UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
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This document has been electronically approved and signed.

DATE: July 15, 2015

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: Final Rule to Amend Substantial Product Hazard List to Include Extension Cords

BALLOT VOTE DUE: July 21, 2015

The Office of the General Counsel is providing for Commission consideration the attached draft final rule for publication in the *Federal Register*. The final rule would amend the Commission's rule at 16 C.F.R. part 1120, Substantial Product Hazard List, to state that extension cords that do not contain all applicable readily observable characteristics (minimum wire size, sufficient strain relief, proper polarization, proper continuity, outlet covers for 2-wire indoor cords, and jacketed cords for outdoor extension cords) constitute a substantial product hazard under the Consumer Product Safety Act.

Please indicate your vote on the following options:

I. Approve publication of the attached document in the *Federal Register*, as drafted.

_____ _____
(Signature) (Date)

II. Approve publication of the attached document in the *Federal Register*, with changes. (Please specify.)

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_____ _____

(Signature) (Date)

III. Do not approve publication of the attached document in the *Federal Register*.

_____ _____

(Signature) (Date)

IV. Take other action. (Please specify.)

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(Signature) (Date)

Attachment: Draft *Federal Register* Notice: Final Rule to Amend Substantial Product Hazard List to include Extension Cords

Billing Code 6355-01-P

CONSUMER PRODUCT SAFETY COMMISSION

16 CFR Part 1120

[CPSC Docket No. CPSC-2015-0003]

Substantial Product Hazard List: Extension Cords

AGENCY: Consumer Product Safety Commission.

ACTION: Final rule.

SUMMARY: The Consumer Product Safety Commission ("CPSC" or "Commission") is issuing a final rule to specify that extension cords (both indoor and outdoor use extension cords) that do not contain one or more of five applicable readily observable characteristics set forth in the rule, as addressed in a voluntary standard, are deemed a substantial product hazard under the Consumer Product Safety Act ("CPSA").

EFFECTIVE DATE: The rule takes effect on [**insert date that is 30 days after publication in the *Federal Register***]. The incorporation by reference of the publication listed in this rule is approved by the Director of the Federal Register as of [**insert date that is 30 days after publication in the *Federal Register***].

FOR FURTHER INFORMATION CONTACT: Mary Kroh, Office of Compliance and Field Operations, Consumer Product Safety Commission, 4330 East West Highway, Bethesda, MD 20814; telephone: 301-504-7886; mkroh@cpsc.gov.

SUPPLEMENTARY INFORMATION:

I. Background and Statutory Authority

A. Statutory Authority

Section 223 of the Consumer Product Safety Improvement Act of 2008 ("CPSIA"), amended section 15 of the CPSA, 15 U.S.C. 2064, to add a new subsection (j). Section 15(j) of the

CPSA provides the Commission with the authority to specify, by rule, for any consumer product or class of consumer products, characteristics whose existence or absence are deemed a substantial product hazard under section 15(a)(2) of the CPSA. Section 15(a)(2) of the CPSA defines a "substantial product hazard," in relevant part, as a product defect which (because of the pattern of defect, the number of defective products distributed in commerce, the severity of the risk, or otherwise) creates a substantial risk of injury to the public. A rule under section 15(j) of the CPSA (a "15(j) rule") is not a consumer product safety rule that imposes performance or labeling requirements for newly manufactured products. Rather, a 15(j) rule is a Commission determination of a product defect, based upon noncompliance with specific product characteristics that are addressed in an effective voluntary standard. For the Commission to issue a 15(j) rule, the product characteristics involved must be "readily observable" and have been addressed by a voluntary standard. Moreover, the voluntary standard must be effective in reducing the risk of injury associated with the consumer products, and there must be substantial compliance with the voluntary standard.

B. Background

On February 3, 2015, the Commission issued a notice of proposed rulemaking ("NPR") in the *Federal Register* to amend the substantial product hazard list in 16 CFR part 1120 ("part 1120") to add extension cords that lack certain readily observable safety characteristics addressed by a voluntary standard because such products pose a risk of electrical shock or fire. 80 FR 5701. The comment period on the proposed rule closed on April 20, 2015. As detailed in section II of this preamble, the Commission received four comments on the proposed rule, covering three issues.

The Commission is now issuing a final rule to amend part 1120 by adding four readily observable characteristics that apply to all general-use extension cords (indoor and outdoor extension cords, including indoor seasonal extension cords):

(1) minimum wire size;

(2) sufficient strain relief;

(3) proper polarity; and

(4) proper continuity.

Additionally, the final rule includes one characteristic, outlet covers, that applies to 2-wire indoor extension cords, and one characteristic, jacketed cord, that applies to outdoor extension cords. Accordingly, as of the effective date of this rule, extension cords within the scope of the rule that do not conform to all five applicable characteristics described in the voluntary standard, Underwriters Laboratories ("UL"), *Standard for Cord Sets and Power-Supply Cords*, UL 817, 11th Edition, dated March 16, 2001, as revised through February 3, 2014 ("UL 817") will constitute a substantial product hazard.[1] Nonconforming extension cords are deemed to create a substantial product hazard under section 15(a)(2) of the CPSA because such products pose a risk of electrical shock or fire.

The Commission is finalizing the rule with two minor clarifications as recommended by CPSC staff. First, the final rule deletes an erroneous citation to section 31 of UL 817 in §1120.3(d)(1), the requirements for minimum wire size. Section 31 of UL 817 states requirements for attachment plugs, which are not related to minimum wire size, and thus should not be referenced in the section of the rule concerning minimum wire size. Second, the term "jacketed insulated cord" is replaced with "jacketed cord" in § 1120.3(d)(6) of the final rule and in this preamble, when describing a readily observable characteristic for outdoor extension cords. This change is not intended to change the scope of the rule or the requirements, but to clarify the characteristics of UL 817 being incorporated by reference. As explained more fully in response to comment 3 in section II of the preamble, the NPR proposed (and the final rule would require) jacketing – not insulation – as a readily observable characteristic of outdoor extension cords.

[1] The UL mark and logo are trademarks of Underwriters Laboratories, Inc.

C. Extension Cords

The final rule uses the phrase "extension cords" to identify the products that are within the scope of the rule. The Commission received no comments on the definition of "extension cords" described in the NPR; accordingly, the final rule will continue to define an "extension cord" (also known as a cord set), consistent with the description of products subject to UL 817, as a length of factory-assembled flexible cord with an attachment plug or current tap as a line fitting and with a cord connector as a load fitting. Extension cords are used for extending a branch circuit supply of an electrical outlet to the power-supply cord of a portable appliance, in accordance with the National Electrical Code.® The final rule applies to extension cords that are equipped with National Electrical Manufacturer Association ("NEMA") 1-15, 5-15 and 5-20 fittings, and that are intended for indoor use only, or for both indoor and outdoor use. We refer to cords intended for indoor use only as "indoor cords" and to cords intended for both indoor and outdoor use as "outdoor cords." The term "extension cord" does not include detachable power supply cords, appliance cords, power strips and taps, and adaptor cords supplied with outdoor tools and yard equipment.

All products within the scope of the final rule are covered by UL 817. Table 1 provides a non-exhaustive list of examples of extension cords that fall within and outside the scope of the final rule. Not included in this rule are detachable power supply and appliance cords and adaptor cords supplied with outdoor tools and yard equipment because these cords are specific-purpose, rather than general-use cords. The products that are outside the scope of the final rule are not subject to UL 817, or they do not present the same risks of injury.

Table 1: Extension Cords:
Products Within and Outside the Scope of the Final Rule

In Scope: Household extension cords, factory-assembled, 120 volts AC, including: • Indoor or general-use cord sets, including seasonal indoor cord sets • Outdoor cord sets
Out of Scope: • Detachable power cords, either with appliance or other nonstandard plugs (*e.g.*, accompanying electronic or other electrically powered items), or with fittings of different configurations (*e.g.*, a clothes washer replacement cord with a plug at one end and individual wire terminals at the other end) • Unassembled components, such as flexible cord or fittings, which may be assembled into extension cords or installed in permanent branch circuit wiring systems • Cord sets intended for use with non-branch-circuit household current, *i.e.*, greater or less than nominal 120 volts AC (*e.g.*, for use with 220 volt appliances, or for 15-50 ampere/125-–250-volt recreational vehicles) • Power strips, power taps, and surge protectors

D. Applicable Voluntary Standard

The current voluntary standard applicable to extension cords is UL 817-2014. UL has updated UL 817 over the years to address various safety issues to make extension cords safer, *see* Staff's Draft Proposed Rule to Add Extension Cords to the Substantial Product Hazard List in 16 CFR Part 1120, January 21, 2015 ("Staff NPR Briefing Package") Tab B, Extension Cords: Abbreviated History and the Associated UL Standards. The Staff's NPR Briefing Package is available on the CPSC's website at: http://www.cpsc.gov/Global/Newsroom/FOIA/CommissionBriefingPackages/2015/Proposed-Rule-to-Amend-Substantia-Product-Hazard-List-to-Include-Extension-Cords.pdf.

Many of the safety requirements for extension cords predate the existence of the CPSC. For example, CPSC staff believes that UL incorporated requirements for polarized (and grounded) plugs and receptacles on cord sets around 1962. A search by CPSC staff found that grounded plugs were developed as early as 1911, and polarized plugs became available in 1914. The National Electrical Code ("NEC") adopted requirements for polarized electrical outlets in 1948 and for grounded 120-volt receptacles in 1962. Since 1987, UL 817 has addressed the identified, readily observable characteristics that are included in the rule (minimum wire size, sufficient strain relief, proper

polarization, proper continuity, outlet covers for indoor cords, and jacketed cords for outdoor extension cords).

Table 2, which also appeared in the NPR at 80 FR 5703, summarizes the required readily observable characteristics in UL 817 associated with all extension cords, as well as specific requirements for indoor- and outdoor-use extension cords. The Commission received no comments on these requirements for extension cords and no comments on Table 2. Thus, Table 2 remains an accurate summary of the provisions of UL 817 that are being incorporated by reference into the final rule.

Table 2. Readily Observable Characteristics for Extension Cords

General Extension Cord Usage	Readily Observable Characteristics				
	Minimum Wire Size (AWG)	**Sufficient Strain Relief**	**Proper Polarization**	**Proper Continuity**	**Protective Feature**
Indoor ***UL 817 Section 20***	16AWG, or 17/18AWG with integral overcurrent protection *UL 817 Sections 2.10, 21*	18AWG or larger must withstand 30 pound force *UL 817 Section 84*	Cord fittings must be polarized (NEMA1-15) or have a grounding pin (NEMA5-15) *UL 817 Sections 9, 19*	Plug and outlet terminals must be connected in identical configuration (*i.e.*, Hot-to-Hot, likewise for Neutral and Ground) *UL 817 Sections 16, 105*	Outlet covers must be provided on unused outlets on 2-wire parallel *UL 817 Section 26.7*
Outdoor ***UL 817 Section 30***	SAME *UL 817 Section 2.13, 30*	SAME	SAME *UL 817 Sections 31, 32*	SAME	Jacketed flexible cord *UL 817 Section 30*

E. Risk of Injury

1. Electrocution and Fire Hazards

The preamble to the NPR explained that consumers can be seriously injured or killed by electrical shocks or fires if extension cord products are not constructed properly. 80 FR at 5703-04. To reduce the risk of injury caused by fires or electrical shocks, the final rule requires that all extension cords covered by UL 817 comply with requirements for minimum wire size, sufficient strain relief, proper polarization, and proper continuity.

- *Wire size*. Conforming to the minimum wire size requirement in UL 817 supports a product's electrical load to avoid the hazard of fire and electrical shock. When an extension cord does not contain the correct wire size for the load, the cord becomes hot and the insulation is degraded. Damaged insulation can fail by sagging, melting, or hardening and breaking apart, which can expose the energized wire inside the extension cord. Exposed energized wires present a risk of fire and electrical shock. Additionally, conforming to the minimum wire size requirement contributes to the necessary mechanical strength to endure handling and other forces imposed on an extension cord during expected use of the product.

- *Strain relief.* Conforming to the strain relief requirement in UL 817 helps to ensure that use of extension cords, including pulling and twisting the cords, does not cause mechanical damage to the connections and prevents separation of wires from their terminal connections during handling (*e.g*., being pulled, twisted). Damaged connections, such as broken strands of copper wiring inside the insulated wiring, could cause overheating (leading to a fire) or separation of wires from their terminal connections, which could expose bare energized conductors (leading to electrical shock and fire).

- *Proper polarity.* An extension cord that conforms to the proper polarity requirements in UL 817 minimizes the risk of accidental contact with an energized conductor. Polarization clearly identifies the energized wire in the cord set and maintains, in conjunction with other construction requirements, the same orientation as the receptacle of the branch circuit for the products, such as lighting, appliances, and other equipment plugged into the extension cord. For example, a product that employs a power switch that must be located in the energized side of the power supply circuit will be supplied in the proper orientation, thus reducing the risk of electrical shock.

- *Proper Continuity*. An extension cord that conforms to continuity requirements in UL 817 provides a continuous conductive path from line to load fitting so that the cord can serve its intended function. For each terminal in the plug fitting, a corresponding conductor must be attached to the corresponding terminal in the load fitting. For example, a cord attached to a plug with a grounding pin must have a grounding conductor. Each wire in the cord also must be connected properly on each end so that, for example, the grounding pin of the plug on a three-wire cord is connected to the grounding socket on the outlet, and the energized blade on the plug is not wired to the non-energized receptacle on the outlet. Proper continuity from end to end reduces the risk of both fire and electrical shock.

Indoor (2-wire) and outdoor extension cords each have one additional safety requirement that is also readily observable and reduces the risk of injury.

- *Outlet covers*. Indoor 2-wire parallel extension cords with polarized parallel-blade and -slot fittings must contain outlet covers. Outlet covers reduce the risk of injury to children, in particular, by minimizing the opportunity for a child to probe plugs with small objects or chew on the exposed receptacle surfaces, which can lead to hand or mouth burns and electrical shock.

- *Jacketed cords.* Outdoor extension cords must have jacketed cords. A jacketed cord protects the individual insulated conductors from damage when exposed to weather and other conditions associated with outdoor use. An unjacketed extension cord used outdoors is susceptible to damage that can lead to exposed conductors, and thus, present a risk of shock and fire.

2. Incident Data

For the NPR, CPSC staff searched extension cord incident data reported between 1980 and May 2014 from CPSC's Injury or Potential Injury Database ("IPII") for both fatal and nonfatal incidents; staff searched the Death Certificate Database ("DTHS") for fatal incidents. Staff limited the scope of the incidents under consideration to incidents involving fire, burn, and shock hazards.

CPSC staff has updated this data, and found that a total of 765 fatal incidents, 1,128 deaths, and 4,760 nonfatal incidents involving extension cords were in-scope, and occurred between 1980 and 2013.[2] 80 FR at 5704.

For the final rule, staff also searched IPII and DTHS for in-scope incidents reported from January 2014 through April of 2015. CPSC staff found an additional 21 in-scope fatal incidents that occurred in 2014 (involving 25 deaths) and two fatal incidents (two deaths) in 2015. CPSC staff found an additional 83 nonfatal extension cord incidents that occurred in 2014, and staff found 11 nonfatal incidents that occurred in 2015. *See* Tab E, Staff Briefing Package: Final Rule to Amend 16 C.F.R. Part 1120 to Add Extension Cords, dated July 15, 2015 ("Staff's Final Rule Briefing Package"), available at: INSERT LINK.

Table 3 shows the annual average number of reported incidents associated with extension cords for five different periods for fatal incidents, deaths, and nonfatal incidents. The table presents data for the 35-year period, divided into five 7-year periods. Reporting may not be complete for the most recent period because sometimes CPSC receives reports of incidents years after the incidents have occurred. Table 3 shows a steady decline in the number of reported extension cord fire, burn, and shock fatal incidents, deaths, and nonfatal incidents in CPSC databases since the 1980s.

[2] Staff has updated incident data to include retailer reports.

Table 3. Extension Cord Annual Average of Reported Fatal Incidents, Deaths, and Non-fatal Incidents from 1980 – 2014

Years	Fatal Incidents	Deaths	Non-fatal Incidents
1980 – 1986	32.7	47.7	201.0
1987 – 1993	27.7	46.6	179.3
1994 – 2000	23.6	31.1	131.6
2001 – 2007	15.9	21.7	114.3
2008 - 2014	12.4	17.6	65.7

F. Compliance Efforts to Address the Hazard

As noted in the preamble to the NPR, the Office of Compliance sent a letter dated January 9, 2015 to manufacturers, importers, distributors, and retailers of extension cords, informing them that the Office of Compliance considers products that do not conform to the UL 817 requirements for the five applicable readily observable characteristics to be defective and to present a substantial product hazard. 80 FR at 5704-05. In numerous instances over a period of 20 years, CPSC staff has considered the absence of one or more of the identified readily observable characteristics (minimum wire size, sufficient strain relief, proper polarization, proper continuity, outlet covers for 2-wire indoor cords, and jacketed cords for outdoor extension cords) to present a substantial product hazard and has sought appropriate corrective action to prevent injury to the public. Since August 2014, however, no additional recalls or import stoppages of extension cords have occurred.

II. Summary of Comments on the Proposed Rule and CPSC's Responses

The Commission received four comments, comprising three issues, in response to the NPR. No commenters opposed the rule. One comment was received from an industry association and three comments were from consumers. The industry association expressed general support for the proposed rule and suggested an additional readily observable characteristic of extension cords. The consumer commenters were also generally supportive of the NPR. As explained in response to comment 3, the Commission made one minor clarification to the final rule based on the comments received. Below are summaries of the comments and the Commission's responses:

Comment 1: One commenter suggested an additional "readily observable" characteristic of extension cords, a visual check and test using a magnet, to ensure that the wire strands in extension cords are made of copper instead of steel.

Response 1: UL 817, by reference to UL 62, *Standard for Safety for Flexible Cords and Cables,* requires that extension cords be made of annealed copper wire strands. For example, neither aluminum nor steel is an acceptable material for wire used in extension cords under UL 817. Magnets are not attracted to copper or aluminum, but are attracted to steel. Thus, the commenter is suggesting that CPSC use a magnet to test for noncompliant steel wire. Although a magnet can detect steel, it cannot detect other noncompliant wire materials, such as aluminum. Accordingly, the Commission disagrees with the commenter's suggestion because magnets cannot be used to detect the required copper wire strands, nor can magnets be used to detect all other noncompliant materials. A resistance measurement could distinguish whether a conductor is made of copper, but the high-precision equipment required for a sufficiently accurate measurement is costly, and use of it may not be "readily observable."

Regardless of the rule, if CPSC staff finds that the extension cord's construction is noncompliant with the voluntary standard, staff can collect samples of such products and conduct a preliminary determination of whether the product presents a substantial product hazard. If such product does present a substantial product hazard, CPSC can take action to remove the products from the market.

Comment 2: Two commenters asked whether an extension cord must include all of the readily observable characteristics outlined in the proposed rule, or just one characteristic.

Response 2: Four of the six observable characteristics apply to all general-use extension cords (indoor and outdoor extension cords, including indoor seasonal extension cords): (1) minimum wire size; (2) sufficient strain relief; (3) proper polarity; and (4) proper continuity. All

four characteristics must be present for the product not to present a substantial product hazard. Additionally, one characteristic (outlet covers) applies to 2-wire indoor extension cords, and one characteristic (jacketed cord) applies to outdoor extension cords. Thus, 2-wire indoor and all outdoor extension cords would each be required to exhibit five readily observable characteristics described in UL 817. If one or more applicable characteristics are missing, the product presents a substantial product hazard under section 15(a)(2) of the CPSA.

Comment 3: One commenter believed that UL 817 only requires an outdoor two-conductor extension cord to have flexible insulation on each conductor and does not require a jacket over the conductors.

Response 3: Section 30.1 of UL 817 specifies the types of flexible cords that may be used to construct outdoor extension cords. All of the cords specified in section 30.1 of UL 817 require a jacketed layer covering the conductors.[3] A "jacket" is a layer of flexible plastic or rubber intended to prevent the individual insulated conductors inside the cord from being exposed to the environment, and to prevent mechanical damage to the conductors.

The commenter may misunderstand an *additional* requirement stated in section 30.1a: "A 2-wire type of outdoor-use cord set shall contain two insulated circuit conductors." This requirement for the individual conductors in an extension cord to be insulated does not eliminate the primary requirement for a jacket to cover the conductors on extension cords for outdoor use.

In the NPR, the Commission described the requirement for a jacketed cord as a "jacketed insulated cord." This designation may be confusing, because readers may conflate the two different requirements stated in section 30 of UL 817, one for a jacketed cord, and the other for insulated conductors inside the cord jacket. The NPR proposed to require a jacketed cord, not insulated

[3] *Wire and Cable Marking and Application Guide,* January 2014, Regulatory Services Department, UL, Northbrook, IL.

conductors, as a readily observable characteristic of outdoor extension cords. Accordingly, the Commission has replaced the term "jacketed insulated cord" throughout the preamble and in the regulation text at §1120.3(d)(6) to "jacketed cord" to clarify that the rule only applies to the jacket requirement in section 30 of UL 817 for outdoor-use extension cords.

III. Information Supporting Substantial Product Hazard Determination

A. Defined Characteristics Are Readily Observable and Addressed by UL 817

Sections 2, 9, 16, 19, 20, 21, 26, 30, 31, 32, 84, and 105 of UL 817 set forth the requirements for the readily observable characteristics specified in the final rule: minimum wire size, sufficient strain relief, proper polarization, proper continuity, outlet covers for 2-wire indoor cords, and jacketed cords for outdoor extension cords. Table 2 in section I.D of this preamble summarizes the technical requirements for the five applicable readily observable characteristics in UL 817. The final rule deems the absence of any one of these applicable characteristics to be a substantial product hazard under section 15(a)(2) of the CPSA. The preamble to the NPR set forth information to support a finding that minimum wire size, sufficient strain relief, proper polarization, proper continuity, outlet covers for 2-wire indoor cords, and jacketed cords for outdoor extension cords, are readily observable characteristics from UL 817. *See* 80 FR 5705-08. We summarize that information here.

1. Minimum Wire Size

Section 2 of UL 817 requires that a "general-use cord set" be made using flexible cord, as described in Table 20.1, with conductors sized 18, 17, 16, 14, 12, or 10 AWG terminated in a plug and outlet. Extension cords using flexible cord with conductors sized 18 or 17 AWG also require overcurrent protection. Minimum wire size, as required in section 2 of UL 817, is a readily observable characteristic of extension cords that can be observed visually by taking a measurement of the product's bare wires. 80 FR at 5705.

2. Sufficient Strain Relief

Section 84 of UL817 describes the strain relief test required for all extension cords. Section 84.2.1 specifies that cords with 18AWG or larger conductors must withstand a 30-pound pull force on the connection between the fitting and the cord. Section 84.2.2 of UL 817 specifies that a weight must be steadily suspended from the cord for 1 minute so that the cord is pulled directly from the fitting without the cord pulling loose or stretching from the plug/load fitting. Sufficient strain relief, as required in section 84 of UL 588, is a readily observable characteristic of extension cords that can be determined by suspending a 30-lb. weight from the plug and load fittings and observing for conformance with section 84.2 of UL 817. 80 FR at 5705-06.

3. Proper Polarization

Section 19 of UL 817 requires that all two-wire extension cords must have polarized fittings. Sections 31 and 32 of UL 817 require that all two-conductor outdoor extension cords must have polarized fittings and that grounding fittings must be used on three-conductor cords. General UL construction specifications on fittings (Section 9.3 of UL 817) require that polarized outlets must reject improper or reversed insertion of polarized plugs to reduce the risk of shock. Proper polarization, as required by sections 9, 19, 31, and 32 of UL 817, is a readily observable characteristic of extension cords, which can be observed by visually inspecting the plug for the polarized configuration. 80 FR at 5706.

4. Proper Continuity

Section 16 of UL 817 requires that corresponding terminals of line (plug) and load (outlet) fittings must be connected to the same conductor of the cord. Section 105 of UL 817 prescribes testing requirements for all manufactured extension cords so that the conductors are connected to the intended terminals of the fittings, and that electrical continuity exists throughout the entire length of the conductor/contact assembly. The wires of an extension cord must form continuous

paths from one end to the other so that the cord can serve its intended function. Each wire in the cord also must be properly connected on each end so that, for example, the grounding pin of the plug on a three-wire cord is connected to the grounding socket on the outlet, and the energized blade on the plug is not wired to the non-energized receptacle on the outlet. Proper continuity, as required by sections 16 and 105 of UL 817, is a readily observable characteristic of extension cords that can be visually observed using an inexpensive and readily available battery-light continuity tester. 80 FR at 5705-07.

5. Outlet Covers (2-Wire Indoor Extension Cords)

Section 26.7 of UL 817 requires that an indoor 2-wire parallel extension cord with polarized parallel-blade and -slot fittings that has more than one outlet must have covers for all the additional outlets. Outlet covers on indoor 2-wire parallel extension cords with polarized parallel-blade and -slot fittings, as required in section 26 of UL 817, are a readily observable characteristic of indoor extension cords, which can be observed by visually inspecting additional outlets for the presence of covers.

6. Jacketed Cords (Outdoor Extension Cords)

Section 30 of UL 817 requires that extension cords for outdoor use be manufactured using jacketed flexible cord; that is, a cord consisting of two or three insulated wires covered by an additional flexible plastic or rubber jacket. Jacketed cord on outdoor extension cords, as required in section 30 of UL 817, is a readily observable characteristic of outdoor extension cords that can be observed by visually inspecting for the presence of a jacketed cord.

B. Conformance to UL 817 Has Been Effective in Reducing the Risk of Injury

Conformance to sections 2, 9, 16, 19, 20, 21, 26, 30, 31, 32, 84, and 105 of UL 817, as summarized in Table 2 in section I.D of this preamble, has been effective in reducing the risk of injury from shock and fire associated with extension cords. CPSC's incident data suggest that

conformance to UL 817 has coincided with, and may have contributed to, a decline in the risk of injury associated with extension cords. *See* Tab A of Staff's Final Rule Briefing Package.

The preamble to the NPR reviewed the reported death and nonfatal incident data from 1980 through 2013, which demonstrated a decline during that period. 80 FR at 5708-09. Table 3 in section I.E.2 of this preamble shows the annual average number of reported incidents for five different periods for each of fatal incidents, deaths, and nonfatal incidents. The 35-year period is broken up into five 7-year periods. Reporting may not be complete for the most recent period because sometimes, CPSC receives reports of incidents years after they have occurred. Table 3 shows an overall decrease in the number of reported fire and shock incidents associated with extension cords, including fatal incidents, deaths, and nonfatal incidents, since the 1980s and early 1990s.

C. Extension Cords Substantially Comply with UL 817

The Commission has not articulated a bright-line rule for substantial compliance. Rather, in the rulemaking context, the Commission has stated that the determination of substantial compliance should be made on a case-by-case basis. Extension cord compliance with UL 817 is "substantial," as that term is used in section 15(j) of the CPSA. The Commission estimates that a majority of extension cords, likely in excess of 90 percent, sold for consumer use in the United States, conforms to UL 817. *See* 80 FR at 5709-10. Since issuing the NPR, CPSC has not received any information in the comments, or otherwise, that would change the estimated level of compliance with UL 817.

IV. Description of the Final Rule

The rule regarding extension cords creates two new paragraphs in part 1120: one defines the products covered by the rule and the other states the characteristics that must be present for the products not to present a substantial product hazard. Two minor clarifications have been made in the final rule: (1) in § 1120.3(d)(1), deletion of the erroneous citation to section 31 of UL 817, and

(2) in § 1120.3(d)(6), replacement of the phrase "jacketed insulated cord" with "jacketed cord." Neither clarification is intended to change the scope or substance of the rule.

Definition. Section 1120.2(e) defines an "extension cord," also known as a "cord set," as a length of factory-assembled flexible cord with an attachment plug or current tap as a line fitting and with a cord connector as a load fitting. Extension cords are used for extending a branch circuit supply of an electrical outlet to the power-supply cord of a portable appliance, in accordance with the National Electrical Code.® As defined in the rule, the term applies to extension cords that are equipped with National Electrical Manufacturer Association (NEMA) 1-15, 5-15 and 5-20 fittings, and that are intended for indoor use only, or for both indoor and outdoor use. The term "extension cord" does not include detachable power supply cords, appliance cords, power strips and taps, and adaptor cords supplied with outdoor tools and yard equipment.

This definition is adapted from descriptions of extension cords defined in section 1 of UL 817. The rule includes indoor and outdoor general-use extension cords that can be used with many different types of electrical products. All in-scope products are covered by UL 817. Excluded from the definition are detachable power supply and appliance cords and adaptor cords supplied with outdoor tools and yard equipment because these are specific-purpose cords, rather than general-use cords. The products that are not covered by the rule are not subject to UL 817, or they do not present the same risks of injury.

Substantial product hazard list. Section 1120.3(d) states that extension cords that lack the identified characteristics in accordance with the requirements specified in the relevant sections of UL 817 (sections 2, 9, 16, 19, 20, 21, 26, 30, 31, 32, 84, and 105) are deemed a substantial product hazard under section 15(a)(2) of the CPSA:

(1) Minimum wire size requirements in sections 2, 20, 21, and 30 of UL 817;

(2) Sufficient strain relief requirements in sections 20, 30, and 84 of UL 817;

(3) Proper polarization requirements in sections 9, 19, 20, 30, 31, and 32 of UL 817;

(4) Proper continuity requirements in sections 16, 20, 30, and 105 of UL 817;

(5) Outlet cover requirement (for indoor 2-wire parallel extension cords with polarized parallel-blade and -slot fittings) in sections 20 and 26 of UL 817; or

(6) Jacketed cord requirement (for outdoor use extension cords) in section 30 of UL 817.

These characteristics and the UL 817 requirements are explained in more detail in sections I.D (Table 2) and III.A of this preamble.

Standards incorporated by reference. At the request of the Office of the Federal Register ("OFR"), the Commission made a formatting change to part 1120 in the final rule for seasonal and decorative lighting products, 80 FR 25216. This change created a new section, 1120.4, listing all of the incorporations by reference ("IBR") for products added to the substantial product hazard list. The IBR for extension cords is included in a new § 1120.4(c)(4).

Incorporation by reference. The OFR has regulations concerning incorporation by reference. 1 CFR part 51. The OFR recently revised these regulations to require that, for a final rule, agencies must discuss, in the preamble of the rule, ways that the materials the agency incorporates by reference are reasonably available to interested persons and how interested parties can obtain the materials. In addition, the preamble of the rule must summarize the material. 1 CFR 51.5(b).

In accordance with the OFR's requirements, Table 2 in section I.D of this preamble summarizes the requirements of UL 817. Interested persons may purchase a copy of UL 817 from UL, either through UL's website, www.UL.com, or by mail at the address provided in the rule. A copy of the standard also can be inspected at the CPSC's Office of the Secretary, U.S. Consumer Product Safety Commission, or at NARA, as provided in the rule.

V. Commission Determination that Extension Cords that Lack Any One of Five Applicable Readily Observable Characteristics Present a Substantial Product Hazard

To place a product (or class of products) on the list of substantial product hazards pursuant to section 15(j) of the CPSA, the Commission must determine that: (1) the characteristics involved are "readily observable"; (2) the characteristics are addressed by a voluntary standard; (3) the voluntary standard is effective in reducing the risk of injury associated with the consumer products; and (4) products are in substantial compliance with the voluntary standard. Accordingly, based on the information provided in this rulemaking, for extension cords, the Commission determines that:

- minimum wire size, sufficient strain relief, proper polarization, proper continuity, outlet covers for 2-wire indoor extension cords, and jacketed cords for outdoor extension cords, are all readily observable characteristics of extension cords. Proper polarization, outlet covers, and jacketed cords are all visually observable characteristics of an extension cord. Measurement of minimum wire size, sufficient strain relief, and proper continuity can be readily conducted and visually observed;
- the identified readily observable safety characteristics for extension cords are addressed in the following sections of a voluntary standard, UL 817:
    - Minimum wire size – sections 2, 20, 21, and 30;
    - Sufficient strain relief – sections 20, 30, and 84;
    - Proper polarization – 9, 19, 20, 30, 31, and 32;
    - Proper continuity – sections 16, 20, 30, and 105;
    - Outlet cover (for indoor 2-wire parallel extension cords with polarized parallel-blade and -slot fittings) – sections 20 and 26;
    - Jacketed cord (for outdoor use extension cords) – section 30;

- conformance to UL 817 has been effective in reducing the risk of injury from shock and fire associated with seasonal and decorative lighting products. For example, the annual average reported deaths associated with extension cords from 1980 to 1986 was 47.7, and the annual average number of reported non-fatal incidents during the same time period was 201. These death and injury averages have declined over the years. In the most recent 7-year period, from 2008 to 2014, the annual average number of reported deaths fell to 17.6, and the annual average number of reported nonfatal incidents fell to 65.7. Although decreasing numbers of death and injury may be a result of several factors, conformance with UL 817 coincided with, and likely contributed to, the decline in deaths and injuries associated with extension cords; and
- extension cords sold in the United States substantially comply with UL 817. We estimate that more than 90 percent of the extension cords for sale in the United States comply with the readily observable safety characteristics addressed in UL 817: minimum wire size, sufficient strain relief, proper polarization, proper continuity, outlet covers for 2-wire indoor cords, and jacketed cords for outdoor extension cords.

VI. Effect of the 15(j) Rule

Section 15(j) of the CPSA allows the Commission to issue a rule specifying that a consumer product or class of consumer products has characteristics whose presence or absence creates a substantial product hazard. A rule under section 15(j) of the CPSA is not a consumer product safety rule, and thus, does not create a mandatory standard that triggers testing or certification requirements under section 14(a) of the CPSA.

Although a rule issued under section 15(j) of the CPSA is not a consumer product safety rule, placing a consumer product on the substantial product hazard list in 16 CFR part 1120 has some ramifications. A product that is or has a substantial product hazard is subject to the reporting requirements of section 15(b) of the CPSA, 15 U.S.C. 2064(b). A manufacturer, importer, distributor, or retailer that fails to report a substantial product hazard to the Commission is subject to civil penalties under section 20 of the CPSA, 15 U.S.C. 2069, and possibly to criminal penalties under section 21 of the CPSA, 15 U.S.C. 2070.

A product that is or contains a substantial product hazard is also subject to corrective action under sections 15(c) and (d) of the CPSA, 15 U.S.C. 2064(c) and (d). Thus, a rule issued under section 15(j) for extension cords allows the Commission to order that a manufacturer, importer, distributor, or retailer of extension cords that do not contain one or more of the applicable readily observable characteristics must offer to repair or replace the product, or refund the purchase price to the consumer.

A product that is offered for import into the United States and is or contains a substantial product hazard shall be refused admission into the United States under section 17(a) of the CPSA, 15 U.S.C. 2066(a). Additionally, CBP has the authority to seize certain products offered for import under the Tariff Act of 1930 (19 U.S.C. 1595a) ("Tariff Act"), and to assess civil penalties that CBP, by law, is authorized to impose. Section 1595a(c)(2)(A) of the Tariff Act states that CBP may seize merchandise, and such merchandize may be forfeited if: "its importation or entry is subject to any restriction or prohibition which is imposed by law relating to health, safety, or conservation and the merchandise is not in compliance with the applicable rule, regulation, or statute."

VII. Regulatory Flexibility Act Analysis

The Regulatory Flexibility Act ("RFA") requires that proposed and final rules be reviewed for the potential economic impact on small entities, including small businesses. 5 U.S.C. 601-612.

In the preamble to the proposed rule (80 FR at 5711-12) the Commission certified that the rule will not have a significant economic impact on a substantial number of small entities. The Commission received no comments on the RFA analysis presented in the NPR, and we have not found any data that would alter that analysis.

VIII. Environmental Considerations

Generally, the Commission's regulations are considered to have little or no potential for affecting the human environment, and environmental assessments and impact statements are not usually required. *See* 16 CFR 1021.5(a). The final rule to deem extension cords that do not contain one or more of five applicable readily observable characteristics to be a substantial product hazard will not have an adverse impact on the environment and is considered to fall within the "categorical exclusion" for purposes of the National Environmental Policy Act. 16 CFR 1021.5(c).

IX. Paperwork Reduction Act

The rule does not require any stakeholder to create, maintain, or disclose information. Thus, no paperwork burden is associated with this final rule, and the Paperwork Reduction Act of 1995 (44 U.S.C. 3501–3520) does not apply.

X. Preemption

A rule under section 15(j) of the CPSA does not establish a consumer product safety rule. Accordingly, the preemption provisions in section 26(a) of the CPSA, 15 U.S.C. 2075(a), do not apply to this rule.

XI. Effective Date

The preamble to the proposed rule stated that a final rule deeming that extension cords that do not conform to the specified sections of UL 817 regarding minimum wire size, sufficient strain relief, proper polarization, proper continuity, outlet covers (for 2-wire indoor extension cords), and jacketed cord (for outdoor extension cords), are a substantial product hazard be effective 30 days

after publication of a final rule in the *Federal Register*. We received no comments on the effective date. Accordingly, the final rule will apply to extension cords imported or introduced into commerce on [**insert date that is 30 days after publication in the *Federal Register***].

List of Subjects in 16 CFR Part 1120

Administrative practice and procedure, Clothing, Consumer protection, Cord sets, Extension cords, Household appliances, Lighting, Infants and children, Imports, Incorporation by reference.

For the reasons stated above, and under the authority of 15 U.S.C. 2064(j), 5 U.S.C. 553, and section 3 of Public Law No. 110-314, 122 Stat. 3016 (August 14, 2008), the Consumer Product Safety Commission amends 16 CFR part 1120 to read as follows:

PART 1120 – SUBSTANTIAL PRODUCT HAZARD LIST

1. The authority citation for part 1120 continues to read as follows:

Authority: 15 U.S.C. 2064(j).

2. In § 1120.2, add paragraph (e) to read as follows:

§ 1120.2 Definitions.

* * * * *

(e) *Extension cord (also known as a cord set)* means a length of factory-assembled flexible cord with an attachment plug or current tap as a line fitting and with a cord connector as a load fitting. Extension cords are used for extending a branch circuit supply of an electrical outlet to the power-supply cord of a portable appliance, in accordance with the National Electrical Code.® For purposes of this rule, the term applies to extension cords that are equipped with National Electrical Manufacturer Association ("NEMA") 1-15, 5-15 and 5-20 fittings, and that are intended for indoor use only, or for both indoor and outdoor use. The term "extension cord" does not include

detachable power supply cords, appliance cords, power strips and taps, and adaptor cords supplied with outdoor tools and yard equipment.

3. In § 1120.3, add paragraph (d) to read as follows:

§ 1120.3 Products deemed to be substantial product hazards.

* * * * *

(d) Extension cords that lack one or more of the following specified characteristics in conformance with requirements in sections 2, 9, 16, 19, 20, 21, 26, 30, 31, 32, 84, and 105 of UL 817 (incorporated by reference, see § 1120.4):

(1) Minimum wire size requirement in sections 2, 20, 21, and 30 of UL 817;

(2) Sufficient strain relief requirement in sections 20, 30, and 84 of UL 817;

(3) Proper polarization requirement in sections 9, 19, 20, 30, 31, and 32 of UL 817;

(4) Proper continuity requirement in sections 16, 20, 30, and 105 of UL 817;

(5) Outlet cover requirement (for indoor 2-wire parallel extension cords with polarized parallel-blade and -slot fittings) in sections 20 and 26 of UL 817; or

(6) Jacketed cord requirement (for outdoor use extension cords) in section 30 of UL 817.

4. In § 1120.4(c), add new paragraph (4) to read as follows:

§ 1120.4 Standards incorporated by reference.

* * * * *

(4) UL 817, *Standard for Cord Sets and Power-Supply Cords,* 11th Edition, dated March 16, 2001, as revised through February 3, 2014 ("UL 817"), IBR approved for § 1120.3(d).

Dated: July __, 2015.

_____

Todd A. Stevenson, Secretary
Consumer Product Safety Commission.

Staff Briefing Package

Final Rule to Amend 16 C.F.R. Part 1120
To Add Extension Cords
July 15, 2015

Table of Contents

Briefing Memorandum: Extension Cords: Staff's Recommended Final Rule Under Section 15(j) of the Consumer Product Safety Act

UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
BETHESDA, MD 20814

This document has been electronically approved and signed.

MEMORANDUM

Date: July 15, 2015

TO : The Commission
Todd 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

Arthur S. Lee, Project Manager
Directorate for Engineering Sciences
Office of Hazard Identification and Reduction

SUBJECT : Extension Cords: Staff's Recommended Final Rule Under Section 15(j) of the Consumer Product Safety Act

On February 3, 2015, the U.S. Consumer Product Safety Commission ("CPSC," "Commission") published a notice of proposed rulemaking ("NPR") in the *Federal Register*[1] (79 Fed. Reg. 5701) to amend the substantial product hazard ("SPH") list codified at 16 C.F.R. part 1120 ("part 1120"). The NPR proposed to add extension cords that lack any one or more of the following readily observable characteristics to the SPH list: minimum wire size, sufficient strain relief, proper polarity, proper continuity, outlet covers for 2-wire indoor extension cords, and jacketed cord for outdoor extension cords. These six readily observable characteristics are embodied in an existing voluntary standard, UL 817, *Standard for Cord Sets and Power-Supply Cords*, 11th Edition, dated March 16, 2001, as revised through February 3, 2014 ("UL 817").[2] Under the NPR, extension cords that lack the applicable readily observable characteristics would be deemed to present a SPH.

The Commission received four comments on the NPR. In this memorandum, staff summarizes comments received on the NPR, provides updated incident, recall, and import stoppage data; updates information on conformance to the voluntary standard, and informs the Commission on the expected impact of a final rule on small businesses. CPSC staff recommends that the Commission publish the draft final rule to amend part 1120 to include extension cords. The draft final rule contains two minor staff-recommended clarifications.

[1] http://www.gpo.gov/fdsys/pkg/FR-2015-02-03/pdf/2015-01949.pdf.
[2] The UL mark and logo are trademarks of Underwriters Laboratories, Inc.

I. Introduction

The Consumer Product Safety Improvement Act of 2008 ("CPSIA")[3] expanded section 15 of the Consumer Product Safety Act ("CPSA") by creating a new subsection (j) that allows the Commission to specify by rule for a consumer product, or class of consumer products, characteristics whose existence or absence the Commission deems a substantial product hazard, as defined in section 15(a)(2) of the CPSA. To be deemed a SPH under section 15(j):

- the characteristics must be "readily observable";
- the characteristics must be addressed by a voluntary standard;
- the voluntary standard must be effective at reducing the risk of injury; and
- there must be substantial compliance with the voluntary standard.

The NPR proposed to amend the SPH list in 16 C.F.R. part 1120 to add a total of six readily observable characteristics of extension cords, as addressed in UL 817. Four characteristics apply to all general-use extension cords (*i.e.*, both indoor and outdoor extension cords, including indoor seasonal extension cords):

(1) minimum wire size;
(2) sufficient strain relief;
(3) proper polarity; and
(4) proper continuity.

In addition, one characteristic (outlet covers) applies to 2-wire indoor extension cords and one characteristic (jacketed cord) applies to outdoor extension cords. Thus, 2-wire indoor and all outdoor extension cords would each be required to exhibit five readily observable characteristics.

If the Commission issues the recommended draft final rule, extension cord products that lack one or more of these characteristics would be deemed to create a SPH under section 15(a)(2) of the CPSA because such products pose a risk of electrical shock or fire. In the NPR, the Commission determined preliminarily that:

- minimum wire size, sufficient strain relief, proper polarity, and proper continuity; either outlet covers for 2-wire indoor extension cords or jacketed cord for outdoor extension cords, are all readily observable characteristics of extension cord products;
- these readily observable characteristics are addressed by a voluntary standard, UL 817;
- conformance to UL 817 has been effective in reducing the risk of injury from shock and fire associated with these readily observable characteristics; and
- substantially, extension cord products sold in the United States comply with UL 817.

Staff recommends two minor clarifications in the draft final rule. First, the staff recommends deleting the erroneous citation to section 31 of UL 817 in § 1120.3(d)(1), the

[3] Pub. L. No. 110-314.

requirements for minimum wire size. Section 31 of UL 817 states requirements for attachment plugs, which are not related to minimum wire size, and thus should not be referenced in the section of the draft rule concerning minimum wire size. Second, staff recommends replacing the term "jacketed insulated cord" with "jacketed cord" throughout the preamble and in the regulation text, at § 1120.3(d)(6), when describing a readily observable characteristic for outdoor extension cords. This change is not intended to change the scope of the rule or the requirements, but to clarify the characteristics of UL 817 being incorporated by reference. As explained more fully in response to comment 3, the NPR proposed (and the draft final rule would require) jacketing – not insulation – as a readily observable characteristic of outdoor extension cords.

II. Extension Cords

The draft final rule uses the phrase "extension cords" to identify the products that are within the scope of the rule. The Commission received no comments on the definition of "extension cords" described in the NPR; accordingly, the draft final rule will continue to define an "extension cord" (also known as a cord set) consistent with the description of products subject to UL 817. All products within the scope of the final rule are covered by UL 817.

Table 1, which also appeared in the NPR at 80 FR 5703, summarizes the required readily observable characteristics in UL 817 associated with all extension cords, as well as specific requirements for indoor and outdoor use extension cords. The Commission received no comments on these requirements for extension cords. Thus, Table 1 remains an accurate summary of the provisions of UL 817 being incorporated by reference into the draft final rule.

Table 1. Readily Observable Characteristics for Extension Cords

General Extension Cord Usage	Readily Observable Characteristics				
	Minimum Wire Size (AWG)	**Sufficient Strain Relief**	**Proper Polarization**	**Proper Continuity**	**Protective Feature**
Indoor ***UL 817 Section 20***	16AWG, or 17/18AWG with integral overcurrent protection *UL 817 Sections 2.10, 21*	18AWG or larger must withstand 30 pound force *UL 817 Section 84*	Cord fittings must be polarized (NEMA1-15) or have a grounding pin (NEMA5-15) *UL 817 Sections 9, 19*	Plug and outlet terminals must be connected in identical configuration (*i.e.*, Hot-to-Hot, likewise for Neutral and Ground) *UL 817 Sections 16, 105*	Outlet covers must be provided on unused outlets on 2-wire parallel cord *UL 817 Section 26.7*
Outdoor ***UL 817 Section 30***	SAME *UL 817 Section 2.13, 30*	SAME	SAME *UL 817 Sections 31, 32*	SAME	Jacketed flexible cord *UL 817 Section 30*

III. Public Comments

The Commission received three comments and questions from four commenters in response to the NPR, one from an industry association and three from consumers. The industry association expressed general support for the proposed rule and suggested an additional observable characteristic. The consumer commenters, likewise, were generally supportive of the NPR. Two consumer commenters wanted clarification on certain aspects of the NPR. One commenter addressed a technical issue associated with UL 817. No commenters opposed the

rule. Staff recommends one minor clarification to the final rule based on the comments received. Summaries of the comments and staff's responses are as follows.

Comment 1: One commenter suggested an additional observation, a visual check and test using a magnet, to ensure that the wire strands in extension cords are made of copper instead of steel.

Response 1: UL 817, by reference to UL 62, *Standard for Safety for Flexible Cords and Cables*, requires that extension cords be made of annealed copper wire strands. For example, neither aluminum nor steel is an acceptable material for wire used in extension cords under UL 817. Magnets are not attracted to copper or aluminum, but are attracted to steel. Thus, the commenter is suggesting that CPSC use a magnet to test for noncompliant steel wire. Although a magnet can detect steel, it cannot detect other noncompliant wire materials, such as aluminum. Accordingly, CPSC staff disagrees with the commenter's suggestion, because magnets cannot be used to detect the required copper wire strands, and cannot be used to detect all other noncompliant materials. A resistance measurement could distinguish whether a conductor is made of copper, but the high-precision equipment required for a sufficiently accurate measurement is costly, and use of it may not be "readily observable."

Regardless of the rule, if CPSC staff finds that the extension cord's construction is non-compliant with the voluntary standard, staff can collect samples of such products and conduct a preliminary determination of whether the product presents a SPH. If such product does present a SPH, CPSC can take action with firms to remove the products from the market.

Comment 2: Two commenters asked whether the presence of all of the readily observable characteristics was required for a cord not to present a SPH.

Response 2: Four of the six observable characteristics apply to all general-use extension cords (indoor and outdoor extension cords including indoor seasonal extension cords): (1) minimum wire size; (2) sufficient strain relief; (3) proper polarity; and (4) proper continuity. All four characteristics must be present for the product not to present a SPH. One characteristic (outlet covers) applies to 2-wire indoor extension cords, and one characteristic (jacketed cord) applies to outdoor extension cords. Thus, 2-wire indoor and all outdoor extension cords would be required to exhibit five readily observable characteristics described in UL 817. If any of the applicable characteristics are missing, the product would present a SPH under section 15(a)(2) of the CPSA.

Comment 3: One commenter believed that UL 817 only requires an outdoor two-conductor extension cord to have flexible insulation on each conductor and does not require a jacket over the conductors.

Response 3: Section 30.1 of UL 817 specifies the types of flexible cords that may be used to construct outdoor extension cords. All of the cords specified in section 30.1 of UL 817 require a jacketed layer covering the conductors.[4] A "jacket" is a layer of flexible plastic or rubber

[4] *Wire and Cable Marking and Application Guide*, January 2014, Regulatory Services Department, UL, Northbrook, IL.

intended to prevent the individual insulated conductors inside the cord from being exposed to the environment, and to prevent mechanical damage to the conductors.

The commenter may have misunderstood an *additional* requirement stated in section 30.1a), "A 2-wire type of outdoor-use cord set shall contain two insulated circuit conductors." This requirement for the individual conductors to be insulated in an extension cord does not eliminate the primary requirement for a jacket to cover the conductors on extension cords for outdoor use.

In the NPR, the Commission described the requirement for a jacketed cord as a "jacketed insulated cord." This designation may be confusing, because readers may conflate the two different requirements stated in section 30 of UL 817, one for a jacketed cord, and the other for insulated conductors inside the cord jacket. The NPR proposed to require a jacketed cord, not insulated conductors, as a readily observable characteristic of outdoor extension cords. Accordingly, staff recommends changing the term "jacketed insulated cord" throughout the preamble and in the regulation text at §1120.3(d)(6) to "jacketed cord" to clarify that the rule only applies to the jacket requirement in section 30 of UL 817 for outdoor-use extension cords.

IV. Incident Reports Update

For the NPR, CPSC staff conducted a search for incidents involving extension cords that occurred since 1980 and were reported by May of 2014. CPSC staff has updated the data, and found a total of 765 fatal incidents, 1,128 deaths, and 4,760 nonfatal incidents that: (a) involved extension cords, (b) were in-scope, and (c) occurred between 1980 and 2013.[5] To capture the latest available data in support of a final rule, staff searched the Injury or Potential Injury Database ("IPII"), and the Death Certificate Database ("DTHS") for in-scope incidents reported from January 2014 through April 2015. CPSC staff found an additional 21 in-scope fatal incidents that occurred in 2014 (involving 25 deaths) and two fatal incidents (two deaths) in 2015. CPSC staff also found an additional 83 nonfatal extension cord incidents that occurred in 2014 and 11 nonfatal incidents that occurred in 2015.

Although these incidents do not provide a basis for national estimates, they indicate that the numbers of fatal and nonfatal extension cord fire and shock incidents reported to CPSC have declined over this 35-year period. The memorandum from the Directorate for Epidemiology updating this information can be found in Tab A, titled, Extension Cord Products: Update on Reported Fire or Shock Incidents from 1980 to April 2015.

V. Recall and Import Stoppage Data Update

In numerous instances, CPSC staff has considered the absence of one or more of the readily observable characteristics described above to present a SPH and has sought appropriate corrective action to prevent injury to the public. From 1994 to August 2014, CPSC staff obtained 29 voluntary recalls of indoor and outdoor extension cords involving a total of 3.2 million units. In addition to product recalls, CPSC staff identified 54 shipments at import involving a total of

[5] Staff updated incident data to include retailer reports.

160,000 units of extension cords that may not have complied with UL 817. Since August 2014, no additional recalls or import stoppages of extension cords occurred.

VI. Substantial Compliance Update

Based on CPSC staff's continuing review of market information and compliance activity, staff estimates that a substantial majority of extension cord products sold for consumer use in the United States conforms to UL 817. Staff's 2015 report in the NPR briefing package estimated that the conformance level likely is well in excess of 90 percent of units sold. Staff has not received new information that would change this estimate.

VII. Small Business Considerations Update

CPSC did not receive any public comments on the NPR related to the Commission's determination that no significant impact on small businesses or other small entities would likely result from the proposed rule. In the memorandum prepared for the NPR, CPSC staff identified two small U.S. manufacturers of items that may not conform to some elements of UL 817. One company markets a cord set with a non-polarized plug; the other offers cord sets made with a certain vintage-style plug whose physical configuration does not allow for strain relief. Staff considers the former company's product to be outside the scope of the NPR, but still non-conforming. Staff is evaluating this product to determine whether it may present a SPH. The latter company's products are in-scope, and would therefore present a SPH under the rule if sold without sufficient strain relief. The company can readily assemble these cord sets with other, conforming vintage-style plugs at essentially no additional cost.

Staff's continuing review of extension cords on the market has revealed no other domestically manufactured, nonconforming products. Staff expects, from time to time, to find some nonconforming imported items that may present a SPH, and will take enforcement action, as appropriate, in such instances. CPSC staff has not received new evidence that would change staff's conclusion that a final rule would not have a significant impact on a substantial number of small businesses or other small entities.

VIII. Effective Date of the Final Rule

Staff recommends that a final rule adding extension cords to the SPH list in 16 C.F.R. part 1120 become effective 30 days after publication of a final rule in the *Federal Register*. A 30-day effective date is appropriate because extension cords are already in substantial conformance with UL 817, and the readily observable characteristics in UL 817 that are being incorporated by reference into the final rule are well known and have been in effect since the 1990s. Additionally, the Office of Compliance sent a letter dated January 9, 2015 to manufacturers, importers, distributors and retailers of extension cords, informing them that the Office of Compliance considers products that do not conform to UL 817, regarding the identified readily observable characteristics, to be defective and present a SPH. As a result, stakeholders have had significant advance notice of the substance of the final rule.

IX. Compliance with Section 15(j) of the CPSA

All four conditions required in section 15(j) of the CPSA for extension cords to be added to the SPH list in part 1120 have been fulfilled:

- the presence or absence of the characteristics described in the rule for all general-use extension cords (indoor and outdoor extension cords including indoor seasonal extension cords) are readily observable: (1) minimum wire size; (2) sufficient strain relief; (3) proper polarity; and (4) proper continuity. Additionally, outlet covers (applicable to 2-wire indoor extension cords) and jacketed cord (applies to outdoor extension cords) are readily observable;
- requirements for the identified readily observable characteristics have been addressed by a voluntary standard, UL 817;
- UL 817 has been effective in reducing incidents attributed to extension cords; and
- there is substantial compliance in the marketplace with UL 817.

X. Staff Recommendation

CPSC staff recommends that the Commission publish the draft final rule containing two minor clarifications as prepared by the Office of the General Counsel. CPSC staff also recommends an effective date of 30 days after publication of the final rule in the *Federal Register*.

TAB A: Extension Cord Products: Update on Reported Fire or Shock Incidents from 1980 to April 2015

TAB A

UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
BETHESDA, MD 20814

MEMORANDUM

Date: May 19, 2015

TO : Arthur Lee
Project Manager, Extension Cord 15J Project
Directorate for Engineering Sciences
Division of Electrical Engineering

THROUGH: Kathleen Stralka
Associate Executive Director
Directorate for Epidemiology

Stephen Hanway
Director, Division of Hazard Analysis

FROM : David Miller
Mathematical Statistician, Division of Hazard Analysis

SUBJECT : Extension Cords: Update on Reported Fire or Shock Incidents from 1980 to April 2015

I. Introduction

The Consumer Product Safety Improvement Act of 2008 ("CPSIA") expanded Section 15 of the Consumer Product Safety Act ("CPSA"). Section 15(j) of the CPSA allows the Commission to specify by rule for a consumer product, or class of consumer products, characteristics whose presence or absence the Commission determines present a substantial product hazard.

CPSC Epidemiology Hazard Analysis staff ("EPHA") prepared this updated memorandum to describe the number of fire or shock incidents in CPSC databases involving extension cords (indoor and outdoor) from 1980 to 2014 in support of a rulemaking under section 15(j) of the CPSA. This memorandum will show the number of incidents (separately for fatal and nonfatal incidents) by year. Although these incidents do not provide a basis for estimates, they demonstrate that the number of fatal and nonfatal extension cord fire and shock incidents (and the number of resulting deaths) reported to CPSC have declined over this 35-year period.

II. Extension Cord Incident Data

EPHA staff conducted a search of CPSC's Injury or Potential Injury Database ("IPII") and Death Certificate Database ("DTHS") for incidents that included the product code: '0685 – Extension cords'. The search was for incidents that occurred from 1980 to 2014 and that were

reported to CPSC by April 2015. CPSC staff limited the scope to fire and shock hazard incidents. Some incident reports describe an extension cord as a possible cause of the incident. Such cases were not included in the dataset for this rulemaking. The data presented are limited to incident reports concluding that an extension cord was the cause of a fire or shock incident.

Neither IPII, nor DTHS are statistical samples. CPSC staff cannot use information from these databases to support a national estimate of the number of incidents involving extension cords. The extension cord incidents captured by our databases each year, although not sufficient to produce estimates, provide annual minimums of extension cord incidents.

If, as one might expect, CPSC databases are able to capture a larger proportion of the fatal incidents (for example, if fatalities are more likely to be reported by news media, which CPSC data captures) than the nonfatal incidents, then CPSC tallies for deaths and fatal incidents will be closer to the true numbers than CPSC staff's tallies for nonfatal incidents. However, CPSC staff does not know the extent to which fatalities and nonfatalities are underreported.

For the NPR, CPSC staff conducted a search for incidents that involved extension cords reported between 1980 and May of 2014. CPSC staff has updated these data, and found a total of 765 fatal incidents, 1,128 deaths, and 4,760 nonfatal incidents that involved extension cords, were in-scope, and occurred between 1980 and 2013.[6] For the final rule, staff also searched IPII and DTHS for in-scope incidents reported from January 2014 through April of 2015. CPSC staff found an additional 21 in-scope fatal incidents that occurred in 2014 (involving 25 deaths) and two fatal incidents (two deaths) in 2015. CPSC staff also found an additional 83 nonfatal extension cord incidents in that occurred in 2014 and 11 nonfatal incidents that occurred in 2015. Figure 1 shows a 3-year moving average of tallies for fatal extension cord incidents reported to CPSC staff that occurred in 1980 to 2014. Figure 2 shows a 3-year moving average of tallies for reported deaths from these incidents. A single incident can result in multiple deaths, hence the distinction. The graphs use 3-year averages to smooth out short-term fluctuations.

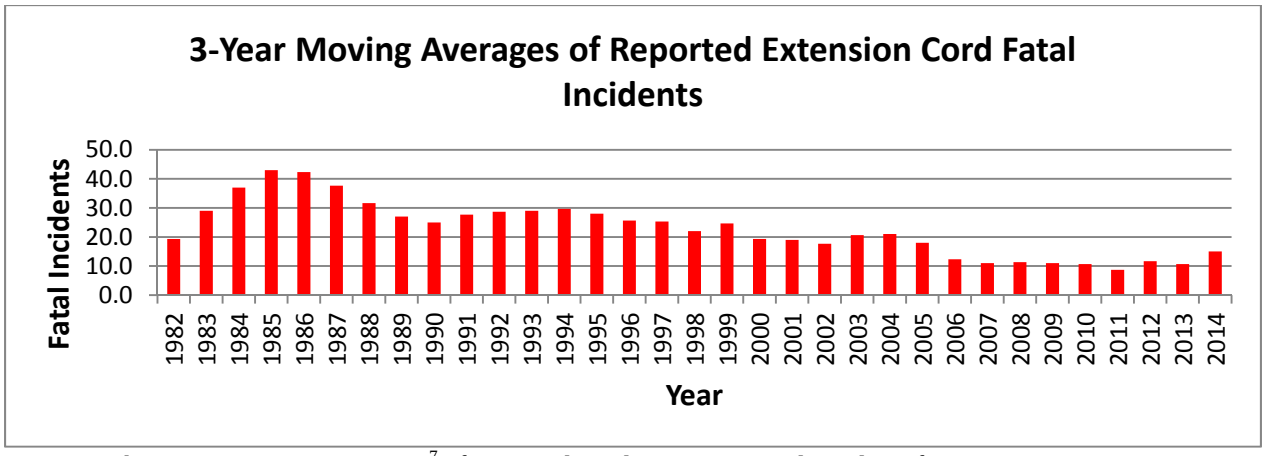

Figure 1. Three-Year Moving Averages[7] of Reported Fatal Extension Cord Incidents from 1980 to 2014

[6] Staff has updated incident data to include retailer reports.

[7] The year refers to the average for the 3 years leading up to, and including, that year. For example, the number for 1999 (31.0), is the annual average number of reported fatal incidents from 1997 to 1999.

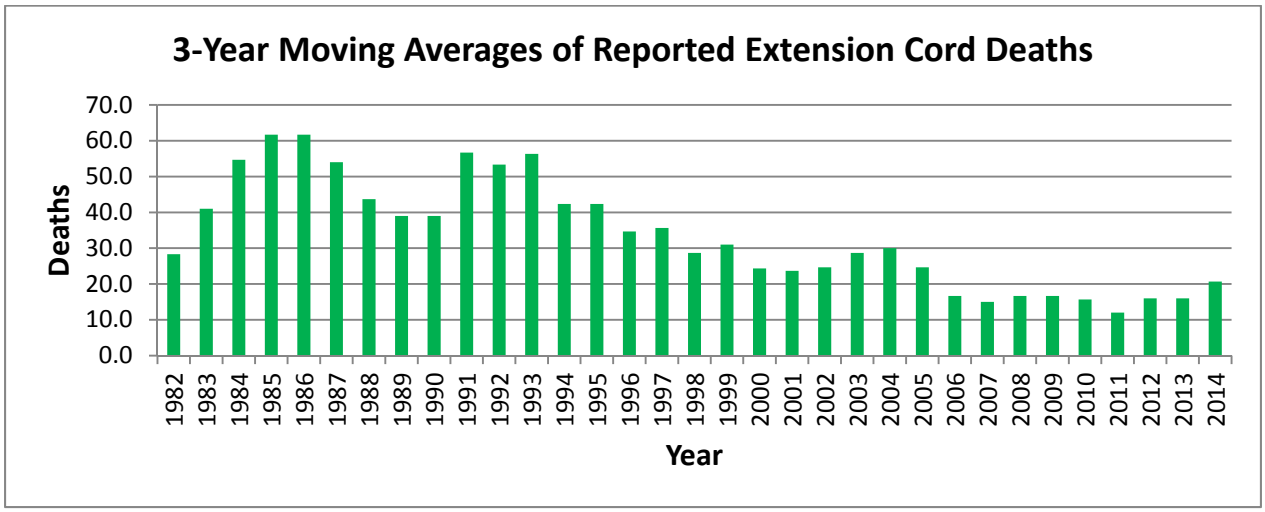

Figure 2. Three-Year Moving Averages of Reported Extension Cord Deaths from 1980 to 2014

Figure 3 shows a 3-year moving average of tallies for reported nonfatal incidents from IPII. Incidents where an extension cord is listed as a *possible cause* of the incident are excluded. As mentioned earlier, these tallies are not estimates of extension cord incidents, but instead, these tallies are minimums because they are all of the reported incidents that CPSC has captured in its databases for this period.

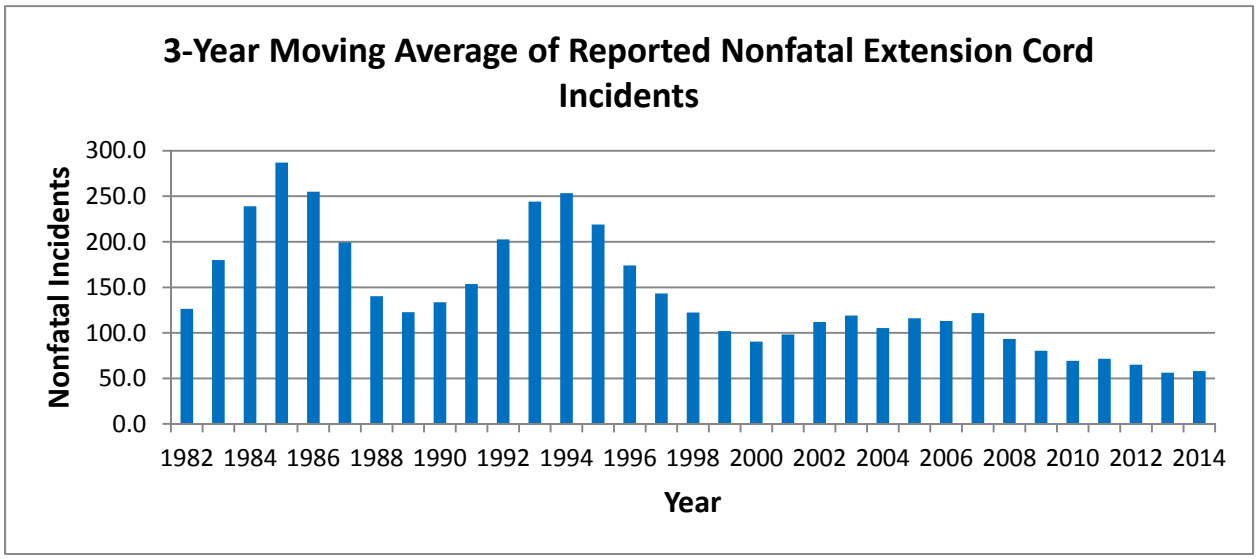

Figure 3. Three-Year Moving Averages of Reported Extension Cord Nonfatal Incidents from 1980 to 2014

The graphs demonstrate that there are more fatal and nonfatal reported incidents in the 1980s and the early 1990s than in subsequent years. The number of reported incidents has declined over time. Table 1 shows the annual average number of reported incidents for five different periods for each of fatal incidents, deaths, and nonfatal incidents. The 35-year period is broken up into five 7-year periods. Reporting may not be complete for the most recent period because sometimes, CPSC receives reports of incidents years after the incidents have occurred. Table 1 shows a similar overall decrease as the figures above demonstrate. The number of

reported fire and shock incidents associated with extension cords, including fatal incidents, deaths, and nonfatal incidents, has declined since the 1980s and early 1990s.

Table 1. Extension Cord
Annual Average of Reported Fatal Incidents, Deaths, and Nonfatal Incidents from 1980 to 2014

Years	Fatal Incidents	Deaths	Nonfatal Incidents
1980 – 1986	32.7	47.7	201.0
1987 – 1993	27.7	46.6	179.3
1994 – 2000	23.6	31.1	131.6
2001 – 2007	15.9	21.7	114.3
2008 - 2014	12.4	17.6	65.7

III. Conclusions

Although these incident reports do not provide a basis for national estimates, the data indicate that the number of fatal and nonfatal extension cord fire and shock incidents (and the number of resulting deaths) reported to CPSC have declined over this 35-year period.