



# Underwriters Laboratories International Standards 2021: The year in review



UNDERWRITERS LABORATORIES™



# Letter to our stakeholders



As the world continued to fight the COVID-19 pandemic, Underwriters Laboratories welcomed 2021 by continuing to collaborate virtually with our partners and stakeholders in standards development. Throughout the year, our global team of professionals worked to further standards development and promote the sharing of information and safety science to help make the world a safer place. We focused on the need to develop new standards in emerging technologies, while also revising existing standards to remain relevant as industries evolve and new safety and security challenges emerge. Since

our first standard — UL 10A, Standard for Tin-Clad Fire Doors — was published in 1903, Underwriters Laboratories has remained a trusted developer of consensus standards.

This year, the Standards team prioritized reimagining and modernizing our standard processes and tools to keep pace with our rapidly changing world. We gathered feedback and input through surveys and one-on-one conversations to learn how we can further improve the tools used in our development process. The responses from our stakeholders have been positive and supportive of our work as we continue to look for ways to improve how we provide training, access to information and opportunities for stakeholders to get involved in standards development.

With the support of our partners, we found new ways of connecting and supporting each other in our efforts to ensure a safe, secure and more sustainable living and working environment. The topics for our virtual webinar series were selected based on input received from participants about interests in emerging technologies and region- or country-specific standardization needs. At Underwriters Laboratories, we recognize the value of our international relationships and take pride in prioritizing strong communication, information sharing, and the promotion of safety with the help of our partners worldwide.

We extend a special thanks to our memoranda of understanding (MOU) partners and other stakeholders for collaborating and participating in our webinars, roundtables and workshops focused on specific, key areas of standards needs around the world. To all our stakeholders and MOU partners, we thank you for your partnership and trust, and we look forward to working with you — both virtually and face-to-face — on our standards initiatives and activities in the near future.

**Phil Piqueira**

Vice President, Global Standards  
Underwriters Laboratories

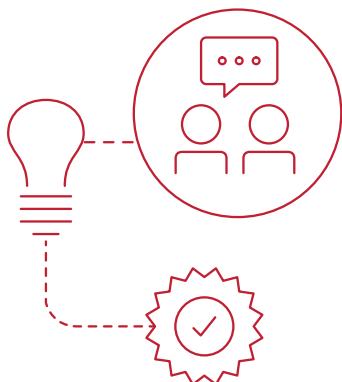
# About us

## Organization overview

Underwriters Laboratories is a nonprofit organization focusing on making the world a safer place through research, public education and standards. The nonprofit employs about 150 staff members located in the United States and around the world. We are affiliated with UL, a leading global testing, inspection and certification (TIC) organization that employs about 14,000 staff worldwide. UL works with organizations and companies to provide global compliance and certification of their products.

Underwriters Laboratories and its business solutions affiliate, UL Inc, are distinct organizations united by a common mission. The nonprofit is led by its President and CEO, Terrence Brady. Christopher Cramer joined Underwriters Laboratories during 2021 as the Senior Vice President and Chief Research Officer. Previously, he oversaw research programs as vice president for research at the University of Minnesota. A board of trustees provides both guidance to and governance for the organization. UL Standards, the standards development organization within Underwriters Laboratories, is led by Vice President of Global Standards Phil Piqueira.

UL Standards is composed of a variety of teams specializing in disciplines ranging from engineering to data science and international outreach to publications and distribution. Dozens of staff members lead the development and maintenance of standards in collaboration with stakeholders from throughout the world.



## Standards Matter

Originally launched in 2016, our [Standards Matter](#) campaign highlights the role that standards play in helping to ensure the safety, security and sustainability of the products and systems that people use in everyday life.

The revamped initiative includes articles on how standards help guide the safety and performance of new and evolving technologies. Each feature focuses on a specific UL Standard, showcasing its impact on the design and manufacture of everyday household products such as hair dryers, garage doors, power strips and children's toys. Additionally, each Standards Matter article provides information on the UL standards development process and invites potential stakeholders to get involved by submitting a proposal or applying to join a standards technical panel.

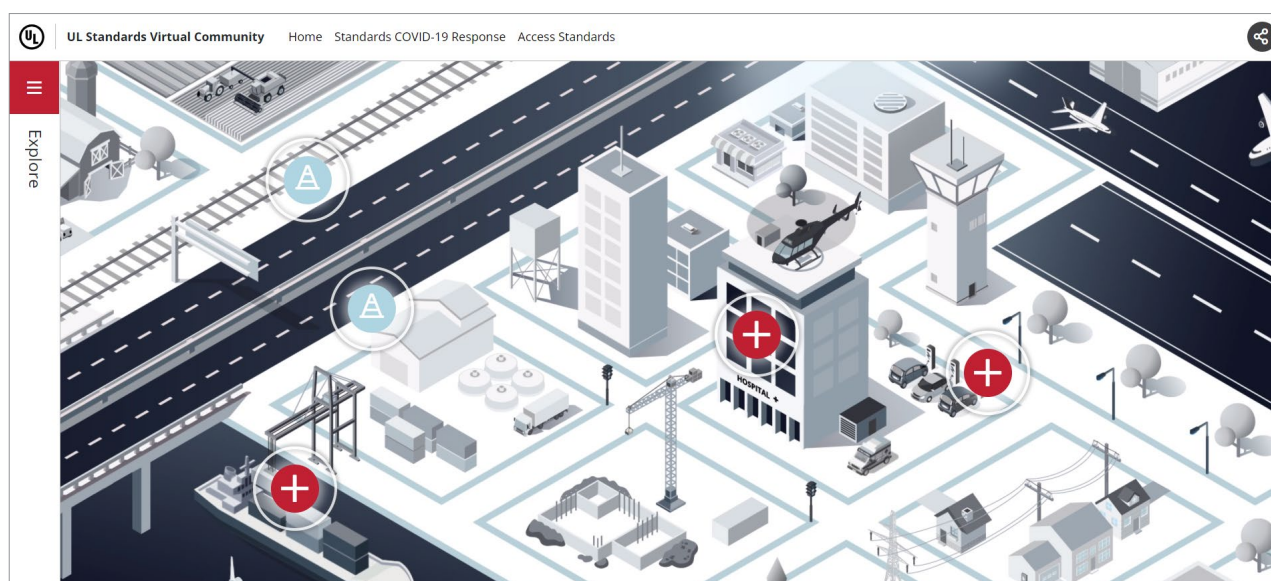


# About us

## Virtual Community

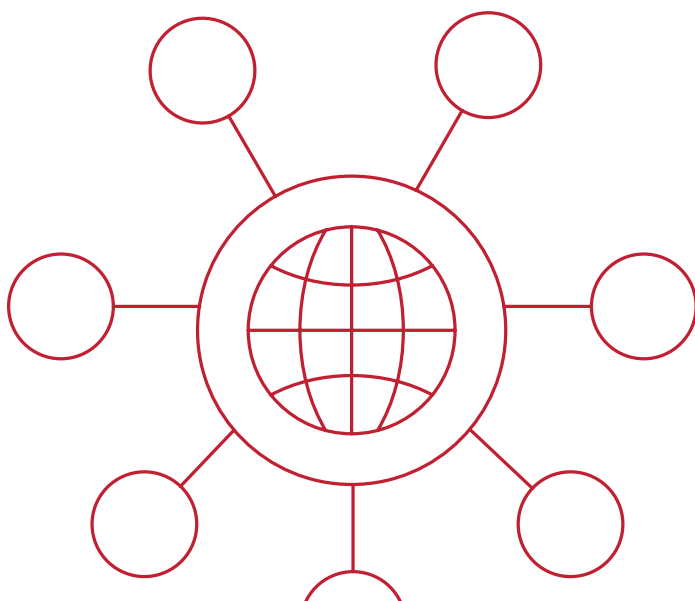
In 2021, UL Standards designed and built an interactive digital platform that demonstrates the significant influence standards have on everyday life. Using a dynamic cityscape scenario with clickable icons and informative flyout text boxes, the [UL Standards Virtual Community](#) illuminates the role of standards in the marketplace and connects stakeholders to the importance of hazard-based safety engineering and science.

The first phase of the Virtual Community officially launched on June 29, 2021, featuring three stations on the interactive map: a marina, an electric car and a hospital. The inclusion of the electric vehicle (EV) aligns with publication in 2020 of [UL 4600, the Standard for Safety for the Evaluation of Autonomous Products](#). Future phases will include additional areas on the map, such as a virtual house, airport and fire station. Additional content, such as information on new and emerging technologies, nonprofit research outputs and messaging on safety campaigns, will also be incorporated in future phases.



## Modern Standards Program

Underwriters Laboratories embarked on the [Modern Standards Program](#) to optimize its processes, digital platforms and stakeholder engagement. This multi-year plan consists of using extensive stakeholder research and other information gathering to guide enhanced innovation and accessibility, and a world-class user experience to drive global impact and fulfill our public safety mission. The all-new [MyInfo Portal](#) launched in 2021 to streamline the process for users to apply for membership to standards technical panels (STPs) and technical committees (TCs), part of a series of new technological platforms in development comprising the Modern Standards Program.



## Overview: Our impact



**68**  
MOUs



MOUs in  
**32**  
**COUNTRIES**



MOUs with  
**3** **REGIONAL**  
standards development organizations

**6 STP**  
**TRAINING**  
WORKSHOPS/WEBINARS

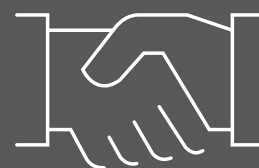


with over **270**  
**participants**



**866**  
UNIQUE STP MEMBERS  
in **42** countries  
outside the United States

**368**



unique **STPs**



# UL Standards highlights

## Microwaves, UL 923

In February 2021, a group of pediatric doctors and burn specialists published an article in the medical journal, *Pediatrics*, detailing their work and collaboration with Underwriters Laboratories to help reduce the risk of microwave-related scald injuries on small children.

The team spent years compiling data and publishing research on the alarming number of children who were being treated for severe burns received while retrieving heated food and liquids from microwave ovens. Because of the recurring factors in these tragic cases, the team believed that many of the incidents could be prevented if the appliances were designed and built differently.

Their efforts led to a proposal to revise [UL 923, the Standard for Microwave Cooking Appliances](#). Additional work on the proposal was required with a partnership, or working group, between the team of doctors, data and human factors specialists, key industry members and technical staff. The proposal achieved consensus, and the new requirements were published in UL 923 in 2018.

The new requirements consist of a dual approach. First, to open the microwave oven door, two distinct actions will be required. This approach is consistent with product standards applicable to other consumer products, including hot water dispensers, battery compartments, heating appliances, highchairs and cribs that require dual-action mechanisms to reduce potential hazards to children. The second approach is the requirement of an on-product label that warns against young children using the microwaves and calls out the potential hazard of burns from heated contents. The use and care instructions for these products will also be updated to align with this warning label wording. These changes are slated to become effective in March 2023.

Proposals on our standards can come from anyone who sees a need and an interest to further safety. We aim to work with a variety of groups and professionals. To begin a proposal submission, or to review and comment on proposals under consideration, visit our [Collaborative Standards Development System \(CSDS\)](#).



# UL Standards highlights

## Repurposing Batteries, UL 1974

In order to help meet the global need for repurposing batteries, we have been working with international stakeholders to facilitate webinars and promote adoption of [UL 1974, the Standard for Evaluation for Repurposing Batteries](#). As a manufacturing process standard, UL 1974 addresses the methods to determine the safety and performance of batteries, modules and cells from used battery systems in electric vehicles.

The Standard was developed to help support circular economy (CE) efforts by addressing resource efficiency for the lifecycle of precious materials, while also helping to prevent toxic waste, natural resource depletion and carbon footprint increases. By considering how batteries are used, retired and used again for second- or even third-life applications, it aims to minimize carbon footprint and the disposal of materials in landfills.

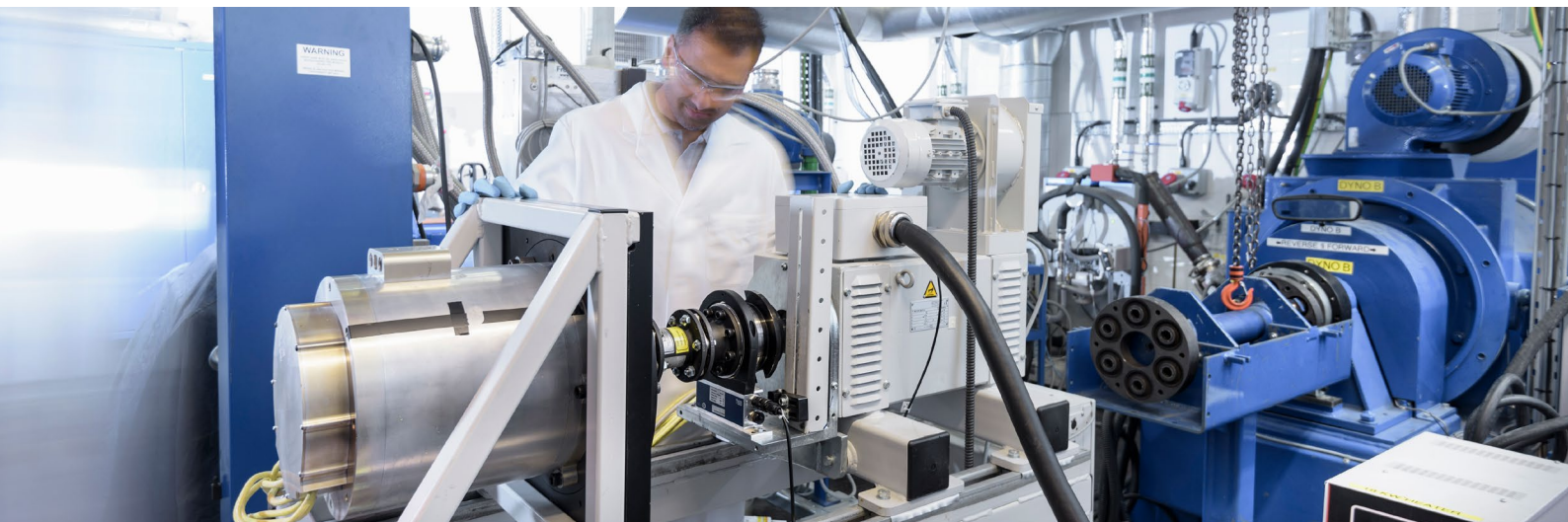
In 2021, the Asia Pacific Economic Cooperation (APEC) hosted its [13th Sub-Committee on Standards and Conformance \(SCSC\) Conference, "Standardization in Circular Economy for a More Sustainable Trade."](#) The conference aimed to raise awareness of CE efforts, share information on standards and conformance supporting CE, and identify trends of standardization activities. Underwriters Laboratories participated by supporting the design and execution of the conference. Presenters shared various topics, including how UL 1974 helps address gaps and challenges in CE.

Presenting at the SCSC Conference, MOU partner The Singapore Battery Consortium (SBC) shared how our organizations work together to organize joint webinars, highlighting 2021's [Master Class Series on Battery Safety and Standards](#). The presentation included information on how UL standards support clean energy and the repurposing of batteries.

The Bureau of Indian Standards (BIS) is also studying UL 1974 for adoption in India. Additionally, BIS recently used UL standards in the development of Indian Standard IS 17387, General Safety and Performance Requirements of Battery Management Systems.

UL 1974 supports the United Nations Sustainable Development Goals (SDGs), including SDG 7, "access to affordable, reliable, sustainable and modern energy for all," as well as SDG 12, "sustainable consumption and production patterns."

Development is also taking place on [UL 3600, the Standard for Measuring and Reporting Circular Economy Aspects of Products, Sites and Organizations](#), which aims to help companies quantify and report on circular economy efforts. Publication of the Standard is tentatively expected to take place in early 2022.



# Our work/ cooperation this year

In response to the COVID-19 pandemic, UL Standards continued to host meetings with national standards bodies and other organizations in a virtual format to prioritize safety and health. Despite the challenges of virtual collaboration, we held many successful workshops and training sessions in which we shared safety information and collaborated on the implementation of effective safety standards. No matter what the future of standards may hold, we remain committed to engaging our partners in new and innovative ways, building trust in international standards and advancing the UL mission of working for a safer world.



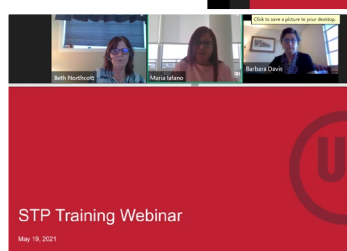
## Training webinars

In 2021, we held a series of six STP training webinars for stakeholders in the international community. These webinars are designed to provide the necessary training and support for our international stakeholders as they get involved in standards development. Each training session provided an overview of Underwriters Laboratories and our standards development process, along with info on how to apply for STP membership and how to get involved. More than 270 people attended the webinars.

Our International team includes regional managers and global staff who are involved in answering questions and helping STP members and stakeholders feel comfortable as they get involved in our standards development process.

During feedback sessions, many stakeholders noted that the webinars were very helpful. Dulce Blanca Punzalan, president and COO of Filbamboo Exponents, Inc. in the Philippines, said that the webinar she attended in February was very comprehensive as she thanked the presenters.

We also provided training for specific MOU partners, with in-depth explanation of our standards development process and instruction on how to navigate our CSDS platform. Webinars were held with [the Bureau of Philippine Standards \(DTI-BPS\)](#), [the Technical Standards Institute of Costa Rica \(INTECO\)](#), [the Colombian Institute of Technical Standards and Certification \(ICONTEC\)](#), and [the Institution of Fire Engineers, Singapore \(IFES\)](#).



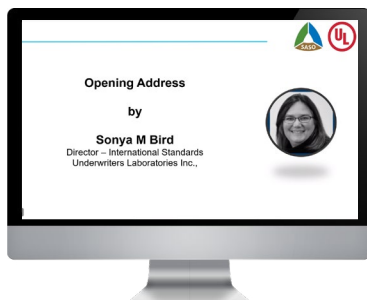


## Multi-day webinars

We continued our collaborations with MOU partners this year by hosting several joint workshop series. Aimed at extending our global safety mission, these workshops focused on promoting UL standards that are regionally relevant to our international partners. The multi-day webinars promoted information sharing by subject matter experts, along with two-way dialogue that allowed our partners to work with us in the development of regionally relevant standards, furthering a partnership formalized through our MOU agreements.

In designing these workshop series, we worked closely with our partners to identify topics that were of interest and relevance to the organizations and the regions. UL Standards proposed potential topics for the series and our partners voted to determine which topics were of highest priority and interest to the region.

Our [joint workshop series with the Saudi Standards, Metrology and Quality Organization \(SASO\)](#) included 11 workshops with topics including artificial intelligence, autonomous vehicles, circular economy, smart grids, drones and renewable energy.



We also launched a [joint workshop series in collaboration with the African Organization for Standardization \(ARSO\)](#). This series included five workshops on topics such as photovoltaic systems, lithium-ion batteries, energy storage systems, drones and cybersecurity. Each workshop provided a technical overview of

the topic, while also highlighting standards designed to mitigate safety, security and sustainability issues.



In October, we held a [webinar series on electric vehicle technology in Latin America](#). This three-day series included speakers from Underwriters Laboratories and Latin American stakeholder groups. The sessions focused on issues and trends related to electric vehicles, such as thermal runaway in lithium-ion batteries, autonomous mobility, and efforts to make EV technology safer and more sustainable.

## Autonomous vehicles

Since its publication in April 2020, [UL 4600, the Standard for Safety for the Evaluation of Autonomous Vehicles and Other Products](#), has received the attention of stakeholders from around the world. As part of our commitment to knowledge sharing, our organization provided presentations about the Standard at multiple international forums held in conjunction with our partners and other stakeholders.

The Standard was translated into Japanese by the [Japanese Standards Association \(JSA\)](#) in response to a growing demand from local industry. The translation was published June 30, 2021, in a webinar jointly organized by JSA and Underwriters Laboratories with speakers from the National Institute of Informatics Japan and Underwriters Laboratories. The virtual event was attended by more than 200 participants, primarily from Japan and Singapore.

In Korea, Underwriters Laboratories was invited to present an overview

of UL 4600, the Standard for Safety for the Evaluation of Autonomous Products, at an international conference as part of the Korean Automated Vehicle Standardization Forum organized by the Korean Agency for Technology and Standards (KATS). The Standard was also the focus of the technical discussion on Future of Mobility during the US-Korea Standards Forum 2021, at which Underwriters Laboratories and leading industry players shared how UL 4600 helps autonomous vehicle companies demonstrate they are at the crossroads of safety and innovation.

We organized four workshops in February and March 2021 on artificial intelligence and autonomous vehicles (including discussion of UL 4600) in partnership with SASO. These topics were identified by SASO as priorities of interest for standardization. One of the key outcomes of the sessions was SASO expressing interest in establishing a working group to adopt UL 4600 locally.

As part of the webinar series held in October on EV technology in Latin America, Underwriters Laboratories presented an overview of UL 4600 and the UL standards development process.



## Fire safety

UL Standards strives to support global leadership in fire safety through standards that cover fire prevention, detection and suppression. Fire safety science has been a pillar of our organization since the publication of our first standard in 1903. As technology has continued to evolve, our portfolio of standards has grown to include more than 1,600.

We hosted a [joint virtual workshop series with Shenzhen International Security Technology Co., Ltd \(SZIST\)](#) to increase knowledge of our fire safety standards portfolio, increase Chinese stakeholder participation in our standards development process and STPs, and support the adoption and adaptation of fire safety standards in China. The series included three sessions on fire safety topics such as fire doors, extinguishing devices and valves for fire protection. Each workshop provided a technical overview of the topic and relevant safety hazards, as well as applicable UL standards to mitigate the safety issues. The workshops included a consecutive translation in Chinese.

In June, a [webinar was held in collaboration with the National Fire Protection Council \(CONAPCI\) and the Mexican Association of Automatic Fire Sprinklers \(AMRACI\)](#) to conclude Mexico's fire prevention month. During the event, safety experts released previously unpublished fire safety statistics for Mexico and preventive actions for home fires. The data revealed tremendous opportunities for UL Standards and its partners to help improve Mexico's fire safety landscape through standardization. Fire safety is one of the two sectors in which we are authorized to develop national standards for Mexico. Additional fire safety programs with partners in Mexico are planned that will allow us to demonstrate our leadership in the development of fire safety standards while working to affect positive change.

In November, we [presented at Expo Seguridad Industrial 2021](#), an in-person exhibition on fire safety in

Mexico City. This event allowed us to raise awareness about the importance of standards in fire protection, and to highlight our work developing Mexican Standards for fire safety and life-saving devices. We also discussed our work as the only standards developing organization (SDO) authorized to develop standards for all three countries in the United States-Mexico-Canada Agreement (USMCA), providing an overview of the different global approaches to standards development and recent trends in standardization for USMCA countries.

## Energy storage/ battery safety

Through standards and battery safety research, we are working to help address the potential safety challenges that energy storage technologies present in a variety of industries, ranging from consumer products to transportation and grid storage. Our work in this area helps ensure that energy storage designs are performance-driven while prioritizing safety and reliability.

In June, Phil Piqueira delivered a presentation at the [2021 Qingdao Forum on International Standards \(QFS\)](#) on energy storage safety standards and how they support the development of low carbon economy reform. His presentation included an overview of the benefits of battery energy storage systems (BESS) used to capture energy generated by photovoltaic panels and wind turbines. He also addressed the safety risks presented

by the technology and detailed how Underwriters Laboratories is working to address these risks through standards and research. Attendees were encouraged to engage in the UL standards development process as updates to these standards are currently in progress.

In October, we partnered with the China Energy Storage Alliance (CNESA) to host a [joint workshop on energy storage system safety](#). The workshop addressed fire and explosive dynamics with a focus on the safety of energy storage systems. It included presentations on fire service considerations, with an overview of the UL Fire Safety Research Institute (FSRI) [investigation of the 2020 Battery Energy Storage System explosion](#) in Arizona, which injured four firefighters. The goal of the workshop was to help industry professionals in China learn about energy storage system safety and improve local systems accordingly.

We also hosted a joint series of [masterclass webinars in partnership with Singapore Battery Consortium \(SBC\)](#). This webinar series provided an introduction to standards for battery value chain, energy storage systems, electric vehicles, repurposing batteries, transportation of batteries and micromobility. Standards highlighted in this series included [UL 2202, the Standard for Electric Vehicle \(EV\) Charging System Equipment](#); [UL 2594, the Standard for Electric Vehicle Supply Equipment](#) and [UL 2580, the Standard for Batteries for Use in Electric Vehicles](#). The series of webinars had 995 attendees from 22 countries.





## Photovoltaic systems

As the demand for safely generating power with photovoltaic (PV) systems has risen over the years, we have published a number of safety standards addressing PV equipment hazards such as fire, electrical shock, mechanical stress and components. Particular consideration is also needed to address geographical differences. Many of the standards are harmonized adoptions of the

International Electrotechnical Commission (IEC) standards with national differences.

Our partnerships and work with standards-developing organizations around the world have indicated that photovoltaic systems are a topic of interest. A webinar was held with [Technical Standards Institute of Costa Rica](#) to provide further information as they evaluate the need for standards that focus on photovoltaic and distribution systems. Distributors,

manufacturers and individuals from the energy commission and other sectors participated in the discussion on how UL Standards could help meet specific needs for Costa Rica.

[Discussions on photovoltaic systems were also held with the African Organization for Standardization.](#) UL's primary designated engineer took part in these webinars, along with regional engineers and experts on photovoltaic systems, to provide their knowledge and expertise.

# MOU partnerships

## Signed agreements

In line with UL's mission of working for a safer world, Underwriters Laboratories collaborates with national and regional SDOs around the globe to develop and harmonize standards that address their local safety and sustainability needs.

We sign MOUs to formalize partnerships with other organizations and outline how we will share knowledge and support one another's standards development activities. Each partnership is structured with the goals of promoting communication, fostering ongoing collaboration and facilitating participation of stakeholders while developing and harmonizing safety standards.

During 2021, we were excited to announce our partnership with GCC Standardization Organization (GSO), a regional standards organization for the member states of the Gulf Cooperation Council in the Middle East. We also added MOUs to partner with national standards bodies in Belize, India, Nigeria, St. Kitts and Nevis and with several other organizations.

We also signed two unique agreements in 2021. Our recent copyright agreement with the Japanese Standards Association is structured with a particular focus on sales and distribution, rather than adoption of standards. Through the agreement, JSA will be able to access and translate UL standards, and to also sell the standards to stakeholders in the region.

Similarly, the copyright agreement with the European Committee for Electrotechnical Standardization (CENELEC) — a branch of the European Union (EU) — is unique because it allows the EU to reference UL 969, the Standard for Safety for Marking and Labelling Systems. Prior to the copyright agreement, EU laws required any references to UL standards to be removed from IEC/ISO/CEN/CENELEC standards and documents. The agreement allows the Standard to be used internationally in EU countries.

## List of MOUs

Currently, we hold 68 MOU agreements with organizations from around the world; 17 of which were signed in 2021. The following is a list of recent agreements:

- Agencia de Seguridad, Energía y Ambiente (ASEA)
- Asociación Mexicana de Rociadores Automáticos Contra Incendios (AMRACI)
- Asociación de Normalización Y Certificación (ANCE)
- Belize Bureau of Standards (BBS)
- Bureau of Indian Standards (BIS)
- Consejo Nacional de Protección Contra Incendios (CONAPCI)
- GCC Standardization Organization (GSO)
- Fire Safety Door (Lock) Industry Alliance
- Haikou Fire Rescue Detachment (HKFRD)
- Haiti Bureau of Standards (BHN)
- Institution of Fire Engineers Singapore (IFES)
- Insituto Politécnico Nacional (IPN)
- Integrated Building Automation Community (INBAC)
- Normalización y Certificación (NYCE)
- Organismo Nacional de Normalización y Certificación de la Construcción y Edificación (ONNCE)
- Standards Organisation of Nigeria (SON)
- Shenzhen International Security Technology (IST)
- St. Kitts and Nevis Bureau of Standards (SKNBS)
- Standards Organisation of Nigeria (SON)
- Zhejiang Association for Standardization (ZAS)





# Questions and answers with our partners

## STP member

Eunice Huang

As a voting member on STP 1839, Eunice Huang participated in our standards development process by submitting a proposal for [UL 1839, the Standard for Automotive Battery Booster Cables](#). We asked Eunice to discuss her experience:

### Q: What was your experience like with the proposal submission process?

A: I was able to create my own user account on the CSDS system. I can participate by submitting proposal requests through CSDS. This is my first experience with submitting a proposal request. Since I am not familiar with the whole process, I thought it would be very difficult to fulfill. However, I was supported by the regional manager in China. She was ready to provide help and to answer any questions. The project manager for STP 1839 also provided me feedback efficiently and helped in processing the proposal. I do appreciate everything they have done.

### Q: Why did you submit a proposal?

A: I submitted a proposal to substitute the material of copper used in booster cables, which could enable a wider selection of material.

### Q: How does this proposal benefit your company/organization?

A: If the proposal request for UL1839 is finally approved, then a new substitute material will be put into use. This will be a great innovation for our company. The cost of production will be lowered and our products will be more competitive in the market. Definitely, there will be great positive impacts. This is a milestone in my work. It is encouraging. Maybe we could seek more possibilities in other standards.

Anyone can submit a proposal to change or revise a current standard. STP membership is not required. To begin a proposal submission, or to review and comment on proposals under consideration, [click here](#).

### Q: What benefits do you see in the ability to make changes to a UL standard?

A: Being able to make changes to a UL standard is such a great and meaningful thing to the whole society. It enables people from all walks of life to voice their needs and opinions. That will help to provide a better, safer and more wonderful world to all of us.

### Q: Why would you encourage others to get involved?

A: It is important to get to know others involved in standards development and to participate in standard development actively. The CSDS system is a great platform which provides chances for people to put forward different thoughts and ideas. Your thoughts and ideas will be heard and considered seriously. That's pretty amazing.

*This is a milestone in my work. It is encouraging. Maybe we could seek more possibilities in other standards.*

Eunice Huang



## Questions and answers with our MOU partners

### Consejo Nacional de Protección Contra Incendios (CONAPCI)

Victor Espinola, general director of CONAPCI

In January 2021, we signed a [collaboration agreement with Mexico's National Council for Fire Protection](#). As a non-profit organization dedicated to bringing together stakeholders from Mexico's fire protection industry, CONAPCI works with public, private, academic and other sectors to help protect the public and prevent urban fires. Through the agreement, our Standardization Committee in Mexico is working with CONAPCI to develop standards for fire safety. In this discussion, Victor Espinola, general director of CONAPCI, helped to provide insight into our MOU relationship:

#### Q: Do you think the MOU with Underwriters Laboratories has been beneficial to both parties? What have its main achievements been thus far?

A: Even in a pandemic, it seems to us that the opportunities to collaborate in joint events has sent the signal that the fire protection industry continues to move forward with its one purpose: the safeguarding of life through good practices and the use of certified products based on UL standards.

#### Q: What are some reasons you would give for signing an MOU with Underwriters Laboratories?

A: Underwriters Laboratories represents a fundamental piece as a standardization body so that the products that are promoted for fire prevention and protection offer our stakeholders certainty of its standards. Also, to be able to exchange concerns and actions to promote the correct use of products through the use of UL standards. The MOU allows us to address technical issues, develop joint actions to report on fire statistics, promote joint regulatory initiatives, and openly exchange ideas under a common mission.

#### Q: What benefits has this MOU brought to your institution?

A: To send a signal of unity in our Mexican industry that we are working together to help make products safer.

#### Q: Do you have plans to adopt, adapt or reference UL standards?

A: Various standards have been raised in the committee chaired by Underwriters Laboratories, especially in the area of fire alarms and fire detection.

### Singapore Battery Consortium (SBC)

Dr. Sing Yang Chiam, director of SBC

Through our [MOU with the Singapore Battery Consortium](#), we agreed to cooperate, share and promote knowledge in the area of emerging battery technology. We discussed our partnership with Sing Yang Chiam, director of SBC, in the following Q&A:

#### Q: How has the MOU partnership benefitted your organization?

A: We have greatly strengthened our working relationships. Being able to list Underwriters Laboratories as a key partner through the MOU also benefited us greatly as UL is highly reputable in the field.

#### Q: Which Underwriters Laboratories resources do you find beneficial?

A: The joint seminars and activities we co-organized tap into resources from both sides. I think this was most beneficial. Underwriters Laboratories was able to pull in not only experts, but a wide reach of audience that is aligned with our intention for wider outreach. Underwriters Laboratories was also excellent when it comes to enquiries about related standards and safety from our members and stakeholders.

#### Q: Why did Singapore Battery Consortium decide to partner with Underwriters Laboratories?

A: The international staff at Underwriters Laboratories was able to lay out a vision for the collaboration between our organizations. The common vision included how we increase our outreach, safety and standards for batteries and to continue the motivation and desire to see it make impact.



## Questions and answers with our MOU partners (continued)

### **Q: How has the MOU agreement benefitted standards and safety in your country?**

A: As mentioned, our members have benefited from both private consultation with Underwriters Laboratories and also the public outreach. Notably, our standards masterclass series has been very well received and adds to the awareness and proliferation of thinking about standards for our enterprise and public stakeholders.

### **Q: How do you go about choosing which standards to adopt or use as a base document?**

A: From SBC's point of view, our members play a role in the organized standard committees where recommendations are given as group.

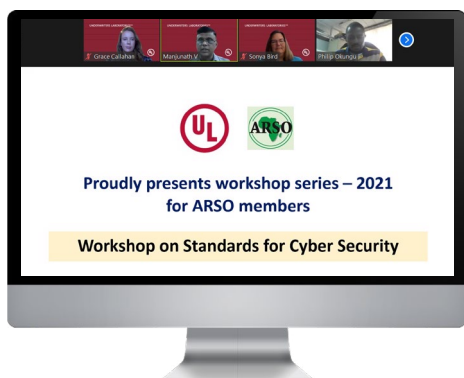
### **Q: Why do you reference UL standards?**

A: UL standards are part of many available library of standards. In areas such as battery repurposing, UL remains the only available standard.

### **The African Organisation for Standardisation (ARSO)**

Dr. Hermogene Nsengimana, secretary general of ARSO

The African Organisation for Standardisation and Underwriters Laboratories signed an MOU in 2017. Arso Secretary General, Dr. Hermogene Nsengimana, shared his thoughts about our cooperation and partnership.



### **Q: What have been some of the benefits of being our MOU partner?**

A: There are two major advantages that we would like to point out. Standards capacity building workshops and trainings conducted together in the last two years have helped national standardization bodies of ARSO member countries in building their awareness of standards.

The increased visibility of ARSO member countries to Underwriters Laboratories has helped them in their understanding of UL standards in various sectors of interest and thus reduce duplication of standards work.

### **Q: Why did ARSO agree to become an MOU partner with Underwriters Laboratories?**

A: Underwriters Laboratories is advanced in some of the emerging areas which are important for the African continent. Under our new strategy, we are looking forward to developing standards towards the fourth industrial revolution which touches on some of the key areas in which UL Standards is focused on such as cybersecurity. Our MOU agreement brings us together and we are able to avoid duplication of work as well as benefitting from the experience of UL Standards.

As well, ARSO is working on sustainability issues. UL has standards that address EV needs and the circular economy. This adds value and is clearly what the African content needs.

### **Q: How do you go about choosing which standards to adopt or use as a base document?**

A: At present, there are 80 technical committees formed by ARSO. We conduct scientific studies on priority sectors, identify what standards need to be harmonized and identify overlapping sectors based on the products which are traded within the continent and outside the continent. It is important to have the priority sectors identified as they provide a guide of our work.

We conduct specific training or knowledge sharing sessions with the technical committees to keep updated on the new and emerging technologies.

# Resources

## New standards published

- UL 244B — the Standard for Safety for Field Installed and/or Field Connected Appliance Controls
- UL 1393 — Environmental Claim Validation Procedure (ECVP) for Marine Biodegradability
- UL 1394 — Environmental Claim Validation Procedure (ECVP) for Estimated Water and Energy Use Savings and GHG Emissions Reductions of Remote Flow-Switch Wet Fire Sprinkler System Testing Devices
- UL 1396 — Environmental Claim Validation Procedure (ECVP) for Rapidly Renewable Content
- UL 2152 — the Standard for Safety for Special Purpose Nonmetallic Containers and Tanks for Specific Combustible or Noncombustible Liquids
- UL 3100 — the Standard for Safety for Automated Mobile Platforms (AMPs)
- UL RP 9691 — Recommended Practice for Nameplates for Use in Electrical Installations
- UL 62841-2-3 — the Standard for Electric Motor-Operated Hand-Held Tools, Transportable Tools and Lawn and Garden Machinery - Safety - Part 2-3: Particular Requirements For Hand-Held Grinders, Polishers And Disc-Type Sanders
- UL 62841-3-7 — the Standard for Electric Motor-Operated Hand-Held Tools, Transportable Tools and Lawn and Garden Machinery - Safety - Part 3-7: Particular Requirements for Transportable Wall Saws
- UL 62841-4-4 — the Standard for Electric Motor-Operated Hand-Held Tools, Transportable Tools and Lawn and Garden Machinery - Safety - Part 4-4: Particular Requirements for Lawn Trimmers, Lawn Edge Trimmers, Grass Trimmers, Brush Cutters and Brush Saws
- UL 6298 — Plugs, Socket-Outlets and Couplers with Arcuate Contacts
- UL 80079-36 — the Standard for Safety for Explosive Atmospheres - Part 36: Non-Electrical Equipment for Explosive Atmospheres – Basic Method and Requirements
- UL 80079-37 — the Standard for Safety for Explosive Atmospheres - Part 37: Non-Electrical Equipment for Explosive Atmospheres – Non-Electrical Type of Protection Constructional Safety

## Global staff

Our UL Standards International team has staff in China, Denmark, India, Mexico, Saudi Arabia, Singapore and the United States. We are available to help stakeholders get involved in our standards development process and further safety standards in countries and regions around the world.

We are excited to announce the addition of Zahi Daher to the International team as a regional manager for the Middle East/North Africa region. He brings a vast amount of knowledge on fire safety standards, as well as a number of connections with national standards bodies and regulators across the region. He is excited to utilize his connections in the area to help further safety through standardization.

We are also happy to welcome to Sofia Pacheco, the new Regional Manager for Mexico and Latin America. Before joining Underwriters Laboratories, Sofia worked in both Mexico's private and public sector, and she brings a wealth of experience in standardization, government affairs and public policy to our organization. While working with Mexico's Ministry of Economy, Sofia managed the development of national standards, technical regulations, conformity assessment procedures and risk impact assessments. She also promoted the harmonization of international standards with national regulations and served as contact point to the Trade Barriers to Trade Committee at the World Trade Organization. She is looking forward to helping to continue positioning Underwriters Laboratories as a prominent member within the Mexican quality infrastructure system.

## Connect with us

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