

**U.S. Consumer Product Safety Commission
LOG OF MEETING**

SUBJECT: Meeting between CPSC technical staff and UL LLC

DATE OF MEETINGS: March 12, 2018

LOG ENTRY SOURCE: Andrew Trotta, ESEF

DATE OF LOG ENTRY: March 22, 2018

LOCATION: CPSC National Product Testing and Evaluation Center

CPSC ATTENDEE(S):

Joel Recht, Engineering Sciences (ES)

Doug Lee, ES

Arthur Lee, ES

Andrew Trotta, ES

Scott Ayers, ES

Rick McCallion, Office of Hazard Identification and Reduction (EXHR)

Patty Adair, EXHR

Rik Khanna, EXHR

Patty Edwards, EXHR

George Borlase, EXHR

NON-CPSC ATTENDEE(S):

Don Talka, UL

Tom Blewitt, UL

Sarah Owen, UL

Guests

Randy Cooper, Association of Home Appliance Manufacturers

Ryan Radford, Samsung Electronics America

SUMMARY OF MEETING:

UL requested the meeting to discuss high-energy batteries and other areas of mutual interest as a follow-up to meetings with Acting Chairman Buerkle and Commissioners Kaye and Adler in October 2017. Besides high energy batteries, UL and CPSC staff discussed flammable refrigerants in refrigeration and air-conditioning appliances, button/coin cell batteries, wearable technologies, arc-fault circuit-interrupter (AFCI)/ground-fault circuit-interrupter (GFCI) nuisance tripping, cybersecurity/Internet of Things and the new standard for audio/video, information and communication technology equipment.

UL presented a brief overview of their capabilities to conduct detailed examination of incident-involved lithium-ion batteries as well as basic research into battery-related

failures. As an example, they showed the analytical work that they conducted for the assessment of the Samsung Galaxy Note 7 smartphone cell failures. They indicated that they perform the bulk of their battery safety research in Taipei, Taiwan at their Battery Safety Science Research Center and invited CPSC staff to visit the facility when in the region. One area of research that they mentioned was the effects of aging on the safety of lithium cells. UL staff offered to assist CPSC staff with their technical analysis of high energy batteries. UL also mentioned that they are working on consolidating and improving battery and battery-operated product safety standards such as UL 1642 – *Lithium Batteries*, UL 62133 - *Secondary Cells and Batteries Containing Alkaline or Other Non-Acid Electrolytes - Safety Requirements for Portable Sealed Secondary Cells, and for Batteries Made From Them, for Use in Portable Applications* and UL 2056 – *Outline of Investigation for Power Banks*.

Regarding modifications to product safety standards to account for the emerging use of flammable refrigerants in appliances, UL reported that their efforts started in 2011 with refrigerators and continues with other air conditioning equipment. UL indicated that they have released a white paper, *Update — Revisiting Flammable Refrigerants*, in January 2017 to summarize the efforts to date and the remaining challenges. CPSC staff shared their interest in exploring the possible use of odorants to improve consumer awareness of a leak from an appliance.

CPSC staff also raised the issue of promoting consumer awareness of flame jetting hazards (ignition of flammable vapors within a necked fuel container by an external heat source, cause the torch-like expulsion of burning fuel from the container). Staff asked for a UL staff point of contact for this type of information and education effort. UL indicated that they will identify someone and provide contact information.

Regarding efforts on reducing coin/button cell battery incidents, UL highlighted efforts to limit accessibility in a wide array of products by both changes to specific standards such as UL 60065 - *Audio, Video and Similar Electronic Apparatus - Safety Requirements* and their horizontal standard, UL 4200A - *Products Incorporating Button Cell Batteries of Lithium and Similar Technologies*, which has requirements for battery containment that can be referenced by any other standard. UL reported that 33 standards currently either include battery compartment accessibility requirements or reference UL 4200A. CPSC staff reported on their efforts with the National Electrical Manufacturers Association (NEMA) battery standards to incorporate battery packaging requirements and settle on standard battery “keep out of reach” marking icons. UL staff indicated that they will coordinate with relevant staff to determine whether “icons” and “instructional safeguards”, as well as packaging, for batteries and would be proposed for inclusion in relevant UL standards.

CPSC staff also inquired about whether battery-powered tea lights are covered under any standard, expressing concerns with coin cell accessibility. UL indicated that the standard for Flashlights and Lanterns, which references UL 4200A, may be applicable but they did not believe that UL listed any tea light candles.

CPSC EXHR staff gave an overview of staff's interest in wearable technologies, 3D printing and Internet of Things. UL has a standard on wearable technology, UL 2287, Outline of Investigation for Sustainability for Wearable Electronics Products, and while UL staff was uncertain of its status, took an action item to check on it. UL has started a consortium to advance research in practical safety issues of artificial intelligence enabled products and will contact EXHR Risk Management Office to provide information on the consortium.

UL provided some information on their cybersecurity efforts as it pertains to UL 5500 – *Standard for Safety for Remote Software Updates*, which is a safety-related security standard (as opposed to UL 2900 - *Software Cybersecurity for Network-Connectable Products*, which covers more general security issues such as confidentiality, integrity and availability). UL 5500 is a horizontal standard so it is not application specific; it is expected to be adopted in June.

The topic of AFCI)/GFCI nuisance tripping was raised by CPSC staff as a follow up to a discussion from CPSC staff's meeting with AHAM on January 4, 2018. AHAM had been working with NEMA to identify products that were causing nuisance tripping of AFCIs. UL indicated that they conducted a research project to better define AFCI performance on an energy basis rather than a specific number of half cycle events. The AHAM representative offered an update on the information indicating that the involved products were refrigerators, gas ranges and microwaves. He further indicated that they were considering possible design guidelines to assist manufacturers in mitigating these conditions. UL also indicated a potential problem with GFCIs and variable frequency motor drives since GFCIs only function for 60 Hz leakage currents. They are considering possible proposed changes for UL 943 – Ground-Fault Circuit-Interrupters to cover leakage currents between 60 Hz and 10 kilohertz.

Finally, UL discussed the future replacement of UL 60950-1 – *Information Technology Equipment – Safety- Part1: General Requirements* and UL 60065 – *Audio, Video and Similar Electronic Apparatus* with UL 62368-1 - *Audio/Video, Information and Communication Technology Equipment - Part 1: Safety Requirements*. Although UL 62368-1 uses hazard-based safety engineering approach, UL staff indicated that the standard still includes performance requirements. Although it is already available for product certification, the effective date for UL 62368-1 to replace UL 60950-1 and UL 60065 is June 20, 2019. The UL STP will start working on harmonizing with the 3rd edition of IEC 62368-1 once it is published.