring either separate tassels on each cord or breakaway tassel, however this separate tassel configuration presents a wraparound (hazard #1) or knotted loop (hazard#2) strangulation hazards as described above .

Hazard 4. Loop above the stop ball of the cord. This hazard occurs in a window covering where multiple cords are connected together by a cord connector or stop ball to form a loop as shown in Figures 8 and 9. A child can still access the loop created by the cord connector/stop ball if window covering is raised as shown in Figure 8. Approximately 2% (4/249) of all investigated incidents are associated with this hazard pattern.



Requirements in the ANSI/WCMA Standard to Address Hazard 4

The CPSC staff’s IDI review of the four incidents showed that the window coverings associated with Hazard 4- *Loop above the stop ball of the cord* appeared to meet section 4.3.9 of the ANSI/WCMA standard: *The cord connector shall limit the exposed loop above the cord connector to less than 3 inches below the bottom of the cord lock when the bottom rail is fully lowered.* Section 4.3.9 allows for an accessible loop when the bottom rail is fully raised. The cord connector or stop ball connects multiple pull cords creating an accessible hazardous loop as reported in IDI 081112HWE7844 and Figure 10:

“She observed the victim hanging in an upright position by the window blind’s cords. The victim’s head was inside one of the loops formed between the inner cord stop and the head rail above it.”

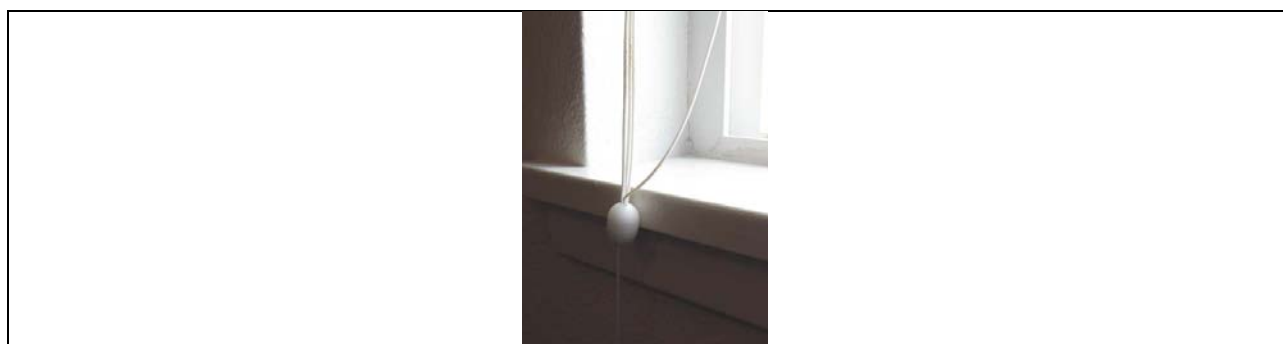
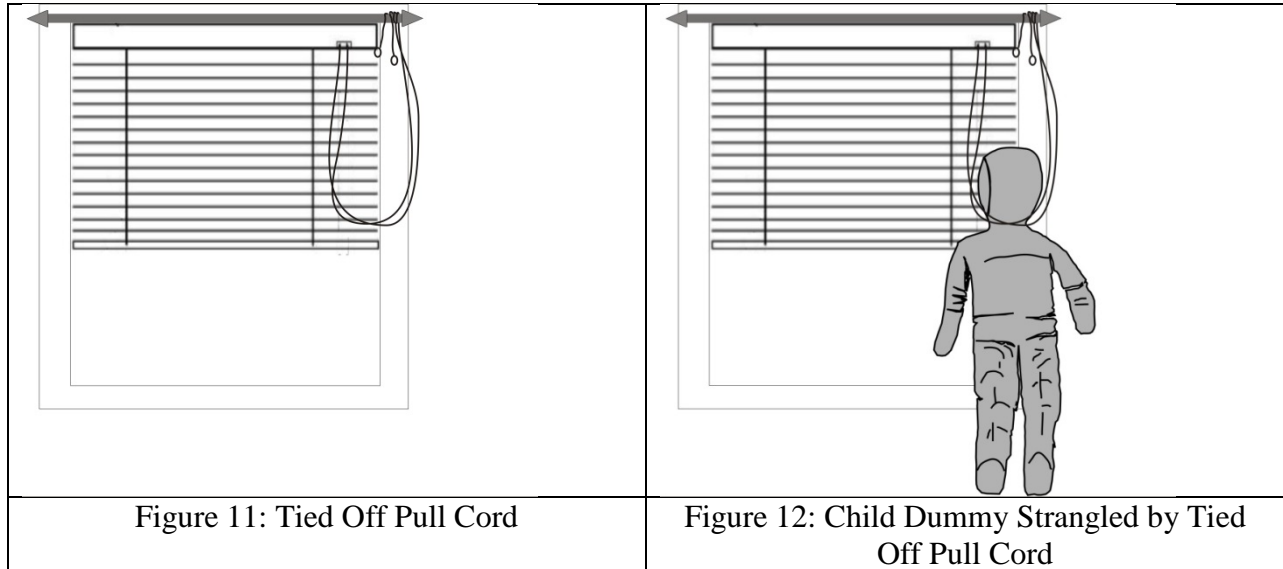


Figure 10: Stopball/ Cord Connector (source: IDI 081112HWE784)

Engineering staff believes that the ANSI/WCMA standard does not effectively address Hazard 4 – *Loop above the stop ball of the cord* because a product that meets the standard could still contain an accessible hazardous loop when the bottom rail is raised.

Hazard 5. Loop created when pull-cord was tied to another object, usually on the wall. This hazard occurs when a pull cord is tied to another object. Children can strangle from anchored pull cord as shown in Figures 11 and 12. Two of the 249 (1%) investigated incidents are associated with this hazard pattern.



Requirements in the ANSI/WCMA Standard to Address Hazard 5

The CPSC staff’s review of the two IDIs showed that the window coverings associated with this hazard scenario appeared to meet section 4.3.2 of the voluntary standard: *Product shall have one or more separate operating cords.* The ANSI/WCMA standard does not limit, prevent, or specify requirements for pull cords that are tied to other objects. Section 4.3.2 exposes a potentially accessible loop that is created when the pull cords are tied off to another object on the wall. This accessible loop allows the child to insert their head through the loop as reported in IDI 030402CCC1421:

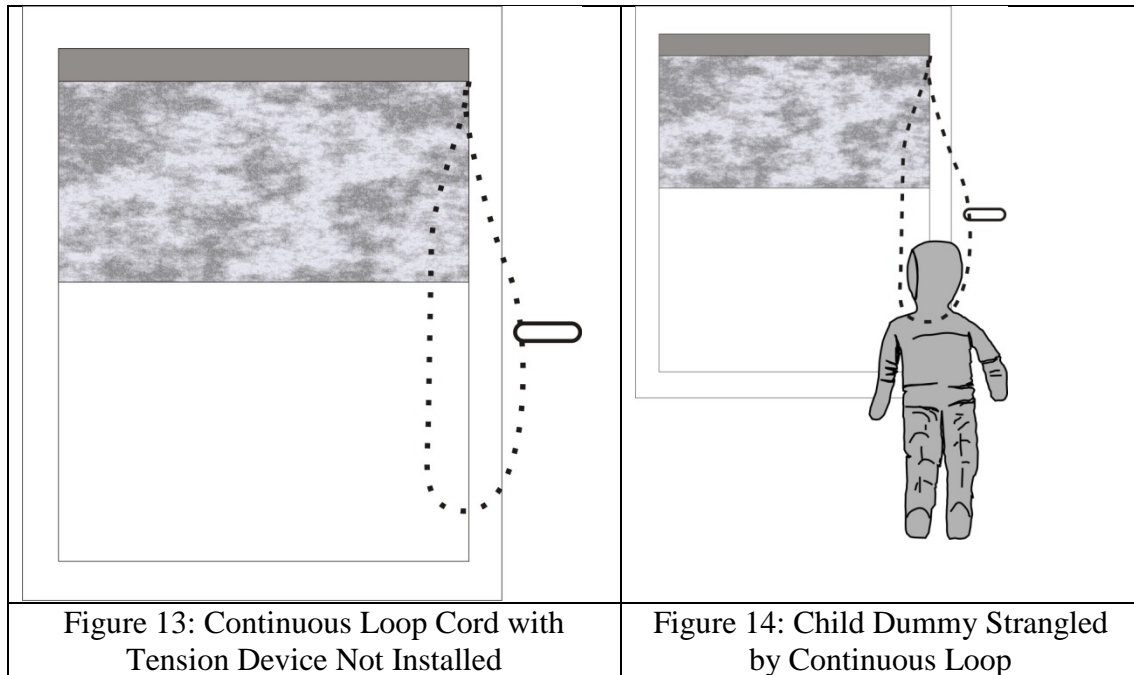
“As the victim fell to the floor, the mini-blind’s pull cord, tied at its end to the curtain rod, caught around his neck. The victim strangled hanging by his neck.”

Engineering staff believes that consumers may attempt to keep the long cords away from children by tying the cords on a curtain rod or other means.³ Therefore staff believes the ANSI/WCMA A100.1-2014 standard does not effectively address Hazard 5 – *Loop created when pull-cord was tied to another object, usually on the wall.*

³ Memorandum from Celestine T. Kish to Rana Balci-Sinha, “Human Factors Response to Window Coverings Petition” U.S. Consumer Product Safety Commission, Bethesda, MD.

Hazard 6. Unknown manner (involving a pull cord). In 7% of the investigated incidents (18/249), information was insufficient to determine the hazard pattern associated with the pull cord involved in the incident.

Hazard 7. Entanglement in a continuous loop cord. This hazard occurs when the child inserts their head into the freestanding loop of a continuous cord with the tension device broken or not installed as seen in figures 13 and 14. Approximately 28% (70/249) of all investigated incidents are associated with this hazard pattern.



Engineering staff was able to defeat safety feature of the tension device by sliding the attachment screw collar while pulling the tension downward on the cord as shown in Figures 17 and 18. With the tension device away from the head rail, the shade can be fully opened or closed. Engineering staff is concerned that this type of tension device, that meets the ANSI/WCMA standard, may not effectively discourage improper installation or use of the tension device.



Requirements in the ANSI/WCMA Standard to Address Hazard 7

Section 4.3.7 of the ANSI/WCMA voluntary standard states, “*The product shall contain a cord tension device that will at least partially prevent the window covering from functioning for light control or privacy when not installed.*” CPSC staff’s IDI review of 70 incidents associated with entanglement in a continuous loop cord showed that the majority of the incident units did not have a tension device installed on the continuous loop. In contrast, staff did not have any reports of incidents with the tension device properly installed and intact. Consumers may not want to install the tension device because it typically requires drilling and screwing into their walls. “The more steps, or increasingly more difficult steps, that are required to install and use these

devices, the less likely consumers will comply.”⁴ A tension device that is not installed correctly can form an exposed free hanging hazardous loop as reported in IDI 050804CCC1029:

“The victim’s parents did not change the previous owner’s window blinds and window treatments that were covering the windows. The horizontal blinds in the victim’s upstairs bedroom had a continuous loop cord with an attached, plastic universal cord tensioner. However, the plastic universal cord tensioner piece was hanging freely down from the cord. The bottom of the plastic device was not attached to the wall or anything else in the victim’s room. The three year old male victim was found by his mother unresponsive and hanging from a single outer cord (loop part) of a window blind.”

Engineering staff examined tension devices that are currently in the market and that meet Section 4.3.7 of the ANSI/WCMA standard. Section 4.3.7 of the ANSI/WCMA standard requires that window covering only partially operate if the tension device is not installed. This partial limitation on operability is typically accomplished by having the tension device clamp onto the operating cord if the tension device is not installed onto the wall. As the operating cord is pulled, the tension device interferes with the head rail as shown in Figure 15. If the tension device is properly screwed into the wall and properly tensioned, the cord clamp is not engaged, allowing the operating cord to move through the tension device as shown in Figure 16.

	
<p>Figure 15: Uninstalled Tension Device Interfering with Head Rail</p>	<p>Figure 16: Fully Functional Window Covering with Installed Tension Device</p>

⁴ Ibid.



Figure 17: Sliding the Tension Device's Screw Collar to Unlock



Figure 18: Sliding the Tension Device

Staff believes that the ANSI/WCMA standard does not effectively address Hazard 7- *Entanglement in a continuous loop cord* because the standard allows accessible free hanging continuous loop cords to remain easily functional and operable when the tension device is not installed. A strangulation hazard exists because hazardous loops are not effectively addressed by the standard when the window covering continues to be operational, despite the fact that the tension device is not properly installed.

Hazard 8. Entanglement from exposed inner cords with no cord stops. This hazard occurs when the child pulls the inner cords of a product without inner cord stops installed and inserts their head into the inner cord loop as seen in Figures 19 and 20. Approximately 9% (22/249) of all investigated incidents are associated with this hazard pattern.

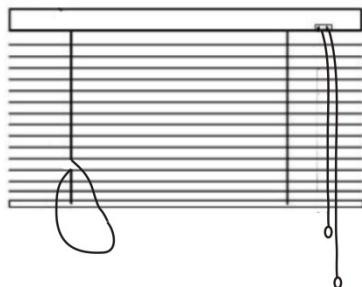


Figure 19: Exposed Inner Cords with no Cord Stops

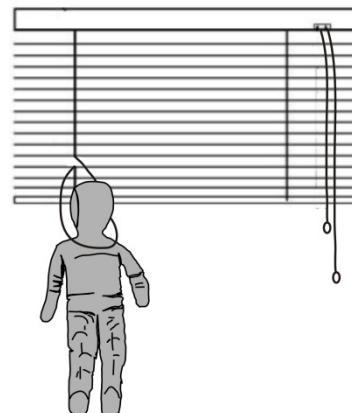
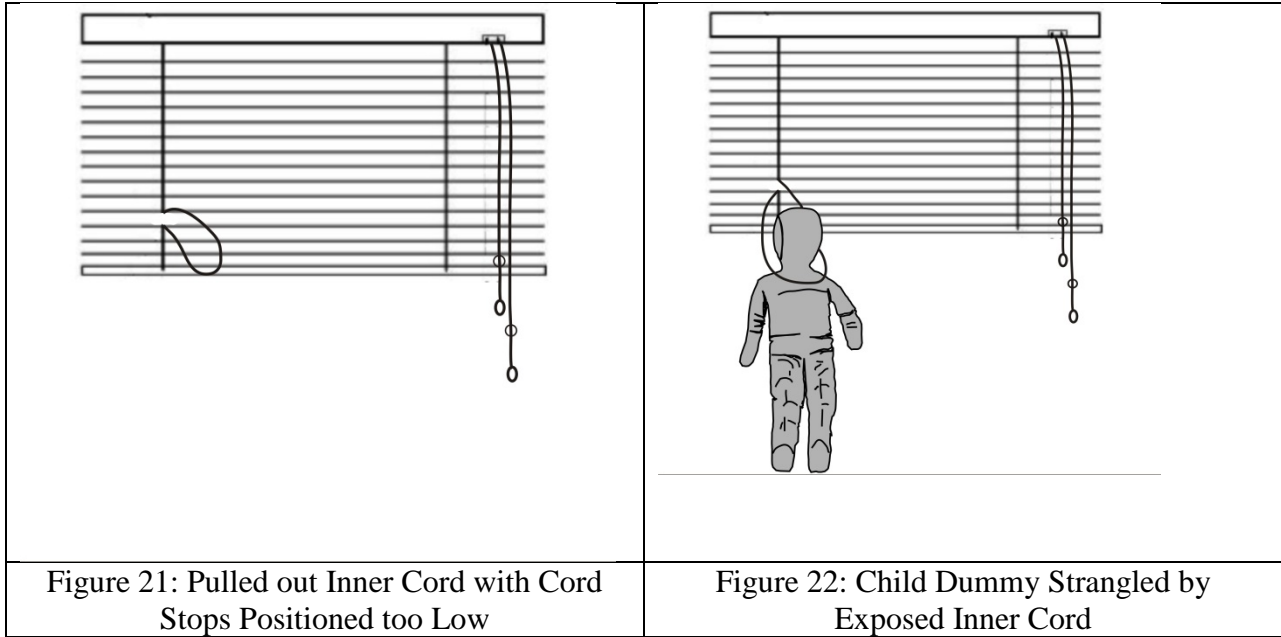


Figure 20: Child Dummy Strangled by Exposed Inner Cord with no Cord Stops

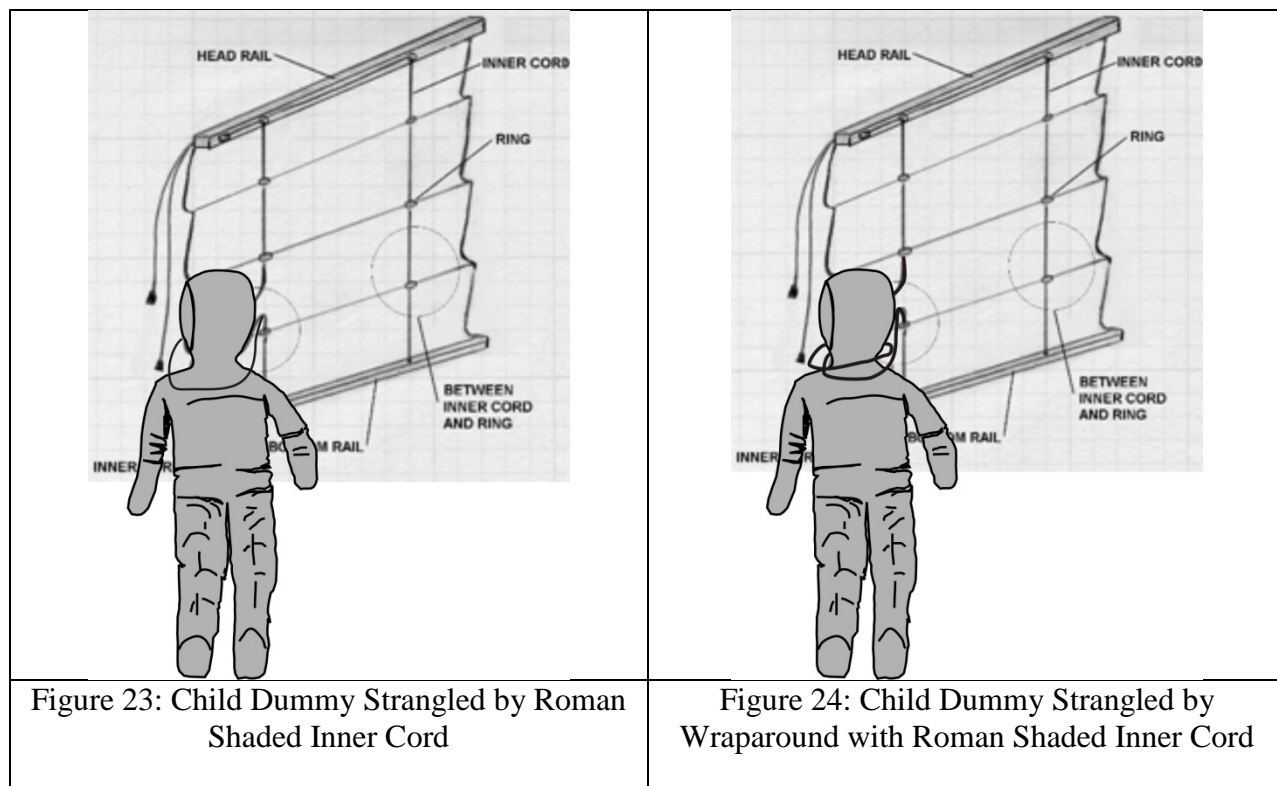
Hazard 9. Entanglement from exposed inner cords when the cord stops are positioned too low. This hazard occurs when the child pulls the inner cords of a product with inner cord stops placed more than 3 inches from the head rail and inserts their head into the inner cord loop as shown in Figures 21 and 22. Staff’s IDI review resulted in one incident associated with the cord stops positioned too low.



Requirements in the ANSI/WCMA to Address Hazard 8 and 9

The CPSC staff’s IDI review showed that the incident window coverings associated with these two hazard scenarios did not meet current requirements in the voluntary standard because they did not appear to have the inner cord stops installed or inner cord stops were positioned too low. CPSC’s Engineering Science’s staff believes that the performance requirements in section 4.4 of the ANSI/WCMA standard effectively addresses the hazards associated with the inner cords. The CPSC staff’s IDI review showed that the window coverings associated with the inner cord hazard scenario appeared to be older products that were manufactured before the 2002 standard was published. Engineering staff believes that had the cord stops involved in the incident scenarios met the voluntary standard, they would not likely have occurred. Accordingly, the ANSI/WCMA standard adequately prevents hazards presented by inner cords.

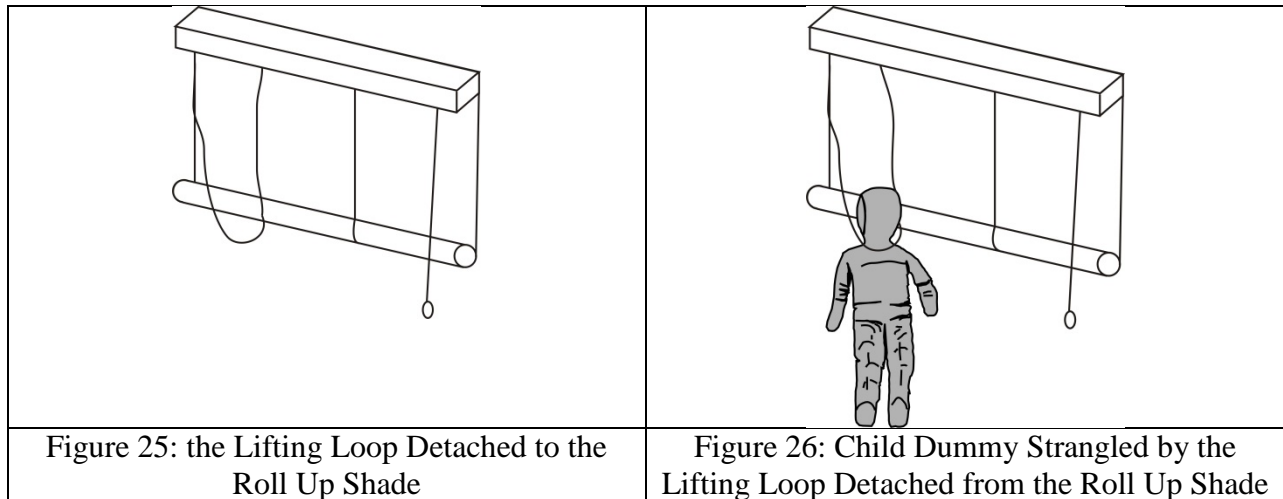
Hazard 10. Entanglement in the Roman shade inner cord. This hazard occurs when the child inserts his or her head in the loop created when the child pulls the inner cord of a Roman shade or inserts his or her head into the opening between the inner cord and shade material or when the child wraps the inner cord around his or her neck as shown in Figures 23 and 24. Around 10% (24/249) of all investigated incidents are associated with this hazard pattern.



Requirements in the ANSI/WCMA to Address Hazard 10

The CPSC staff's IDI review showed that the window coverings associated with the Roman shade inner cord hazard did not meet current requirements in the ANSI/WCMA standard. Section 4.4 of the ANSI/WCMA standard requires products to have either (1) no inner cords, (2) no accessible inner cords, (3) accessible cords that pass the Hazardous Loop Test, or (4) have shrouded inner cords that pass the Hazardous Loop Test. These requirements prevent hazardous inner cords that may allow child's head to be inserted to the loop. Engineering staff believes that the Roman shade inner cord hazard is effectively addressed in ANSI/WCMA standard.

Hazard 11. Entanglement in the lifting loop. This hazard is specific to roll up style blinds and occurs when the child inserts their head or arm through the lifting loop. This can occur while the loop slides off the shades as shown in Figures 25 and 26. Around 1% (3/249) of all investigated incidents was associated with this hazard pattern.



Requirements in the ANSI/WCMA to Address Hazard 11

The CPSC staff’s IDI review showed that the window coverings associated with entanglement in the lifting loop appeared to be older products that were manufactured before the 2014 standard was published and did not appear to meet the 2014 ANSI/WCMA standard. Section 4.4.5 of the ANSI/WCMA standard requires that products have an inner cord release device. Section 6.1 of the standard requires a performance test, stating that the cord shall be pulled 48 times in various directions. Of the 48 times the lifting loop is pulled, the average force to release the cord must not exceed 3 pounds. This performance test mimics the force that may be exerted in various directions due to the child’s head being in the loop and determines if the cord release device will perform as intended to eliminate the lifting loop. Engineering staff believes that the hazard associated with entanglement in the lifting loop for roll up style blinds has been effectively addressed in ANSI/WCMA standard.

Hazard 12. Entanglement in the tilt cords. The hazards identified in incident reports based on features for tilt cords are the same as Hazard 2- *Entanglement in one or more long cords, which the child wrapped around the neck.* Around 1 percent (2/249) of all investigated incidents are associated with this hazard.

Requirements in the ANSI/WCMA to Address Hazard 12

The CPSC staff’s IDI review showed that window coverings associated with Hazard 12 - *Entanglement in tilt cords* appeared to meet section 4.3.2 of the WCMA standard, *the product shall have one or more separate operating cords.* Section 4.3.2 of the voluntary standard allows accessible free hanging operating cords. Even a single accessible tilt cord can expose a child to this hazard by allowing children to wrap the cord around their neck as reported in IDI 080915HNE3763:

“The mother found the child twenty minutes later in his room entangled in the blinds ... [The detective] attempted to wrap the cords around each other a dozen different times. Each time the cords became caught on the tassels and could not be pulled apart unless pressure was removed.”

Staff believes that the ANSI/WCMA standard does not effectively address Hazard 12 - *Entanglement in tilt cords* because it allows accessible free hanging operating cords that can foreseeably be wrapped around the child's neck.

Hazard 13. Unknown hazard. In these cases, not enough information was provided in the incident reports to determine the cord type. Around 10% (26/249) of all incidents are in the category of an unknown hazard.

Table 2 summarizes the hazard scenarios, the section of the standard related to the hazard, and Engineering Sciences' assessment of whether the standard addresses the hazard.

Table 2. Summary of Hazard Scenarios and Their Addressability

Hazard Scenario	Number of Incidents	Investigated IDIs (%)	Section of the standard related to the hazard	Conclusion
1) <i>Entanglement from pull cords</i>	69	27.7		<i>Not addressed</i>
	14	5.6		<i>Addressed</i>
Entanglement in a loop created by knotted or tangled pull cord	38	15.3	Section 4.3.2 allows multiple cords in unspecified lengths	Not addressed
Entanglement in one or more long cords, which the child wrapped around the neck	25	10.0	Sections 4.3.2 and 4.3.9 allow accessible free hanging operating cords.	Not addressed
Entanglement in a loop above a single tassel of the cord	14	5.6	Sections 4.3.2 and 4.3.3 require either separate cords or cords with release devices in the loop	Addressed
Entanglement in a loop above the stop ball of the cord	4	1.6	Section 4.3.9 allows for an accessible loop when the bottom rail is fully raised.	Not addressed
Entanglement in a loop created when pull-cord was tied to another object, usually on the wall	2	0.8	Section 4.3.2 allows unspecified length of cords	Not addressed
2) <i>Entanglement in a continuous loop cord</i>	70	28.1	<i>Section 4.3.7 requires a cord tension device that will at least partially prevent the operation of the window covering, when not installed but still allows some operability.</i>	<i>Not addressed</i>
3) <i>Entanglement from inner cords</i>	47	18.9	<i>Section 4.4 addresses accessibility and hazardousness of inner cord loops</i>	<i>Addressed</i>
4) <i>Entanglement in the lifting loop of a roll-up shade</i>	3	1.2	<i>Section 4.4.5 addresses the accessible lifting loops of a roll-up style shade</i>	<i>Addressed</i>
5) <i>Entanglement in the tilt cords</i>	2	0.8	<i>Section 4.3.2 allows multiple cords in unspecified lengths</i>	<i>Not addressed</i>
6) <i>Unknown</i>	44	17.7		<i>Unknown</i>

Summary: CPSC Engineering staff believes that the ANSI/WCMA standard is inadequate to address incidents involving accessible window covering cords, because the standard would not effectively address 57% of the investigated incidents. Changes to the performance requirements in the following three sections of the standard could effectively address the hazards associated with pull cords and continuous loops: Window covering products which meet these three provisions in the voluntary standard continue to expose young children to hazardous loops:

- Section 4.3.2 of the WCMA standard: *the product shall have one or more separate operating cords.*
- Section 4.3.7 of the WCMA standard: *the product shall contain a cord tension device that will at least partially prevent the window covering from functioning for light control or privacy when not installed.*
- Section 4.3.9 of the WCMA standard: *the cord connector shall limit the exposed loop above the cord connector to less than 3 inches below the bottom of the cord lock when the bottom rail is fully lowered.*

IV. Other Standards

Engineering staff examined several other international standards. Australia has the *Trade Practices (Consumer Product Safety Standard- Corded internal Window coverings) Regulations 2010 F2010C00801*. Canada has the *Corded Window Covering products Regulation SOR/2006-112* and it has the *National Standard of Canada's Safety of Corded window covering products CAN/CSA-Z600-14*, which are based off the 2012 WCMA standard with minor modifications. Europe has the EN: 13120 *Internal blinds- Performance requirements including safety*, EN 16433 *Internal blinds- Protection from strangulation hazards- test methods*, and EN 16434 *Internal blinds- Protection form strangulation hazards- Requirements and Test methods for safety devices*.

Examination of the European Standard

There are many differences between the WCMA and European standards. CPSC staff believes that each standard has areas of strength and weaknesses.

Table 3 compares the operating cord requirements between the ANSI/WCMA standard and the EN voluntary standards.

Table 3. Comparison of ANSI/WCMA standard with the European standard

Test	ANSI/WCMA A100.1-2014	Overall EN Standard	Summary
Cord Release Device/ Cord Shear Device vs. Breakaway System	Cord Release Device & Cord Shear Device: *Create a 3.5 foot loop from the cord and hook a force gage onto it	Breakaway system *If installation height is not given, the length of pull cord(s) shall be less than or equal to 2/3 of	The ANSI/WCMA standard appears to be more conservative as it

	<p>*Twist the force gauge 360 degrees and draw the force gauge at a speed between .1 and 1 inch per second. The cord shall release within 10 seconds.</p> <p>*Repeat for 50 products</p> <p>*The average release force shall not exceed 3 pounds for the 50 products and all products shall have a release force below 5 pounds.</p>	<p>the height of the curtain.</p> <p>*If the installation height is given, the pull cords shall be at least .6 m above the floor.</p> <p>*The hazardous loop shall be eliminated when a mass of 13.22 pounds is gradually applied to the pull cords within 5 seconds of application.</p>	<p>requires the cord to breakaway at an average of 3 pounds compared to EN's 13.22 pounds.</p>
Cord tension vs. Fixed Tensioning system	<p>*The tension device shall at least partially prevent the window covering from functioning for light control or privacy when not installed.</p> <p>*The tension device shall have a minimum tested release force of 20 pounds off the wall.</p> <p>*Using a force gage gently pull the loop cord horizontally over a period of 5 seconds to create an opening. Stop pulling the gauge when it reads 5 pounds or the pulled pull distance = 25 inches, whichever comes first.</p> <p>*Determine whether the head probe can be inserted into the created with an insertion force of 10 pounds. If the probe can be inserted, then the loop is hazardous.</p>	<p>* If the blind's height is ≤ 2.5 m, then pull cords shall be ≤ 1 m.</p> <p>* If the blind's height is > 2.5 m, then the pull cords shall be \leq the height of the curtain minus 1.5 m.</p> <p>* The distance between the two strands of the loop shall be no more than 50 mm adjacent to the tensioning device.</p> <p>*allows for a breakaway system for the continuous corded system</p>	<p>The ANSI/WCMA standard is stronger because:</p> <p>* It requires the product to be installed by partially limiting the products functionality while the EN does not.</p> <p>*Even though the EN allows for a breakaway, the tested release force is 13.2 pounds which is more than the ANSI/WCMA version.</p> <p>-The ANSI/WCMA standard only allows products which a head probe can't be inserted, while the EN does not.</p>

<p>Pull Cords</p>	<p>Section 4.3 of the standard specifies that window coverings with an exposed operating cord or continuous loop operating system shall meet one of the following requirements:</p> <p>4.3.1: Product shall have no accessible operating cords</p> <p>4.3.2: Product shall have one or more separate operating cords</p> <p>4.3.3: Product shall contain a cord release device in the loop or head rail</p> <p>4.3.4: Product shall contain a permanently attached cord retraction device</p> <p>4.3.5: Product shall contain a cord shear device</p> <p>4.3.6: Product shall contain a cord shroud device</p> <p>4.3.7: Product shall contain a cord tension device</p> <p>4.3.8: Product shall contain a loop cord or bead chain-restraining device</p> <p>4.3.9: If the product requires a cord connector, i.e. stop ball, the exposed loop above the cord connector shall be limited to less than 3 in below the bottom of the cord lock when the bottom rail is fully lowered.</p>	<p>When the bottom rail is fully lowered:</p> <p>*if the blind height is \leq 2.5 m, the pull cords shall be \leq 1 m</p> <p>*if the blind height is $>$ 2.5 m, the pull cord length shall be no longer than the curtain height minus 1.5 m.</p> <p>If the product has 2 pull cords:</p> <p>*Pull cords shall not tangle.</p> <p>*If cords tangle, the loop shall be eliminated within 5 seconds of a 6 kg mass application.</p> <p>*Pull cords shall be connected using a breakaway system. The hazardous loop shall be eliminated within 5 seconds of a 6kg mass application.</p> <p>If the product has more than 2 pull cords:</p> <p>*Pull cords shall be connected together using a breakaway system.</p> <p>*The hazardous loop shall be eliminated within 5 seconds of a 6kg mass application</p> <p>If the product has more than 4 pull cords in the absence of a suitable breakaway connector:</p> <p>*cords may be connected to a single pull cord positioned $<$</p>	<p>WCMA is standard is stronger as it requires the cord release device to release the cord at an average force of 3 pounds while the WCMA allow for forces up to 13.3 pounds.</p> <p>The EN standard is stronger in terms of the following:</p> <p>*It ensures tangled cords become eliminated within 5 seconds of a 13.22 pound application, WCMA has no such requirement.</p> <p>*It restricts the length on continuous loop and breakaway pull cords to reduce access to the cord. If the product does not meet the length requirements, then the product must be fitted with an accumulation system to contain all the excess cord, not allowing more than 100 mm of cord when 60N is applied to</p>
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		50 mm from the head rail when the bottom rail is fully lowered.	it. The WCMA standard does not restrict the pull cord length and the cord retractor is an optional requirement. *In addition to the length requirement, it requires the pull cords to either be connected with a breakaway device, for less than 4 or less pull cords, or connected less than 50 mm below the head rail for more than 4 pull cords. WCMA standard does not have this requirement. *Does not allow for multiple separate cords without any other protection devices. WCMA standard allows for multiple cords.
Inner Cords	Section 4.4 of the standard specifies that window coverings containing inner cords shall meet one of the following requirements: 4.4.1: Product shall have no inner cords 4.4.2: Product shall have no accessible inner cords using a test probe with a diameter of 51 mm for open	*The maximum distance between two consecutive attachment/retention points of inner cords shall be ≤ 200 mm. *It shall not be possible to insert the head probe (W 148mm by L 110 mm by H 150 mm) between the inner cords after 50 N is applied and released from the inner cords. The dimension of	The WCMA standard is stronger because: *The head probe is inserted while the inner cord loop is held open with the force gage. However, the EN standard releases the inner cord after it was pulled and then the head probe is

	<p>construction and 102 mm for closed construction. Any cord that the probe can touch is considered accessible.</p> <p>If the inner cords are accessible, then pull on the cord with a force gage until it reads 22.24 N or 635 mm of slack is pulled, whichever comes first. The head probe, dimensions of W 148 mm by H 110 mm by H 150 mm, shall not be able to be inserted in the loop with a force of 44.5 N.</p> <p>4.4.3: Products that have accessible inner cords shall incorporate an inner cord stop device or cord connector 76.2 mm or less below head rail when bottom rail is fully lowered.</p> <p>4.4.4: Product shall have an inner cord shroud.</p> <p>4.4.5: If the product is a roll up style, blind, accessible inner cords shall have a cord release device.</p>	<p>the loop shall not be increased when inserting the probe.</p> <p>If either of the above requirements are not met, the hazardous loop shall be eliminated when 58.83 N is applied within 5 seconds of application</p>	<p>inserted. The weight of the bottom rail could potentially remove the inner cord loop.</p> <p>*The WCMA standard also gives the option for inner cord stops, which the EN standard fails to mention.</p> <p>The EN standard is stronger because it pulls on the inner cord with 50 N vs WCMA's 22.24 N.</p>
Cord Accumulation System	N/A	Accumulation systems (e.g., cord cleats) are required to be installed per the manufactures instructions which should be at least 1.5 m above the ground. In addition, no more than 100 mm of cord shall be	Neither the ANSI/WCMA nor the EN standard is stronger standard. Having an accumulation system can possibly keep the cord out a child's

		released after a force of 13.48 pounds is applied to any of the cords.	reach, while at the same time posing a hazard similar to, Hazard 5. Loop created when pull-cord was tied to another object, usually on the wall.
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Examination of the Australian Standard

Australia has a mandatory product safety standard requiring the provision of information, warnings, instructions, and safety devices with corded internal window coverings (CIWC). A new regulation has been enacted requiring those installing CIWC in trade or commerce to follow the safety instructions when installing the product and avoid the production of dangerous lengths or loops of cord.

A corded internal window covering must be installed to meet the following four requirements:

1. A loose cord cannot form a 220 mm loop or longer at less than 1600 mm (62.99 in.).
2. The product must be installed using the installation instruction on the retail packaging and any other provided information about how to ensure a loose cord cannot form a loop described in requirement 1.
3. No part of the cord guide (a device designed to retract, tension, or secure a cord) may be installed lower than 1600 mm above floor level unless
 - a. The cord guide will stay attached to the wall when subjected to 70 N applied in any direction for 10 seconds.
 - b. The cord is sufficiently secured or tensioned to prevent the formation of a loop 220 mm or longer.
4. If a cleat is used to secure a cord, it must be installed at least 1600 mm above the floor level.

CPSC staff believes that the use of a cord cleat would not be effective⁵. First, a cord cleat needs to be actively installed and used every time. Second, the cord cleat needs to be installed at a height not accessible to a child. If the child had access to the cord cleat, it would be similar to hazard 5: *Loop created when pull-cord was tied to another object, usually on the wall*. Finally the cord cleat needs to take up all the excess slack in the cord or it could pose a hazard similar to hazard 1: *Loops created by knotted or tangled cord* or hazard 2: *One or more long cords which the child wrapped around the neck*.

⁵Ibid

Examination of Canada's Standard

Canada's most recent standard, *CAN/CSA-Z600-14*, is the 2012 ANSI/WCMA standard with the inclusion of cord cleats. Cord cleats are required for window coverings with accessible cords and shall allow complete cording length to be accumulated on the cleat. Instructions on how to properly use the cord cleats are also required. Consumers will be advised that the cord cleats that are external to the product should be installed at a height of 1.6 m above the floor, while cord cleats integral to the product shall be within 18 inches of the head rail. CPSC staff maintains the same opinion about cord cleats as explained in the above section regarding the Australian standard.

V. Available Technologies

Currently there are products on the market that address all of the hazards mentioned in the incident hazard review. The products that address the hazards include, but are not limited to, cordless window coverings, cord shrouds, cord retractors, and cordless motorized window coverings.

Cords can be made inaccessible with passive guarding devices. Passive guarding devices allow the user to operate the window covering without direct interaction of a hazardous cord. These types of devices would include cord shrouds, integrated cord/chain tensioners, or cord retractors.

Cordless blinds are raised and lowered by pushing the bottom rail up or pulling the rail down. This same motion may also be used to adjust the position of the horizontal slats for light control. Through market research, staff found several examples of cordless blinds that can be made with a maximum height 84" and a maximum width of 144".

Rigid cord shrouds (Figure 27) can be retrofitted over various types of window coverings to enclose pull cords and continuous cord loops. An encased clutch system allows the user to utilize the pull cords in the cord shroud while eliminating access to the hazardous cords.

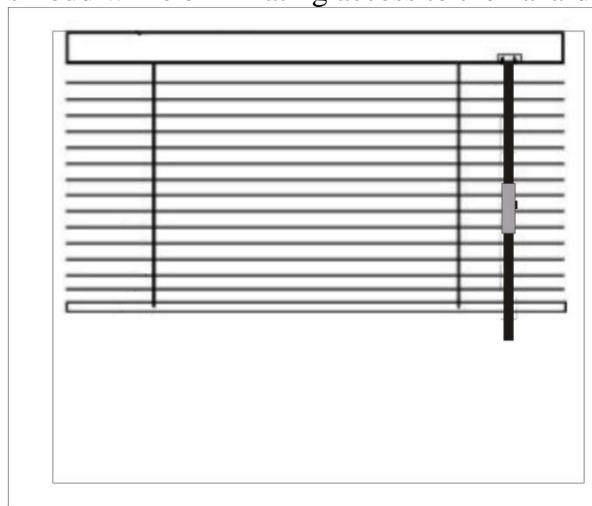


Figure 27: Rigid Cord Shroud System

Loop cord/bead chain restraining devices (Figure 28) keep the looped bead chain taut, preventing access to a hazardous loop, and do not require external components to be installed.

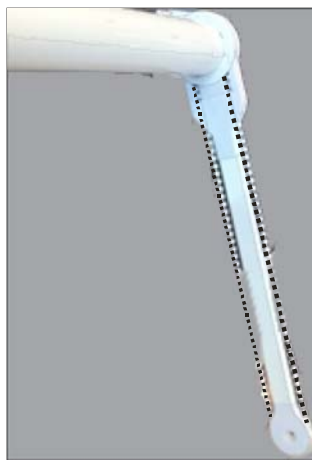


Figure 28: Integrated Cord/Chain Tensioning Device

Crank mechanisms (Figure 29) replace the continuous loop mechanism with a crank/wand mechanism. Since the operating cord is replaced with a wand, the strangulation hazards are completely removed.

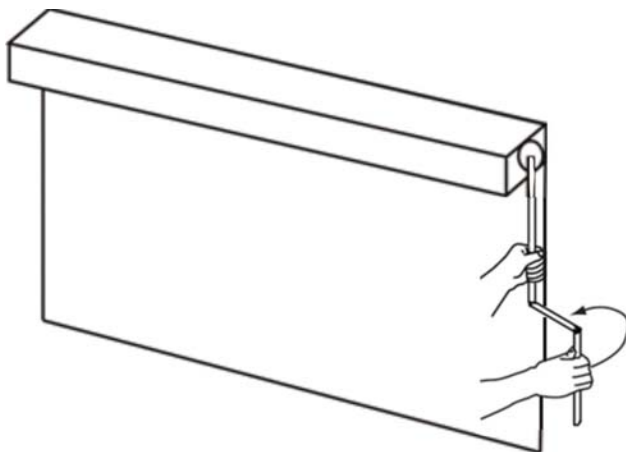


Figure 29: Crank Mechanism

Cord retractors (Figure 30) passively retract the operating cord within 6 inches of the head rail. These devices are intended to keep the operating cords out of the child's reach. Through market research, staff found several examples of cord retractors that can be used on window coverings with a maximum height of 120" and a maximum width of 174".

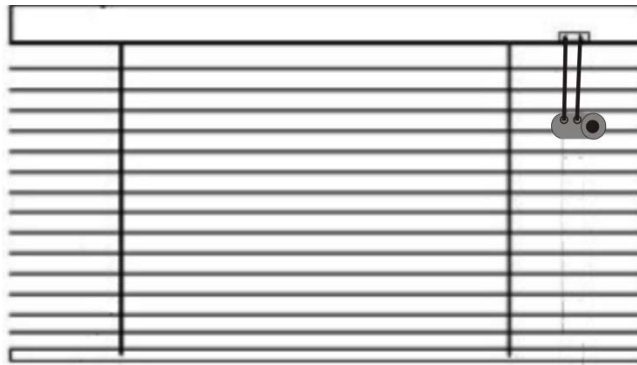


Figure 30: Cord Retractor Mechanism

Cordless motorized blinds are raised and lowered using an electric motor with a supplied controller. These products function in a manner similar to the motorized projector screens. Since these products use a motor instead of a pull cord, there are no exposed hazardous cords.

Table 4 groups the hazard patterns with the appropriate available technologies.

Table 4: Hazard Patterns with Available Technologies

Hazard	Products	ANSI/WCMA requirements	Does the ANSI/WCMA Standard effectively address the Hazard?	Available Technology (commercially available or in prototype stage) to address hazard
Hazard 1. <i>Loops created by knotted or tangled cord.</i>	Horizontal blinds Cellular shades Roll up blinds Roman shades Pleated shades	4.3.2 The product shall have one or more separate operating cords.	No – free hanging, exposed operating cords are permissible.	Cordless window coverings, rigid cord shrouds, crank mechanisms, cord retractors, cordless motorized window coverings
Hazard 2. <i>One or more long cords which the child wrapped around the neck.</i>	Horizontal blinds Cellular shades Roll up blinds Roman shades Pleated shades	4.3.2 The product shall have one or more separate operating cords. 4.3.9 The product shall, if it requires a cord connector, limit the exposed loop above the cord connector to less	No- accessible, free hanging cords can be wrapped around the neck of a child as incident data demonstrates.	Cordless window coverings, rigid cord shrouds, crank mechanisms, cord retractors, and, cordless motorized window coverings

		than 3 inches below the bottom of the cord lock when bottom rail is in the fully lowered position.		
Hazard 3. Loop above a single tassel of the cord	Horizontal blinds Cellular shades Roll Up blinds Roman shades Pleated shades	4.3.2 The product shall have one or more separate operating cords. 4.3.3 The Product shall contain a cord release device in the loop or the head rail	Yes- by requiring either separate tassels on each cord or breakaway tassel, however this separate tassel configuration presents a wraparound (hazard #1) or knotted loop (hazard#2) strangulation hazards as described above .	
Hazard 4. Loop above the stop ball of the cord.	Horizontal blinds Cellular shades Roll up blinds Roman shades Pleated shades	4.3.9 <i>The cord connector shall limit the exposed loop above the cord connector to less than 3 inches below the bottom of the cord lock when the bottom rail is fully lowered.</i>	No- a product that meets the standard could still contain an accessible hazardous loop when the bottom rail is raised.	Cordless window coverings, rigid cord shrouds, crank mechanisms, cord retractors, and, cordless motorized window coverings
Hazard 5. Loop created when pull-cord was tied to another object, usually on the wall	Horizontal blinds Cellular shades Roll up blinds Roman shades Pleated shades	4.3.2 The product shall have one or more separate operating cords.	No- consumers may attempt to keep the long cords away from children by tying the cords on a curtain rod or other means	Cordless window coverings, rigid cord shrouds, crank mechanisms, cord retractors, and, cordless motorized window coverings
Hazard 6.	Horizontal blinds	N/A	Unknown	Unknown

<i>Unknown manner (involving a pull cord).</i>	Cellular Shades Roll Up blinds Roman Shades Pleated shades			
<i>Hazard 7. Entanglement in a continuous loop cord.</i>	Vertical blinds, Roller shades, Curtains and draperies	4.3.7 <i>The product shall contain a cord tension device that will at least partially prevent the window covering from functioning for light control or privacy when not installed.</i>	No- hazardous loops are not effectively addressed by the standard when the blind continues to be operational, despite the fact that the tension device is not properly installed.	Loop cord/bead restraining device, crank mechanisms, motorized option
<i>Hazard 8. Entanglement from exposed inner cords with no cord stops</i>	Horizontal blinds	4.4.1 the product shall have no inner cords 4.4.2 no accessible inner cords 4.4.3 accessible inner cords shall pass the hazardous loop test 4.4.3.1 inner cord stop devices or cord connectors shall be positioned 3 inches or less below the head rail 4.4.4 shrouded inner cords	Yes-window coverings associated with the inner cord hazard scenario appeared to be older products that were manufactured before the 2002 standard was published. Engineering staff believes that had the cord stops involved in the incident scenarios met the voluntary standard, they would not likely have occurred	
<i>Hazard 9. Entanglement from exposed inner cords when the cord stops are</i>	Horizontal blinds	4.4.1 the product shall have no inner cords 4.4.2 no accessible inner cords	Yes- window coverings associated with the inner cord hazard scenario appeared to be	

<p><i>positioned too low</i></p>		<p>4.4.3 accessible inner cords shall pass the hazardous loop test 4.4.3.1 inner cord stop devices or cord connectors shall be positioned 3 inches or less below the head rail 4.4.4 shrouded inner cords</p>	<p>older products that were manufactured before the 2002 standard was published. Engineering staff believes that had the cord stops involved in the incident scenarios met the voluntary standard, they would not likely have occurred</p>	
<p><i>Hazard 10. Entanglement in the Roman shade inner cord.</i></p>	<p>Roman shades</p>	<p>4.4.1 the product shall have no inner cords 4.4.2 no accessible inner cords 4.4.3 accessible inner cords shall pass the hazardous loop test 4.4.3.1 inner cord stop devices or cord connectors shall be positioned 3 inches or less below the head rail 4.4.4 shrouded inner cords</p>	<p>Yes- the requirements prevent hazardous inner cords that may allow child's head to be inserted to the loop</p>	
<p><i>Hazard 11. Entanglement in the lifting loop</i></p>	<p>Roll up blind</p>	<p>4.4.5 accessible inner cords shall feature an inner cord release device</p>	<p>Yes- the lifting loop shall be pulled 48 times in various directions. The lifting loop shall breakaway with an average force not to exceed 3</p>	

			pounds. This test mimics the force that may be exerted due to the child's head being in the loop.	
<i>Hazard 12. Entanglement in the tilt cords</i>	Horizontal blinds	4.3.2 The product shall have one or more separate operating cords.	No- accessible, free hanging cords can be wrapped around the neck of a child as incident data demonstrates.	Wands, cordless window coverings, rigid cord shrouds, and, cordless motorized blinds

VI. Conclusion

After reviewing the 249 IDIs, based on staff analysis, the ANSI/WCMA standard would effectively address 25.7% (64/249) of the investigated incidents, while the standard would not effectively address 57% (141/249) of the incidents. Because the hazard scenario is unknown in 17.7% (44/249) of the incidents, staff cannot determine whether the voluntary standard would address the hazard. The ANSI/WCMA standard is one of the most stringent standards when compared to the Australia's *Trade Practices (Consumer Product Safety Standard- Corded internal Window coverings) Regulations 2010 F2010C00801*, Canada's *Cordless Window Covering products Regulation SOR/2006-112* and *National Standard of Canada's Safety of Corded window covering products CAN/CSA-Z600-14*, and Europe's *Internal blinds- Performance requirements including safety BS: EN 13120*. Engineering Sciences staff assesses that the voluntary standard is inadequate because 57% of the incidents which occurred could still occur with pull cords and continuous loops on window coverings which meet the current version of the ANSI/WCMA standard. Several products on the market currently address all of the hazards identified in the incident hazard review. These products include, but are not limited to cordless window coverings, cord shrouds, cord retractors, and cordless motorized window coverings.

Appendix:

ANSI/WCMA A100.1-1996 contained the requirements to address the following issues:

- Removable safety components
- Passive devices that eliminate a cord or bead loop, or separates the cord or bead loop
- Passive tension device attached to floor or wall causing cord or bead loop to be taut
- Cord stop to minimize the exposed loop to less than three inches from the top of the head rail when lowered
- Cord container to shield it from exposure
- Hang tags and warning labeling the product's dangers
- Cord release devices
- Cord retraction devices (the device shall passively retract the cord within 6 inches of head rail and sequential operations shall be require unlock and unwind the cord)
- Cord shear devices (designed so the cord is not cut when simply pull on the housing)
- Must not have any exposed buttons or plungers that would bake the cutting feature obvious)
- Cord shroud device (can only either be detached from both the head rail on top and the cord stop or tassel on bottom with a sequential process or tools. It shall shield the cords, eliminating their potentially hazardous exposed loops)
- Tension device (can only be detached from the cord or bead loop with a sequential process or tools. It will hold the cord or bead loop taut and close to the product or mountain surface in a manner, that makes the tension device's position fixed and immobile.)

ANSI/WCMA A100.1-2002 (approved August 29, 2002) included:

- Definition of Accessible Inner Cord Stop Device, Accessible inner Cords
- Removed the definition of Young Children
- Added a product requirement of no more than .2% lead per weight per window covering
- A revised product requirement by adding that a product with accessible inner cords shall not allow the cords to form a loop more than 6 inches in length when tested to 6.6. If the product uses an inner cord stop to meet this requirement, the product shall first meet the parameters in 6.6. The inner cord stops shall be positioned 1" to 2" below the head rail when the blind is in the fully lowered position
- Removed the requirement in the cord shroud device about it being detached only through a sequential process or tools and about it being attached to the head rail upon receipt by the end user
- Added requirement for separate operating cords
- Added an accessible inner cord requirement covering its pull force, maximum cord loop, operational test, U.V. stability, impact test, and compression test
- Added a section about stock blinds that do not require a cord stop device (Where cords are not accessible, where it is not possible to create a 4" diameter loop, where the spring loaded cord lock shall act in a manner that it is impossible to create a 4" diameter loop.)

ANSI/WCMA A100.1-2007 included:

- Addition of values and tolerances to the objective
- Added the definition of Free Standing loop, Inner Cord, Inner Cord Stop Device, Multiple Cord or Bead Loop, Multiple Cord Release Device, and Operating Cord
- Removed the definition of Cord Stop
- Added product requirement of no accessible operating cords, having one or more separate operating cords
- Tension devices shall, at least partially, limit light control if not installed

ANSI/WCMA A100.1-2009 included:

- Updates to the definitions to include accessible cords and accessible inner cords
- Additional product requirements for roman style shades
- Additional warning labels for roman style blinds

ANSI/WCMA A100.1-2010 included:

- Modification to the accessible cords to now include accessible cords exposed on the side of the product
- Modification of the Roman style shades to include other various names for this type of shade
- Addition of the combined loop, hazardous loop, lift cord, and rear cord definition
- New product requirements for roman style shades and roll-up style shades. Test procedures for accessible rear chords are in Appendix C and D, while test procedures for lift cords are in appendix C and A
- Labeling classification is clarified for individual tassel cords and for roman style shades
- New warning labeling for the roll-up style shade
- New testing for cord shroud devices, tension devices, and stock blinds

ANSI/WCMA A100.1-2012 included:

- Reference documents and products to the General section
- Added definition for band, bottom rail, cord, cord lock, custom blinds, cycle, guide cord, head rail, ladder, loop cord and bead chain restraining device, operation systems (standard, single cord, continuous loop, cordless, motorized, cord loop lift), and wand
- Additional modifications of the product requirements for the exposed operating cord and accessible inner cord
- New labeling for packaging of retail products and merchandising for custom products
- Added test for cord release devices, loop cord and bead chain restraining device, and wide lift bands
- Modified Cord retraction devices, cord shear devices, cord shroud, tension devices (adding operating cycle test, U.V. stability, impact test, and loop cord and bead chain durability testing), and accessible inner cord

- Modified Appendix C (Test procedure for accessible cords), Appendix D (Hazardous loop test procedure)
- Added Appendix E (Test for roll up style blind inner cord release device, Appendix F (UV stability test), Appendix G (Rationale and background information, Appendix H (testing summary, product illustrations)

ANSI/WCMA A100.1-2014 included:

- Changes to the descriptive text found in Appendix E, Figure E1, Row 3.

TAB F: Window Coverings Petition – Compliance Actions and Industry-Wide Campaigns; December 1994 to April 2014

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**United States
Consumer Product Safety Commission
Bethesda, MD 20814**

Memorandum

Date: August 18, 2014

TO : Rana Balci-Sinha, Ph.D., CPE
Project Manager, Window Coverings Petition
Division of Human Factors
Directorate for Engineering Sciences

THROUGH: Robert J. Howell
Deputy Executive Director for Safety Operations
Office of the Executive Director

Marc J. Schoem
Deputy Director
Office of Compliance and Field Operations

Scott E. Simmons
Director, Defect Investigations Division
Office of Compliance and Field Operations

FROM : Renae Rauchschalbe
Team Lead, Defect Investigations Division
Office of Compliance and Field Operations

SUBJECT : Window Coverings Petition – Compliance Actions and Industry-wide
Campaigns; December 1994 to April 2014

Background

In May 2013, Parents for Window Blind Safety, Consumer Federation of America, Consumers Union, Kids in Danger, Public Citizen, U.S. Public Interest Research Group, Independent Safety Consulting, Safety Behavior Analysis, Inc., and Onder, Shelton, O’Leary & Peterson, LLC (petitioners), filed a petition requesting that the Consumer Product Safety Commission (CPSC) promulgate a mandatory standard that: (a) prohibits any window covering cords where a feasible cordless alternative exists, and (b) where a feasible cordless alternative does not exist, require that all cords be made inaccessible through the use of passive guarding devices. Petitioners request that the Commission promulgate a mandatory standard based on the repeated failure of the voluntary standard to adequately protect small children from strangulation due to accessible

cords on corded window coverings and continuing incidents that occur as a result of accessible cords.

This memo provides information on the history of Compliance staff's effort to work cooperatively with industry to address the strangulation hazard associated with accessible window covering cords. Compliance staff, supported by technical staff, took the lead in negotiations with firms regarding voluntary corrective actions. Although some recalls occurred individually, corrective actions were primarily taken in three industry-wide programs.

The Industry-wide Program to "Cut the Loops"

Compliance staff began working with the Window Covering Manufacturer's Association (WCMA) in 1994 to address child strangulations and near strangulations associated with accessible window covering cords. Data revealed that at least one strangulation death per month occurred in a window covering cord – usually involving children less than 4 years of age but up to and including children 6 years of age.

In October 1994, then-CPSC Chairman Ann Brown announced a joint recall¹ with the WCMA through a news conference explaining to parents how to eliminate the loop on two-corded blinds: 1) cut the cord above the tassel, 2) remove the buckle, and 3) add a tassel at the end of each cord. The WCMA created the larger Window Covering Safety Council (WCSC) to include both manufacturers and retailers to support the toll-free hotline number, posters, brochures and free repair kits containing instructions and safety tassels. In January 1995, manufacturers agreed to redesign window coverings with individual cords or cords with break-away devices. Eventually, at the request of Compliance staff, the WCSC began including plastic tie-down devices in the repair kits for the attachment of continuous looped cords to the wall or floor.

During 1995, Compliance staff and technical staff began working with the WCMA on an ANSI voluntary standard to address accessible cords on window coverings. In November 1996, the ANSI/WCMA A100.1-1996 American National Standard for Safety of Corded Window Covering Products was approved. The standard required the elimination of some outer cord loops by requiring individual cords with tassels or a breakaway tassel and tension devices on continuous loop operating systems.

The Industry-wide Program to Prevent Inner Cord Strangulation

During 1999, Compliance staff began a new investigation of window covering deaths. In an extensive review of incidents, staff found that when a blind rests on the window sill and the cord lock is not in use, the inner cord that is used to raise the slats can be easily pulled out by children to form a hazardous loop. All of the deaths included children in cribs placed next to windows. In most cases, the outer pull cord was out of reach but children still strangled on the inner cord. Victims were aged 9 to 17 months. Compliance staff again met with industry representatives from the WCSC and demonstrated the use of a plastic device (invented by a former NYC

¹ <http://www.cpsc.gov/en/Recalls/1995/CPSC-And-Industry-Redesign-Products-To-Save-Lives/>

firefighter) placed near the top of a pull cord, within inches of the head rail, which prevents the inner cord from pulling through the slats and forming a loop. The industry invented their own version of the plastic devices that look like tiny plastic donuts. In November 2000, CPSC and WCSC again announced a recall² to repair millions of window coverings with inner cords that can form a loop and cause strangulation. Consumers were asked to call a toll-free number and receive a free repair kit containing the plastic inner cord donuts, as well as tassels and plastic tension devices. Newly manufactured window coverings included installed plastic donuts.

The Industry-wide Program to Prevent Strangulation in Roman Shades and Roll-Up Blinds

In July 2005, Compliance staff received a Section 15 report from a nationwide import retailer regarding the near strangulation of a child in the inner cord of a Roman shade (In-Depth Investigation (IDI) 050811CBB3454). A consumer noticed her 1-year-old son going behind a lowered full-length window shade in an effort to see her two older children who were playing outside. The consumer heard a muffled whimper coming from where she last saw her son and found the inner cord of the shade looped around his neck and he was strangling. She quickly removed the cord and checked for injuries. He appeared to be upset but uninjured. In response to the near-strangulation, the retailer removed all Roman shades from store shelves.

After investigating a death of a 1-year-old girl who became entangled in an exposed inner cord found on the backside of a Roman shade, Compliance staff opened a case with a worldwide retailer (Release #09-050). The child was in a playpen underneath a fully lowered Roman shade. She was found partially suspended with the inner cord of the blind wrapped twice around her neck. About 670,000 units were sold in the U.S. CPSC and the retailer announced a joint recall in November 2008 in which the retailer offered a full refund to consumers that returned the shades.

In February 2009, ANSI/WCMA A100.1-2009 Provisional Standard was approved. The standard included design specific requirements, on which CPSC technical staff raised concerns as listed in their letter to WCMA dated March 9, 2009³.

In May 2009, Compliance and technical staffs met with the WCMA Technical Committee and stated their concern about the 8-inch ring spacing in section 4.5.3.1 of the Provisional Standard Canvass regarding Roman shades. Accompanied by a Roman shade containing accessible inner cords, staff used a baby doll to demonstrate how a child can become entrapped and strangle in the inner cords. Staff again stated their position that inner cords on Roman shades should be inaccessible, or at a minimum, contain a cord-release device.

After receiving information that a 1-year-old boy became entangled and strangled in the lift cord loop of a roll-up blind that had fallen into his portable crib, Compliance staff began including

² <http://www.cpsc.gov/en/Recalls/2001/CPSC-Window-Covering-Industry-Announce-Recall-to-Repair-Window-Blinds/>

³ http://www.cpsc.gov//PageFiles/115298/wcma03_09_09.pdf

roll-up blinds as well as Roman shades in recalls. A manufacturer with two deaths associated with its products – one on a roll-up shade and one on a Roman shade - developed a break-away release clip that was approved by technical staff as a fix for roll-up blinds. A second manufacturer that reported under Section 15 but had no deaths or injuries with its products developed a fix for Roman shades: 1) remove the cords; 2) attach shower curtain hooks to the bottom plastic guide circles on the inner side of the shade and 3) raise the shade by moving the shower hooks to the next level of plastic guide circles. This fix was approved by technical staff as well. These two manufacturers announced their recalls to repair roll-up and Roman shades on the same day in August 2009 (Release #09-324 and #09-327). On the same day, a manufacturer of horizontal, vertical and cellular shades agreed to announce a recall to repair providing consumers free tension devices and inner cord stops after learning of a death in the continuous loop bead chain of one of their vertical blinds. The vertical blind had a weight device attached to the continuous loop bead chain but the weight device left an accessible loop – unlike tension devices that attach to a wall or the floor (release # 09-329).

Also in August 2009, Compliance and technical staffs met with the WCMA Technical Committee. During the meeting, staff demonstrated the Roman Shade shower curtain fix to the committee and proposed an industry-wide retrofit campaign for Roman shades and roll-up blinds. The committee was receptive to the proposal.

In response to the five deaths and 16 near strangulations in Roman shades since 2006 and the three deaths in roll-up blinds since 2001, on December 15, 2009, the CPSC and the Window Covering Safety Council (WCSC) announced the recall to repair millions of Roman shades and Roll-up blinds. Additionally, CPSC and 15 other manufacturers and retailers announced individual recalls of their Roman shades and Roll-Up blinds. Free repair kits were provided to all consumers that called the toll-free WCSC number. Chairman Inez Tenenbaum commended “the WCSC for providing consumers with repair kits that make window coverings safer and look forward to future steps to eliminate these hazards” (Release #10-073).

Other Corrective Actions

In September 2012, Compliance staff negotiated a recall with a small “mom and pop” manufacturer that was not aware of the voluntary standard. A 2-year-old Michigan girl reportedly strangled in the loop of a vertical blind cord that was not attached to the wall or to the floor. The firm made custom vertical blinds with an accessible looped pull cord and horizontal blinds without inner cord stop devices. The firm joined the WCSC so that consumers could call the toll-free number to obtain a free repair kit (release # 12-273).

The Fast Track Team conducted another recall to repair in November, 2012 by one of the three largest U.S. manufacturers of custom window coverings on two types of top-down/bottom-up shades, pleated shades and standard cord lock shades. Some of the cords inside the breakaway cord stop were tied in a single knot which can prevent the cord stop from functioning as designed to break away. Consumers were asked to check if there is a knot in the two cords inside the cord lock. If so, they were told to stop using the window coverings and contact the manufacturer to obtain a free repair kit with instructions on untying the knot (release # 13-707).

Also in November 2012, the WCMA announced the approval of the latest revision of the ANSI/WCMA A100.1-2012 voluntary standard. Revisions to the standard include: 1) increased durability and performance testing of tension devices; 2) new requirements for products that rely on “wide lift bands” to raise and lower window coverings; 3) a warning label and pictograms on the outside of packaging for corded products; and 4) testing requirements for cord accessibility, hazardous loop testing, and Roll-Up shade performance.

During December 2012, Compliance and technical staff were invited by Chairman Tenenbaum to attend a meeting with representatives from the Department of Defense to discuss the number of strangulation deaths and near strangulations that have occurred in military homes. In April 2013, a letter was signed by Chairman Tenenbaum and John Conger, Acting Deputy Under Secretary of Defense to Defense Housing Partners – that provide housing to military families.⁴ The letter was to encourage replacement of window coverings with cordless options or at a minimum, educate residents through display of a safety alert for 120 days and distribute the child proofing and hidden hazards checklists to all residents.

Conclusion

Since 1994, staff has worked with industry to make cords on window coverings less accessible or inaccessible to children. Compliance negotiated three industry-wide corrective actions: 1) the “Cut the Loops” program to address the loop on two corded blinds ending in a single tassel; 2) the repair program to prevent inner cord strangulation; and 3) the repair program to prevent strangulation in Roman and Roll-Up blinds. All three programs involved redesign of future production. The lack of incidents and injuries since the industry-wide recalls indicate the programs were successful. The last strangulation in a looped pull cord (two cords ending in one tassel) occurred in January 2005 (IDI 050119CWE3007). Two inner cord deaths have occurred since the industry-wide program: 1) an October 2011 death of a 3-year-old child that occurred when cord stops were positioned too far below the head rail allowing the inner cord to be pulled into a loop (IDI 11018CCC2027); and, 2) a September 2012 Canadian death of a 14-month-old on a product shipped by a U.S. retailer to Canada that did not have any inner cord stops (Document No. X1370277A). One Roman shade death occurred since the industry-wide recall in March 2014 (IDI140305CBB1435). The on-line retailer provides a marketplace for crafters, artists, and collectors to sell their handmade creations. The crafter of the incident custom-made Roman shades was not aware of the voluntary standard requirements.

At present, Compliance staff, with support from technical staff, continues to open cases and attempts to work cooperatively on corrective action plans with various manufacturers of window coverings. However, accessible pull cords on window coverings continue to strangle children: 1) pull cords can wrap around a child’s neck or become tangled and form a strangulation loop; 2) tension devices on continuous loop window coverings may not be attached to walls or floors presenting a strangulation loop; or, 3) cord connectors placed within three inches of the head rail can be pulled down to present a strangulation loop or the single cord below the cord connector can wrap around a child’s neck.

⁴ <http://www.acq.osd.mil/ie/download/DoD-CPSC%20Home%20Child%20Safety%20-%20Apr%2029%202013.pdf>

TAB G: Directorate for Economic Analysis Response to Window Coverings Petition

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**United States
Consumer Product Safety Commission
Bethesda, MD 20814**

Memorandum

Date: August 11, 2014

TO : Rana Balci-Sinha, Ph.D., CPE
Project Manager, Window Coverings Petition
Division of Human Factors
Directorate for Engineering Sciences

FROM : Gregory B. Rodgers, Ph.D., Associate Executive Director,
Directorate for Economic Analysis
Deborah V. Aiken, Ph.D., Senior Staff Coordinator,
Directorate for Economic Analysis
Samantha Li, Economist,
Directorate for Economic Analysis

SUBJECT : Window Coverings Petition

Background

On May 23, 2013, Parents for Window Blind Safety, Consumer Federation of America, Consumers Union, Kids in Danger, Public Citizen, U.S. Public Interest Research Group, Independent Safety Consulting, Safety Behavior Analysis, Inc., and Onder, Shelton, O'Leary & Peterson, LLC (petitioners), petitioned the Commission to promulgate a mandatory standard to eliminate accessible cords on window covering products 78 FR 42026. The petitioners requested that the Consumer Product Safety Commission (CPSC) address the hazard of strangulation to young children posed by window covering cords by: (a) promulgating a mandatory standard that prohibits any window covering cords when a feasible cordless alternative exists; and (b) requiring that all cords be made inaccessible through the use of passive guarding devices when a feasible cordless alternative does not exist. The purpose of this report is to provide market information for window coverings and to provide a preliminary estimate of the societal costs of deaths and injuries involving corded window coverings.

The Product

Window coverings include the following product categories: blinds, shades, and curtains and draperies. The shades category includes cellular shades, pleated shades, roller shades, and Roman shades, while the blinds category includes horizontal blinds and vertical blinds.

We obtained some of our information regarding the current market for window covering products from a recent report prepared by D&R International as part of an effort to expand the ENERGY STAR program to include window coverings (D&R, 2013). The report was funded (or received financial support) from the Window Covering Manufacturers Association (WCMA), the U.S. Department of Energy (DOE), and Lawrence Berkeley National Laboratory (LBNL), and is largely based on information provided by WCMA members and survey data from U.S households.

D&R International is a consulting firm specializing in markets related to energy efficient products. The purpose of the D&R report was to characterize “the installed base of window coverings, and how users operate window coverings ...” as a “step toward establishing a voluntary energy performance labeling program for window coverings.” As stated on page 4 of the study:

The Window Covering Manufacturers Association (WCMA) engaged D&R to gather the data. ...In 2012, D&R, with input from Lawrence Berkeley National Laboratory (LBNL) and WCMA, designed and implemented a WCMA-funded Internet survey of a geographically representative and demographically diverse population to characterize the installed base of windows and window coverings and identify patterns in household operation of window coverings.

D&R also collected shipment, pricing, retail, and manufacturing data from WCMA members to gauge the popularity and price points of particular product categories in the marketplace to identify baseline products for energy savings calculations. D&R was then contracted by LBNL with funding from DOE to analyze the collected data set. D&R developed a research plan in consultation with WCMA, with input from LBNL.

The D&R study (D&R, 2013) estimated that horizontal blinds accounted for about 49 percent of residential window coverings in use, shades accounted for about 17 percent, vertical blinds accounted for about 13 percent, and curtains and draperies accounted for about 19 percent of window coverings in use. Interior window shutters, which account for about 2 percent of window coverings, do not contain cords and are therefore not of direct interest in this analysis.

“Traditional” or “corded” shades and blinds generally have cords located inside the product (inner cord), to the side of the product (operating cord or outer cord), or both. The inner cords may be exposed from the front, rear, or bottom of the window covering or can be rendered inaccessible, depending upon how the product is constructed. The outer cord or operating cord allows the user to raise, lower, open and close, rotate, or tilt the window covering. Operating

cord systems generally fall into one of three categories: (1) standard; (2) single cord; and (3) continuous loop.

Virtually every window covering type is available with a “cordless” operating system, which means it has been designed to function without an operating cord.¹ In lieu of an operating cord, cordless operating systems can be manual or motorized. A manual operating system allows users to lift or lower the window covering with a plastic handle or directly by hand. A motorized operating system uses a motor and control system to manipulate the window covering function, such as a remote control or wall switch. Because cordless operating systems do not have an operating cord, the associated risk is eliminated.

Rather than eliminating the operating cord entirely as in cordless window coverings discussed above, some manufacturers offer other devices to render the operating cord inaccessible. These alternatives include, among others, retractable cord devices, cord cleats, and cord shrouds.

The Market for Window Coverings: General

The Industry

The North American Industry Classification System (NAICS) defines product codes for U.S. firms. Firms that manufacture window coverings may list their business under the NAICS product code for blinds and shades manufacturers (337920 Blind and Shade Manufacturing) or retailers (442291 Window Treatment Stores).² Under U.S. Small Business Administration (SBA) guidelines, a manufacturer of window coverings is categorized as small if the firm has less than 500 employees and retailers are considered small if they have sales revenue less than \$7.0 million or 100 or fewer employees. Based on 2011 data, there were 2,232 firms categorized as blinds and shades manufacturers and retailers (Census Bureau, 2011). Of these, about 2,215 firms (364 manufacturers and 1,851 retailers) are small.

In 2008, three manufacturers reportedly accounted for almost 70 percent of dollar sales in the U.S. window coverings market.³ Two of these manufacturers are publicly-held firms. In 2012, the largest global manufacturer and distributor of window coverings reported net sales of \$2,529 million. The second largest firm produces window coverings in addition to other consumer goods. In 2012, this firm reported net sales of \$5,903 million overall and \$1,644 million in the business segment including window coverings.⁴ The third firm supplies window coverings under multiple brands and dollar sales are not available.

¹The availability of alternatives to corded window coverings may sometimes be constrained due to size and weight limitations. See Lee, 2014.

² The two product codes 337920 and 442291 encompass most products in the window coverings market. However, some drapery and curtain manufacturers may be listed under 322230, stationary product manufacturing.

³ Global Industry Analysts, Inc., February 2010.

⁴ The firm produces blinds, shades, drapes, and decorative hardware, such as traverse rods.

The D&R study discussed above (D&R, 2013) estimated that in 2012, there were between 100 and 150 million units of residential window coverings shipped in the United States. This estimate was based on U.S. Census reports of blind imports, data from WCMA members, and the installed base of window coverings from the household survey conducted as part of the study.⁵ The majority of these shipments, 62 percent, were blinds while 17 percent were shades.

Retail Prices

Retail prices for window coverings vary, depending on the type of the product and retailer. Common size window coverings (or stock products) can be purchased at a variety of retailers, such as big box and home furnishing stores. The type of material and brand affect the price. According to the D&R (2013) study, average prices for window coverings range from about \$50 to \$440 for shades and from about \$10 to \$360 for blinds.⁶ Prices for horizontal blinds are generally lower than the prices of vertical blinds or cellular shades; prices for roller shades are lower than the prices of Roman shades (D&R, 2013).⁷

Custom sized and custom designed window coverings can be purchased from mass merchants and specialty retailers. Custom coverings include uncommon window covering sizes, such as extremely small (e.g., 9 inches wide x 13 inches high), extremely large (e.g., 96 inches wide x 96 inches high), and other unusual sizes. Retail prices for custom made window coverings can be as high as \$3,000.⁸ Retailers often suggest an “in-home” consultation to estimate the price for custom designed products, and prices for customized window coverings are higher than for those sold by mass retailers. We do not know from the incident data whether, or to what extent, custom designed window coverings are involved in incidents. Thus, at this time, we could not say whether any rule would include these window coverings.

Industry and Market Information for Alternatives to Corded Window Covering Products

Availability of Cordless Products

Firms that supply corded window coverings typically offer cordless options. The three major U.S. manufacturers all offer cordless shades and blinds. At least one foreign manufacturer supplies cordless window coverings to the U.S. and at least three domestic manufacturers specialize in manufacturing motorized window coverings. Moreover, according to the WCMA, sale of motorized products has increased substantially (WCMA, 2013, p. 5). At least two big box retailers and home furnishing stores offer multiple cordless window coverings. These cordless products are widely advertised at online websites as cordless alternatives for households with children.

⁵ D&R, 2013, p. 57 and Appendix B, 75-76.

⁶ The range for shades is based on average prices for cellular shades, roller shades, Roman shades, and pleated shades. The range for blinds is based on average prices for vinyl blinds, metal blinds, faux-wood blinds, wood blinds, and vertical blinds.

⁷ The D&R (2013) study did not distinguish between prices of cordless and corded window coverings.

⁸ Based on firms' websites, retail prices for custom-made Roman shades can range from \$300-\$3,000.

Production Costs for Cordless Window Coverings

According to both the industry and petitioners, the cost of producing cordless window covering products is higher than for similar corded products. The petitioners state in the petition that their research indicates that the manufacturer's cost to produce cordless technology for a one-inch vinyl or aluminum blind is \$2.00-\$3.00 more than the cost of the corded alternative, and that for a cordless two-inch faux wood blind, the increment in cost is \$7.00-\$9.00 (Petition, 2013, pp. 9-10). The Window Covering Manufacturers Association (WCMA) disagrees with the cost estimates provided by the petitioners, stating that the costs were underestimated. According to the WCMA, the petitioners do not provide a basis for their cost estimates. While the WCMA does not provide cost estimates of their own, they believe that the petitioners' estimates are inaccurate because they do not include costs associated with: research and development, labor, marketing, production, training of sales and installation personnel, and many other factors required to develop, implement, and introduce cordless products (WCMA, 2013, pp. 14-15). Staff has no data to independently evaluate the accuracy of either the petitioners' or WCMA's claims regarding the costs of producing cordless window coverings. According to WCMA, though, the costs of producing cordless options like motorized systems have declined in recent years.

The annual cost of a regulation eliminating or making inaccessible all cords in window coverings, as proposed by the petitioners would depend on the incremental costs of doing so. Using available data that we have not verified, we provide some preliminary estimates assuming that a rule would cover all window covering products and that a rule would require that all window coverings eliminate or make inaccessible all cords.

As described above, according to D&R's analysis of data from WCMA members, Census, and a household survey, unit shipments of residential window coverings amount to about 100 to 150 million annually. Based upon the D&R analysis as well as discussions with CPSC staff and information available from the internet, we estimate that about 25 percent of current market sales consist of cordless products (or window coverings with inaccessible cords). Consequently, on the order of about 75 to 112.5 million window coverings would need to be modified to meet a regulation that eliminates or makes inaccessible all cords as the petitioner requests. If the incremental manufacturing costs amounted to about \$5.50 per covering (the mid-point of the petitioners' estimated range of about \$2.00 to \$9.00 for cordless horizontal blinds), then the added cost of producing window coverings conforming to a regulation eliminating or making inaccessible all cords would amount to about \$413 million to \$619 million (i.e., $\$5.50 \times 75$ million coverings to $\$5.50 \times 112.5$ million coverings) annually. Even if the average incremental cost was equal to the petitioners' lower bound estimate of \$2.00-\$3.00 per covering, the cost would decrease substantially, but would still amount to about \$150 to \$338 million annually. We note that we are using cost estimates provided by the petitioner, but have no independent basis for estimating these costs. Obviously, if a safety remedy could be developed in which incremental production costs were lower than \$2.00-\$3.00, its annual costs would be lower as

well. Moreover, a regulation that limited the scope of products covered to a subset of the 75 to 112.5 million corded window coverings sold each year would generate lower annual costs.

Prices of Corded versus Cordless Products

Staff lacks a formal historical data series on the prices for corded and cordless window coverings and cannot evaluate how either absolute or relative prices have changed over time. However, we were able to gauge current prices and price differences by examining prices from online retailers (excluding sale prices and other promotions) and comparing prices for products that were identical in all respects other than the operating technology (corded versus cordless). In general, retail prices for cordless shades and blinds are currently higher than retail prices for similar corded products. We have no factual basis for projecting future prices and price differences.

The difference in price between cordless and corded stock products depends on the type of cordless operation. Manually operated cordless window coverings range from \$15 to \$130 more than corded window coverings.^{9,10} The prices of motor operated window coverings are more than \$100 higher than the prices of corded window coverings, and the price differences can exceed \$300.^{11,12} Retailers also supply motorized window covering kits that consumers can install themselves as an aftermarket solution ranging from \$100 to \$250. It is not possible to evaluate price differences for corded versus cordless custom products since custom products have a countless number of attributes that cause price variation.

A control wand is a type of cordless operating system. Some wand operated vertical blinds cost about the same as corded versions; others appear to cost about \$10 more than corded vertical blinds.¹³

We also examined prices from online retailers that supply replacement parts of operating systems. Operating mechanisms used in cordless window coverings are more expensive to replace than those used in corded window coverings. Motorized replacement parts range from approximately \$50 for a wall switch to \$800 for a motor system. Replacement plastic handles can be \$7 to \$8. In contrast, prices for replacement tension devices range from \$5 to \$10.

⁹ This estimate includes cellular shades, Roman shades, pleated shades, and horizontal blinds and excludes vertical blinds. Manually operated cordless shades range \$15 to \$50 more than corded shades. Manually operated cordless horizontal blinds range from \$20 to \$130 more than corded horizontal blinds.

¹⁰ The difference in price including cordless top down/bottom up option for shades can be as much as \$200.

¹¹ The range is based on average prices for cellular shades, roller shades, Roman shades, and pleated shades.

¹² According to the WCMA (2013, p. 5), sales of motorized cordless window coverings have increased in recent years as these products have become less complex and are integrated into building automation systems. The WCMA also says that, despite the declining costs of these products, motorized systems are still comparatively expensive and therefore limited in sales volume.

¹³ Although control wands can be used with large windows, consumers may find it easier to use control wands with smaller windows.

Prices for Other Safety Devices

As noted above, some manufacturers market safety devices that are intended to make the operating cord for the window covering product inaccessible to young children. Specific examples include cord retraction devices and cord cleats. Some of these safety devices such as cord cleats may not meet the petitioners' request because they do not completely eliminate the accessible operating cord. These features are typically included as part of overall product and separate pricing for these safety features are unavailable. Many of the cord retraction devices available in the market appear to be patented and the prices for replacement devices are proprietary information. Prices for replacement cord cleats are roughly \$1 to \$3.¹⁴ Online retail prices for aftermarket cord shrouds are about \$16. These prices are for currently available aftermarket products. This does not necessarily mean that cord shrouds would add \$16 to the retail price of any window covering to meet a possible rule.

Voluntary Standard and Industry Safety Program

Window covering products are covered by the American National Standards Institute (ANSI) and Window Covering Manufacturers Association (WCMA) voluntary standard ANSI/WCMA A100.1-2014. The standard provides performance and testing requirements for the purpose of increasing the safety of window coverings used in consumers' homes. According to the WCMA, manufacturers of window coverings are in substantial compliance with the voluntary standard and have redesigned almost every window covering product in the market to address safety hazards. Beyond WCMA's comments, staff has no data on the extent of compliance and cannot estimate the proportion of annual sales of window covering products that comply.

The WCMA funds the Window Covering Safety Council (WCSC), a coalition of major U.S. manufacturers, importers, and retailers of window covering products. The WCSC disseminates safety information on window coverings, including a safety video, news, and informational brochures. According to WCMA, in 2012, the WCSC reached an estimated audience of 1.18 billion through television, radio, newspaper, consumer and trade magazines, and the internet (WCMA, 2013, p. 4). The WCSC recommends using cordless window coverings in homes where infants and young children are present.¹⁵

In addition, WCSC provides free retrofit devices for older window coverings.¹⁶ These devices include cord stops, safety tassels, and tie-down devices for horizontal blinds, pleated shades, and vertical blinds. WCSC also provides free repair kits to address exposed lift cords in roll-up style shades and exposed inner cords in Roman shade style blinds.

The Window Coverings Association of America (WCAA), the only national non-profit trade association, provides education programs, professional certifications, and business support for

¹⁴ Based on firms' websites, including a home improvement retailer and an online retailer that specializes in supplying replacement parts for window covering products.

¹⁵ See <http://www.windowcoverings.org/about-2/> for a full list of cord safety recommendations.

¹⁶ See <http://www.windowcoverings.org/faqs/> for information on how to request the retrofit kits.

retail window coverings to manufacturers, retailers, and decorators. WCAA has over 800 members in the United States, including firms that produce window covering components and custom design window coverings. WCAA also has members in the Caribbean, Canada, and Australia.¹⁷

Numbers in Use

We calculate the number of window covering in use as an annual average for the years 1996 through 2012. This time frame was selected in order to be consistent with the study period for which data on window covering deaths and injuries were available, and allows us to compute the societal costs associated with window coverings deaths and injuries (presented below) on a per product basis over the same 1996-2012 study period.

Based on U.S. Census estimates, an annual average of about 122.4 million residential housing units existed in the United States during the 1996 to 2012 time period (Census Bureau, 1999; 2006; 2013). Additionally, the D&R (2013) study estimated an average of about 8.5 window coverings per housing unit, based on the WCMA-funded internet survey. Combining the estimated housing units with the estimated average window coverings per housing unit suggests an average of about 1,040 million window coverings that may have been in use in the U.S. (122.4 million housing units \times 8.5 window coverings per housing unit) annually during the 1996-2012 study period.

For purposes of this analysis, we assume that about 20 percent of the window coverings in use during 1996-2012 were cordless (or had no accessible cords). This is based on our estimate that about 25 percent of current market sales consist of cordless products, the increasing availability and sales of cordless products in recent years, and the assumption that only about one-third of curtains and draperies have cords.¹⁸ Thus, there may have been, on average, about 832 million (i.e., 1,040 million window coverings \times 0.80) corded window coverings in use annually from 1996 through 2012.

Consumer Utility

Shades and blinds serve aesthetic as well as functional purposes. They are designed to adjust the light and privacy in a room and can have decorative features, such as hems, fringes or trims, and valences. The aesthetic and functional attributes of window coverings generate utility for the consumer; anything that affects these attributes directly affects utility.

¹⁷ For additional information about WCAA, including list of members, go to <http://www.wcaa.org>.

¹⁸ The one-third estimate is rough and is based on our review of the products offered by online retailers in 2014. An improved estimate would be quite easy to incorporate into our calculations but would have limited effect on the estimated of number of corded window coverings in use since curtains and draperies are a relatively small segment of that market.

Corded window coverings are generally easy to operate and convenient to use. Unlike corded products, and with the exception of motorized coverings, cordless window coverings require physical contact with the body of the product to operate. Based on information from WCMA, cordless window coverings can be difficult to reach or use when furniture, kitchen sinks, ranges, or other household appliances block or obstruct consumer access. Consequently, because contact with the body of the product is needed, stools or chairs to stand on may be needed by some consumers to fully raise or lower cordless window coverings. We cannot say what portion of products (or consumers) this might affect.

There may also be some disutility to handicapped or elderly consumers who are unable to stand upright or are unable to operate the window covering with sufficient force. In these cases, the use of cordless products may inconvenience the consumer or even present a nuisance when the window covering needs to be adjusted. Again, we have no data on the numbers of consumers who might be affected.

According to WCMA, the size of the springs and spools used in some cordless products require more physical space (within the head of the window covering) than is required with a corded system with a lock. Due to the increase in surface area needed, consumers could experience disutility if there is insufficient space for both a functional window covering, such as a blind, and a stationary drapery that serves an aesthetic purpose. We have no information on the amount of space needed and the number of consumers likely to be affected.

Consumers may experience some disutility if the components of the window covering wear out faster than expected. Some types of cordless operating systems are comprised of more mechanical parts than similar corded systems. In addition, some cordless options involve newer technologies. If the mechanisms for raising or lowering cordless products are more prone to failure than corded mechanisms, and therefore need more frequent repair or replacement, then consumers will experience some disutility. We are not able to provide any measurement of that possible disutility.

Preliminary Societal Costs Associated with Corded Window Coverings

This section describes our preliminary assessment of the societal costs of deaths and injuries involving window coverings. We note that these estimates are based on currently available preliminary information and are based on the assumptions that a rule would include all window covering products and would prevent all associated injuries and deaths. An estimate of societal costs provides information on the pool from which the benefits of a safety remedy would be derived. Moreover, given additional information on corded window coverings, such as their expected product life and the number of products in use, we can estimate the expected present value of the societal costs of deaths and injuries per unit of product. This statistic, which is very useful in benefit-cost analysis, represents the maximum per product benefits that can be achieved by a product safety rule (i.e., the potential benefits averaged over the pool of regulated products) (Rodgers and Rubin, 1989). At the initial stages of a project, this statistic can be used to determine whether or not a safety remedy is likely to be found such that the benefits would

approximately equal or exceed the costs. It can also be used to evaluate the likely benefits of a safety requirement, once one is proposed.

Annual Societal Costs

According to the Directorate for Epidemiology, on average, a minimum of about 11 deaths involving window coverings occurred annually during 1999-2010 (Chowdhury, 2014). If we assign a cost of \$8.4 million for each death,¹⁹ then the societal costs associated with these deaths would amount to about \$92.4 million annually (11 deaths × \$8.4 million).

Based on estimates of injuries reported through the National Electronic Injury Surveillance System (NEISS), there were also about 1,550 *nonfatal* window covering cord injuries treated in U.S. hospital emergency departments (ED) from 1996 through 2012, or an average of about 91 ED injuries annually (Chowdhury, 2014). The societal costs of ED treated injuries are estimated with the CPSC's Injury Cost Model (ICM), a model that is fully integrated with NEISS. The ICM societal cost estimates include three primary aggregated cost components: medical costs, work losses, and the non-economic or intangible costs associated with the lost quality of life or pain and suffering (Miller et al., 2000).

Additionally, the ICM uses empirical relationships between ED injuries and those treated in other settings (*e.g.*, physicians' offices, clinics, ambulatory surgery centers, or direct hospital admissions) to estimate the proportion of injuries medically treated outside of hospital emergency departments, as well as the costs of those injuries (Miller et al, 2000).²⁰ Thus, given an annual estimate of ED injuries, the ICM allows us to make an annual estimate of the number and costs of all medically attended injuries.

According to the ICM, there were an estimated total of about 244 medically attended injuries involving corded window coverings *annually* from 1996 through 2012, including the 91 ED injuries plus an additional 153 medically attended injuries treated outside of hospital EDs. The societal costs averaged about \$75,100 per medically attended injury, and ranged from an average of about \$11,900 per injury treated outside of a hospital ED, to \$17,500 per injury for those treated and released from the ED, to about \$435,000 for hospitalized injuries. The aggregate costs of these injuries amounted to about \$18.3 million (244 nonfatal injuries × \$75,100), in

¹⁹ This estimate of \$8.4 million is the estimate of \$7.4 million (in 2006 dollars) developed by the Environmental Protection Agency (EPA, 2014) updated to 2012 dollars and is generally consistent with willingness-to-pay estimates of the value of a statistical life (VSL). According to the Office of Management and Budget's *2013 Draft Report to Congress on the Benefits and Costs of Federal Regulations and Agency Compliance with the Unfunded Mandates Reform Act* (OMB, 2013), willingness-to-pay estimates of the VSL generally vary from about \$1.2 to \$12.2 million in 2010 dollars (OMB, 2013). [In 2012 dollars, the range would vary from about \$1.3 to 13.0 million.]

²⁰ Because injuries are medically treated in a number of settings, limiting the societal costs of injuries to those treated in hospital EDs would lead to a substantial undercount of the aggregate societal costs of injuries. Consequently, the ICM was explicitly designed to estimate the proportion of product-related injuries treated outside of hospital EDs and the costs of those injuries, as well as the societal costs of injuries reported through NEISS.

2012 dollars (Miller et al., 2000).²¹ When combined with the costs associated with the deaths, the aggregate societal costs involving corded window coverings amounted to about \$110.7 million annually (i.e., \$92.4 million + \$18.3 million).

The Directorate of Economic Analysis typically calculates societal costs on a per product basis except in the unusual case where there is insufficient data to do so. The advantage of this approach is that it is robust with respect to scaling; that is, computing societal costs on a per product basis provides a measure of benefits that can be evaluated independent of other market conditions, particularly those that influence the size of the market or sales. Given the estimated number of window coverings in use reported above, societal costs would have amounted to an *average* of about \$0.13 per corded window covering per year (i.e., \$110.7 million ÷ 832 million window coverings).²²

Because window coverings are consumer products that remain in use for a number of years, the annual societal costs accumulate over the period of time in which the products are in use. Consequently, societal costs need to be treated as a stream of discounted costs that occur over the life of a product. Using data from WCMA members, Census, and a household survey, the D&R study presents an estimated breakdown of the U.S. market shares for the major window covering types. We use the D&R estimate to compute an average product life for a window covering of about seven years (across all window covering types). Based on a 7-year product life, the expected *present value* of the societal costs, discounted at a rate of 3.0 percent,²³ would *average* about \$0.85 per corded covering over its expected product life.²⁴

If we disregard safety improvements that may have been achieved during the study period due to changes in the voluntary standard, the societal cost figure of \$0.85 provides an estimate of the maximum per product benefits that could be achieved with any window covering safety rule (or any other safety remedy).²⁵ The value for the maximum per product benefit is useful because it provides an upper bound estimate of the per product cost level for a rule that still yields positive net benefits. Consequently, the benefits of any rule that prevents all cord-related deaths and

²¹ Medical costs and work losses (including long term work losses of those permanently injured, as well as the work losses of caregivers) accounted for 57 percent of the injury costs; the less tangible costs of injury associated with pain and suffering accounted for about 43 percent; product liability costs accounted for less than 1 percent of the injury costs.

²² Note that this annual estimate of approximately 13 cents represents an average across all corded window covering types and is based on deaths reported during 1999-2010 and injuries reported during 1996-2012.

²³ Our choice of discount rate is consistent with research suggesting that a real rate of 3 percent is an appropriate discount rate for interventions involving public health. See, for example, Gold et al. (1996) or Haddix et al. (2003).

²⁴ This estimate of \$0.85 in societal costs per window covering is an approximation based on a number assumptions, including: the estimated minimum number of deaths occurring annually, the \$8.4 million value of statistical life used, NEISS estimates of ED injuries, Injury Cost Model estimates of injuries treated outside of hospital emergency departments, Injury Cost Model estimates of the societal costs of injuries, and estimates of corded window coverings in use. While the estimate is an approximation, it is our best point estimate of societal costs and is based on the methodology typically applied by EC staff in evaluating the societal costs of product related injuries.

²⁵ While the estimate of \$0.85 per window covering represents our best point estimate of the per product societal costs, and its value may be affected by underlying assumptions, conceptually it represents the maximum *per product benefits* achievable with any safety remedy.

injuries would equal or exceed the rule's costs if, on average, the costs of the intervention (i.e., the costs of making window coverings safer) amounted to no more than about 85 cents per covering.²⁶ If a rule would not prevent all injuries, the expected per product benefits would be less than \$0.85.

The estimated maximum societal cost of \$0.85 per window covering represents an average across window covering types. However, it is conceptually straightforward to compute similar, separate values for specific window covering types using the market share information in the D&R study and referenced above, and the distribution of deaths and injuries across the various window covering types which were provided by the Directorate for Epidemiology.

Our preliminary estimates of the expected *present value* of the societal costs (discounted at a rate of 3.0 percent) for horizontal blinds, vertical blinds, and shades were as follows: about \$0.75 per horizontal blind, about \$1.20 per vertical blind, and about \$0.50 cents per shade. Thus, for example, the maximum expected per product benefits associated with a regulatory action that targeted only corded horizontal blinds, and prevented all deaths and injuries involving cords on horizontal blinds, would be about \$0.75. Interpretation of the values for vertical blinds and shades is analogous.

Based on this analysis, the added costs per window covering would have to be quite low, on a per product in use basis, for the benefits of any safety remedy to equal or exceed the costs. Intuitively, the explanation for this finding is that the risk of death and injury from a typical corded window covering is quite small. Based on estimates of the number of corded window coverings in use, the annual risk is about 0.013 deaths and 0.109 ED injuries per million corded window coverings in use. This represents about 1 death for every 75 million window coverings and 1 ED injury for every 9 million window coverings.

One of the reasons for this small *per product* risk is that window coverings are not children's products and only a relatively small proportion are actually used in households with young children.²⁷ Based on the 2011 American Community Survey, about 12.5 percent of U.S.

²⁶ Note that this intervention cost limit of \$0.85 per covering would include any costs associated with reduced utility that might result, as well as added production costs. Reductions in utility could result if, for example, the cordless window coverings are less convenient or more difficult for consumers to use, more time consuming to operate, less reliable in use, or more prone to failure.

²⁷ As a frame of reference, we can compare the magnitude of the window covering risk, per million products in use, to other product-related risks where the at-risk population is better matched to the product in question. For example, consider cribs – a product designed for and used by young children. There were about 14,100 ED injuries involving cribs in 2012 and an average of about 49 crib-related deaths annually during 2007-2009 (the most recent years available) (Chowdhury, 2013). Additionally, based on estimates from the CPSC's nursery products survey, there were about 12.6 million cribs in U.S. households with children under age six years in 2013. Consequently, the annual crib risk was about 3.89 deaths and about 1,119 ED injuries for every million cribs in use (or about 1 death for every 257,000 cribs and 1 ED injury for every 894 cribs). Thus, on a per product in use basis, the risk of death with cribs is about 300 times the risk of death for corded window coverings (i.e., 3.89 deaths per million cribs ÷ 0.013 deaths per million corded window covering); and the risk of ED injury with cribs is more than 10,000 times the injury risk for corded window coverings (i.e., 1,119 ED injuries per million cribs ÷ 0.109 ED injuries per million corded window covering).

households contain children under the age of six years (Vespa, Lewis, and Kreider, 2013). The practical implication is that the majority of the costs of any broad-based safety intervention (or a mandatory standard) affecting all corded window coverings, as proposed by the petitioners, would be borne by households that will not receive any direct benefits. On the other hand, an intervention that targets only at risk households would align benefits with costs and could assist in balancing benefits and costs overall.

Societal Costs Addressed by the Voluntary Standard

The societal cost estimates presented above were based on deaths reported during 1999-2010 and injuries reported during 1996-2012. However, some of the incidents from the study period would likely have been addressed or prevented by recent safety improvements to the voluntary standard. That is, the estimates of societal costs derived from harms reported from the late-1990s through 2012 do not fully reflect the more recent safety improvements in the voluntary standard, and therefore tend to overstate the societal costs that would be addressed by *further* improvements in the voluntary standard or any other regulatory (or non-regulatory) intervention.²⁸ Thus, our estimate of societal costs averaging about \$0.85 per corded covering may overstate the maximum actual benefits that could be achieved with a rule for corded window coverings.

Staff from the Directorate for Engineering Sciences (ES) has evaluated 249 in-depth investigations of reported window covering incidents and has concluded that about 57 to 74 percent would not have been prevented by the voluntary standard (Lee, 2014). While the ES evaluation is not based on a national sample of window covering incidents, it allows us to illustrate how accounting for an effectiveness rate for the voluntary standard affects our estimate of the maximum possible per product benefits that can be achieved with a safety rule. If the ES analysis is correct, it would suggest that the maximum possible benefits of any further safety improvements would amount to roughly 57 to 74 percent of the \$0.85 in the per product societal costs derived earlier, or about \$0.48 to \$0.63 (i.e., $\$0.85 \times 0.57$ to $\$0.85 \times 0.74$) per corded window covering over its expected product life.²⁹ This calculation would suggest that the benefits of any policy intervention that prevented *all* cord-related harms would equal or exceed the rule's costs if, on average, the costs of the intervention (i.e., the costs of making window coverings safer) amounted to no more than about 48 to 63 cents per covering.

²⁸ For example, some of the deaths reported during the earlier part of our study period (which could have involved window coverings installed in the late-1980s or early-1990s), might have already been addressed or prevented had the window coverings conformed to recent revisions to the voluntary standard. Because such deaths are nonetheless included in our evaluation of societal costs, our estimates overstate the societal costs that would actually be addressed by future changes to a standard for corded window coverings.

²⁹ The petitioners acknowledge that the current voluntary standard would have prevented some of the historical deaths and injuries described in the petition. Based on their evaluation of the approximately 250 publically available CPSC-investigations of corded window covering deaths and injuries from 1996 through 2012, the petitioners conclude that about 40 percent "would not have been prevented by the current voluntary standard" (Petition, 2013, p. 7; CPSC, 2013). If the petitioners' estimate is correct, the potential benefits of a rule that eliminated or made inaccessible window covering cords would consist of roughly 40 percent of the \$0.85 in societal costs, or about \$0.34 (i.e., $\$0.85 \times 0.40$) per corded covering over its expected product life.

Summary and Conclusion

Based on the currently available information discussed in this memorandum, shipments of residential window coverings range from about 100 million to 150 million annually; and there are more than one billion window coverings in use in existing U.S. households. Precise estimates of sales of cordless products are unknown, but cordless products appear to be widely available and may account for about 25 percent of the current market. Manufacturers and retailers offer cordless window coverings for virtually all products.

Because of the large number of window coverings in use relative to the number of deaths and injuries, the risks associated with window coverings are small – on the order of about 0.013 deaths and 0.109 ED injuries annually per million corded window coverings in use. And because the risks are low, the expected present value of the societal costs associated with corded window coverings appear to range from roughly \$0.48 to \$0.63 per covering. These expected societal costs represent the maximum benefits per product that would be derived from a mandatory rule that eliminated accessible cords as proposed by the petitioners. In contrast, the petitioners' estimate that the costs associated with eliminating cords from horizontal blinds would amount to about \$2 to \$9 per blind.

Finally, staff notes that there does not appear to be a failure of the market to provide for the cordless products (or window coverings with inaccessible cords). Although staff cannot precisely estimate the annual sales of cordless window coverings or conversion kits, it seems clear that cordless products are available to consumers who want to purchase them. Cordless products are advertised on many manufacturers' and retailers' websites, and consumers can readily purchase and install cordless window coverings if they are willing to pay the generally higher prices that go along with these products. In addition, according to WCMA, production costs for motorized systems are declining and sales of these systems are increasing. The decrease in production costs will likely lead to decreased product prices and further increases in the future sales of cordless options. Thus, even in the absence of regulatory actions, reductions in production costs and prices are market forces already in place that are likely to continue the recent increase in sales of cordless window coverings.

While the market appears to be generating relevant safety information regarding corded window coverings as well as providing adequate cordless options, the extent to which consumers are aware of the information and alternatives is less apparent. It is likely that some proportion of consumers with young children, the households most likely to benefit from purchasing cordless options, are not receiving the industry generated information regarding the risks of corded window coverings. For example, if these consumers purchase window coverings from relatively inexpensive mass retailers that may be less customer-service oriented, they may receive limited (or possibly no) information regarding the cordless alternatives from a sales representative at the point of sale. In addition, because cordless products are generally priced higher than similar corded products, consumers who shop at mass retailers may encounter fewer on the shelf cordless options. The disconnect between information and audience is a potential source of market failure that could be corrected through a directed information and education campaign, if such a campaign could be shown to be effective.

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Window Coverings Association of America. <http://www.wcaa.org/>

Window Covering Manufacturers Association. <http://www.wcmanet.org/>

Window Covering Safety Council. <http://www.windowcoverings.org/>

TAB H: Response to Comments Received on Window Coverings Petition

**T
A
B

H**



UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
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Memorandum

Date: August 5, 2014

TO : Window Coverings Petition File

THROUGH: Joel Recht, Ph.D.
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FROM : Rana Balci-Sinha, Ph.D., Project Manager, Window Coverings Petition
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SUBJECT : Response to Comments Received on Window Coverings Petition

Introduction

The Consumer Product Safety Commission (CPSC or Commission) received a petition requesting the Commission to: (a) promulgate a mandatory standard that prohibits any window covering cords, when a feasible cordless alternative exists; and (b) require that all window covering cords be made inaccessible through the use of a passive guardian device when a feasible cordless alternative does not exist (Petition). The Commission published a request for public comment on this Petition (CPSC-2013-0028) in the *Federal Register* on July 15, 2013.

The comment period ended on September 13, 2013. The Commission received a total of 543 comments. CPSC staffs' summary of the comments and proposed responses follow.

Comments Received and Staff's Responses

The majority of the 543 comments support granting the Petition. A total of 10 comments, submitted by seven consumers and three trade associations, support denial of the Petition. Consumers submitted the bulk of the comments on the Petition. Comments were also received from five window covering professionals, four consumer advocate groups, two attorneys, and one pediatrician. Family, friends, and coworkers of families that lost a child due to corded window coverings filed 148 comments that mention a child's death. Commenters also seek a variety of outcomes from the Commission, including:

- inaccessible window covering cords (143),
- cordless window coverings (72);
- cordless or inaccessible cords (45);
- guarded window covering cords (37), and

- break away cords (2).

Many commenters (155) included statements such as wanting to prevent tragic deaths, asking for safer products, and stating that it is time for change. The significant issues raised in the comments are presented below, followed by staff's responses.

ANSI/WCMA A100-1.2012 Voluntary Standard

Comment: Three commenters state that the then-current ANSI/WCMA A100-1.2012 voluntary standard was the most stringent in the world and has been a model for the revision of Canadian, European Union, and Australian safety standards.

Response: Staff's analysis in Tab E shows that the ANSI/WCMA A100.1-2012 standard is the most stringent standard when compared to Australia's *Trade Practices (Consumer Product Safety Standard- Corded internal Window coverings) Regulations 2010 F2010C00801*, Canada's *Corded Window Covering products Regulation SOR/2006-112* and *National Standard of Canada's Safety of Corded window covering products CAN/CSA-Z600-08*, and Europe's *Internal blinds- Performance requirements including safety BS: EN 13120*.

Comment: One industry commenter (Window Covering Manufacturing Association (WCMA)) suggests that substantial compliance with the voluntary standard is present in the industry. Another commenter, a window coverings professional, stated that some companies do not follow the voluntary standard out of ignorance or apathy and that a strong mandatory standard is necessary.

Response: CPSC staff does not know whether substantial compliance with the voluntary standard exists in the window covering industry. According to an industry trade association and the WCMA, manufacturers of window covering are in substantial compliance with the voluntary standard and have redesigned almost every window covering product in the market to address safety hazards.

Comment: One commenter suggests that compliance with voluntary standard will result in adequate reduction of risk of injury.

Response: Staff believes that products that comply with the voluntary standard are associated with a reduced risk of injury and death due to hazardous cords. However, as described in Tab E, staff's analysis of 249 in-depth investigations by CPSC investigators (IDIs) shows that the ANSI/WCMA A100.1-2012 would effectively address 26% of the investigated incidents, while the standard would not effectively address approximately 57% of the incidents.

Comment: One commenter (WCMA) states that the majority of the incidents (80%) are linked to pre-standard products.

Response: Staff acknowledges that the CPSC-WCMA joint analysis of 1996-2002 IDIs showed that 80% of incidents were linked to pre-standard products¹. Staff believes that the major benefit of identifying the age of the product is to demonstrate the presence of pre-standard products (*i.e.*, older products) in the incident data, which is predictable given the long lifetime of the products. However, this information is not very useful to determine if the hazard that is associated with the incident is addressed by the 2012 version of the standard.

Comment: Two commenters state that the voluntary standard fails to address 40% incidents.

Response: Staff's analysis of 249 IDIs demonstrates that at least 57% of the incidents reviewed would not have been prevented by conforming to the existing voluntary standard.

Public Education

Comment: One commenter states that the best way to bring about the change in replacing pre-standard window coverings with compliant products is through consumer education. The commenter also stated that the Window Covering Safety Council (WCSC) has undertaken extensive consumer education initiatives for this purpose.

Response: Staff agrees that replacing pre-standard window coverings with newer products that comply with the current voluntary standard will effectively reduce the risk associated with certain entanglement factors, including inner cords, pull cords ending in single tassels, and lift cord loop on roll up style blinds. However, staff analysis shows that even newer window covering products carry a continued risk associated with long and exposed pull cords and continuous loops that are not tensioned.

Comment: One commenter states that the best approach to reduce the risk of injury associated with window covering cords is to keep cords away from children which can be achieved through public education campaigns and retrofit kits. Another commenter states that education, not a mandated rule, is the key to reducing the risk of injury.

Response: Staff agrees that public awareness is a crucial component in making safe purchasing decisions and safely using window covering products at home. Public information campaigns are on-going. CPSC and the Window Covering Safety Council (WCSC) have joined forces to raise awareness of strangulation risks presented by window covering cords. October has been designated "Window Covering Safety Month" by CPSC and the industry coalition since 2003. However, staff does not have information to evaluate the effectiveness of public information campaigns on reducing the risk of injury associated with corded window coverings.

Comment: One commenter states that educational campaigns have been inadequate and do not get the attention of consumers who do not read magazine ads or do not listen to the news during 1-2 minute segment when window blind strangulation is discussed.

¹ <http://www.cpsc.gov/PageFiles/103925/webreport1.pdf>

Response: CPSC and the Window Covering Safety Council (WCSC) have joined forces to raise awareness of strangulation risks presented by window covering cords. October has been designated "Window Covering Safety Month" by CPSC and the industry coalition since 2003. However, Staff does not have information to evaluate the effectiveness of public information campaigns on reducing the risk of injury associated with corded window coverings.

Injury and Death Rates

Comment: One commenter states that a mandatory standard will not eliminate all incidents associated with window coverings. The commenter further explains that petitioners' demand that CPSC ban all corded products would eliminate safe products (*e.g.*, retractable cord systems) from the market.

Response: Petitioners did not ask for a ban on all corded window covering products. Petitioners asked the Commission to issue a rule that requires cordless products when feasible, and that requires remaining window covering cords to be inaccessible using a passive guarding device. CPSC staff will not speculate on the adequacy of any undefined mandatory rule.

Comment: Three commenters note a continuous decline in fatalities related to corded window coverings since 1996; stating that the trend should continue as more products comply with the updated safety standards.

Response: Staff's analysis of fatality data is in Tab B. Staff cannot draw any conclusions or trends on the data because (1) non-NEISS incidents reported to CPSC are anecdotal, and (2) a trend analysis is not feasible due to the unreliability of the yearly estimates in the NEISS data.

Feasibility of Cordless Window Coverings

Comment: Three commenters state that it is technologically feasible to design a window covering that eliminates outer cords, *i.e.*, cordless window covering, and that manufacturers have also indicated cordless window coverings are available in retail stores. The commenters assert that cord coverings and retro fit kits that convert corded window coverings into cordless window coverings are available in the U.S. market. A fourth commenter disagrees and states that while cordless technology is available in many popular styles, cordless technology is a) not available in all product styles and sizes and b) does not meet the needs of a wide variety of consumer groups.

Response: As discussed in Tab F, cordless products are available and technologically feasible for most, if not all, types of window coverings. Cord coverings and retrofit safety kits are also widely available. However, staff acknowledges that some product styles and sizes do not have cordless technology, and that cordless technology may be less well suited for some types of window coverings, and some consumers may prefer the corded technology.

Cost of Cordless Products and Products with Inaccessible Cords

Comment: Five commenters addressed the price for cordless window coverings. One commenter states that the cost of cordless window coverings would likely increase due to increases in

research and development costs, labor costs, marketing, etc. Another commenter states that the price of cordless window coverings can be lower than that of corded window coverings and may decline over time, citing the example that the cost of a wand operating system for vertical blinds is cheaper than the comparable corded system. A third commenter asserts that cordless window coverings are considerably more expensive than corded window coverings, *e.g.*, the price of cordless blinds can be 20% to 50% more than corded blinds. Four commenters state that they would be willing to pay more for safer products, and another commenter states that the additional cost for cordless products would not burden the industry as the cost would be passed onto consumers.

Response: In general, as described in Tab G retail prices for cordless products are higher than the retail prices for corded products. While the staff has found instances in which the retail prices for cordless and comparable corded window coverings are about the same, retail prices of manually operated cordless window coverings generally range from about \$15 to \$130 more than the prices for comparable corded window coverings. The prices for motor operated window coverings appear to range from \$100 to in excess of \$300 more than comparable corded coverings. Staff has found no instances in which the retail price of cordless products were actually less than the prices for comparable corded products. While the staff generally expects the costs of cordless products to be greater than comparable corded products, staff has insufficient information to determine how the costs or retail prices of cordless window coverings will change over time.

Comment: Five commenters, including one installer, argue that it is feasible to design products that eliminate the hazard at nominal cost. These commenters argue that products with inaccessible cords can cost less than their corded equivalent, cost effective products are currently in the market and depending on the solution, some products may not see an upcharge when made safer.

Response: As described in Tab F, CPSC staff found that products with safer technologies that shorten an operating cord (*e.g.*, cord retractors) or make the cords inaccessible cost more than their corded equivalents. However, staff has insufficient information to determine how the costs or retail prices of products with safer technologies will change over time.

Product is not intended for a child

Comment: One commenter states that window coverings are intended for adults and there is no need to “child-proof.”

Response: CPSC is charged with protecting the public from unreasonable risks of injury or death associated with the use of the thousands of types of consumer products under the agency's jurisdiction. Over the years CPSC has addressed the risks to children from non-child products, including lighters and child-resistant packaging for certain chemical and cosmetic products and drugs.

Rental Homes and Landlord Responsibility

Comment: Four commenters raised the issue of window coverings in rental units. One commenter suggests that landlords who rent their homes should be required to have up-to-date blinds. Another commenter states that the consumer's landlord refuses to replace the blinds of the house. A third commenter states that landlords should be required to modify window coverings already in place. The fourth commenter states that they have no choice other than mini blinds in their apartment complex.

Response: CPSC regulates use of consumer products, wherever consumers may use such products (homes, schools, in recreation, or otherwise). Certain state and local authorities may have regulations in place with regard to rental homes. CPSC staff agrees with the commenters' concerns regarding window coverings included in rental units where tenants with young children may not have the option of choosing safer window coverings.

Comments about the locations likely to accommodate children

Comment: Three commenters ask that corded window coverings be eliminated from areas such as foster homes, group homes, daycare facilities, and military housing.

Response: CPSC regulates use of consumer products, wherever consumers may use such products (homes, schools, in recreation, or otherwise). Certain state and local authorities may have the authority to implement regulations with regard to foster homes, group homes, and daycare facilities. For example, several states have banned corded window coverings from day care facilities and foster homes.

CPSC collaborates with the Housing and Urban Development and Department of Defense ²to ensure that building management professionals can make appropriate choices for installing window coverings in places such as military housing.

Consumer Acceptance

Comment: Two commenters expressed concern about cordless blinds being the only alternative and some populations having difficulty operating those products. One commenter states that “[c]ordless blinds will also cause problems for the elderly, handicapped, and consumers with tall windows. Many will not be able to reach fully retracted blinds.” Another commenter states that “[t]here is not a cordless alternative for all windows and applications or one that is appropriate for all consumers (e.g., the elderly and persons with disabilities).”

Response: While some populations may have difficulty using a cordless window covering, cordless window coverings are not the only means of addressing the strangulation hazard to

² <http://www.acq.osd.mil/ie/download/DoD-CPSC%20Home%20Child%20Safety%20-%20Apr%2029%202013.pdf>

children. Other types of window coverings are available that remove the risk of strangulation to children but are accessible to all consumers.

Risk associated with window coverings

Comment: One commenter states that the window coverings industry usually suggests that window covering cords are no more dangerous than any other household products, where there may actually be an equal or greater number of injuries. The commenter argues that if the length and duration of daily exposure to the hazard is considered, the risk associated with window covering cords is exponentially higher than the risks with virtually any other household item. The commenter provides two examples to support this statement, including the use of cribs.

Response: Staff cannot evaluate the commenter's claims as staff does not have sufficient information on the exploration scenarios of young children in a home environment that would assist in an evaluation of exposure time.

Conclusion

Numerous (543) comments were submitted in response to the corded window coverings Petition. Comments were received on a range of topics, including the voluntary standard, public education and awareness campaigns, injury and death rates, cost of the products, consumer acceptance, and risk of injury. CPSC staff summarized, considered, and responded to the comments for inclusion in a Petition briefing package to the Commission.