

In this episode we meet someone who leads from the front when it comes to the world of international safety standards, Sonya Bird, Director, International Standards at Underwriters Laboratories. Sonya, began her career at UL, 30 years ago, as a technical standards program manager and now leads teams across the globe. She was named Distinguished Member of Technical Staff at Underwriters Laboratories in recognition of her significant and sustained contributions to fulfilling UL's public safety mission.

Sonya serves on various national and international forums, representing the United States on the International Electrotechnical Commission (IEC), as well as on various leading IEC task forces to harmonize best standards practices globally. Significantly, task forces on diversity and gender responsive standards and attaining the UN's Sustainable Development goals. Sonya is a recipient of the IEC Thomas A. Edison award, for her exceptional achievements and dedicated service.

You can read along as you listen to the interview with Sonya here:

Host: Sonya Bird, thank you for speaking to us on the Word to the WISE podcast. Such a rich and varied experience but take us back to where it all began, from being a student of STEM to choosing a career path in safety and performance standards. How did that happen?

Sonya: From a young age, I loved math and science, and in my spare time I enjoyed puzzles, especially logic puzzles. I was a member of the competitive Math team in my high school, so I was one of those people who stayed after school to do more Math. Math and Science just made sense to me! I was lucky that my school counsellor and my father both steered me towards considering engineering when I went to college. Based on aptitude and interest tests, I ended up in electrical engineering. The labwork and power problems associated with electrical engineering really were just another form of logic puzzles! It all made sense to me!

When I was set to graduate from university, I saw an advertisement for an engineering job that also required good writing skills. I thought this was perfect descriptor for me – solid engineering degree with a desire and aptitude for writing. So I applied! That job was for an introductory engineering role in the standards department at Underwriters Laboratories. I applied, and in the process learned about Underwriters Laboratories and its long history of working for a safer world. The job – and the company – was such a perfect match for me! That was nearly 33 years ago, and I have been thrilled to be at Underwriters laboratories ever since!

Host: Your role is also not just a national or international one but also to lead global harmonisation of performance and safety standards. How challenging or satisfying has that been? What keeps you going?

Sonya: Initially, my role as standards project manager allowed me to focus on the safety requirements for a number of traditional UL standards, including ceiling fans, battery chargers, and portable tools. A number of industries – and the portable tool industry is a good example – desired to have requirements that were more global in nature. I began working with the portable tool industry on common requirements in the US and Canada, and that effort extended to more international work. It's definitely satisfying to know that through standards development I could have a positive affect on a country's safety system – but it is even more gratifying to know that my work addresses safety globally. Once I got involved in international standards, I actually became secretary for IEC TC 61 responsible for addressing

safety of appliances for household use. This committee covers all types of appliances – from washing machines and clothes dryers to coffee makers and beauty care. I recall one issue that we addressed within that international committee. A delegate to the meeting had data that showed potential excessive surface temperatures on an oven door. While an adult may touch the door and feel the heat and pull away, a child may not recognize the danger immediately. The delegate had pictures of children's hands that had received burns from touching the hot oven door for too long of a period of time. The committee was able to look at the requirements in the standard, as well as requirements in other related standards (such as UL's standard for ovens) and introduced a change to the text to protect children from burns. You ask what keeps me going? This is what keeps me going – to recognize that standards have a direct impact on safety around the world. Through our work we hopefully have reduced the chance of other children burning their hands.

Host: And standards are a rather niche area, so if you were to break it down for our listeners, what would you say are the key requirements (especially for women in STEM) to excel in the field?

Sonya: I would say the requirements to succeed in standards development are 1 – a willingness to get engaged; 2 – communication skills, and 3 – positive attitude. First, I would suggest that women in STEM look for ways to get engaged in standards development. The area of standards development really benefits from having a diversity of inputs. This means that the standards committee is not made up of only product experts and manufacturers, but rather of individuals with varied backgrounds all bringing different experiences and information to the table. By getting engaged, individuals can learn the process, and can see how to contribute to standards development.

The second requirement – communication skills – applies to both written and verbal skills. Standards development takes place through written proposals and online collaborative sites, requiring those who participate to make their case in writing. But standards development also includes having working groups and technical committees meet in a room or virtual setting, so participants need to be able to speak up and explain their position. The third requirement – positive attitude – is not something you will necessarily see on a job description, but is an important characteristic. It is important to keep in mind that all people on a committee will not necessarily want to address an issue the same way. There will be debates and sometimes heated or passionate discussions. It is important to keep in mind that others on the committee have the same intent – to build a strong standard. Keeping a positive frame of mind is important.

Host: How important has diversity and gender become as factors in standard development?

Sonya: Within recent years, it has become apparent that the term diversity needs to be expanded to get even greater inputs in standards. As an example, the IEC established a task force to look at diversity within IEC standards development. I was asked to serve on this group. We identified that increased diversity was needed in 3 categories. The first being stakeholder diversity. Many who engage heavily at IEC have a manufacturing background, so it was agreed that additional stakeholder categories such as consumers and academia are needed. The second type of diversity is geographical diversity, meaning voices from a larger population of the world. Although a committee may have members from 30 countries, if 20 of those countries are from Europe then that is not necessarily a diverse technical committee. Increased participation from countries globally is needed. The third type of diversity

identified was the need for gender diversity. This IEC TF noted that the majority of delegates, and hence a majority of technical committee officers and even board members are men. The TF agreed that having more female participation and leadership would be beneficial.

I think there has been an appreciation in recent years for the value of having younger people get involved in standards development. Consider the fact that younger people have grown up in a technological age. Many have always had a computer or tablet or in the case of my kids gaming system in the house. Compare that to my generation. I didn't even touch a computer until I was in middle school – 8th grade, I think. Having younger voices at the standards development table can help technical committees consider all the electronic and connectivity possibilities that the older crowd may not consider.

Host: When you say one size cannot fit all, can you give us some real examples of recent efforts to develop safety and performance standards that specifically considered the needs of women?

Sonya: One example of the need for gender responsive standards that I am aware of is the example of the “crash test dummy” for evaluating impact of a car crash on the occupants in the car. There are cases cited that the dummies did not adequately reflect a woman's body type. Consider that the seat belt may sit differently across a woman than a man – especially across a pregnant woman. It has been said that the dummies used for the test did not adequately reflect the female body type. Changes have been incorporated now to be more gender responsive in better considering the physical dimensions of females. I'd also like to share an example of a UL standard that is gender responsive. One example of a recently published standard which accounted for gender inclusivity is UL 3741, the Standard for Safety for Photovoltaic (PV) Hazard Control. This standard is intended to help reduce shock hazards for firefighters responding to emergencies on homes with PV systems. As research was collected for this standard, it was noted that physical characteristics such as body weight and skin sensitivity could have a direct effect on certain threshold limits for electricity, and that women tended to have lower threshold limits than most men. Both male and female firefighters were considered in the calculations of the potential current that could pass through a firefighter's body during various firefighting interaction scenarios with a damaged PV array. As a result, for the protection of female firefighters, the standard uses DC body resistance data as modified for females, which is roughly 2/3 the limits for males.

Host: What are the other factors needed to make international standards development truly diverse and relevant globally?

Sonya: One other aspect to help standards be more effective is to rely on data where possible. Committees should try to obtain and use data that applies to a diverse population. Underwriters Laboratories is a unique organization in the standards development world, with world-class research taking place by in-house experts. The standards organization wants to take full advantage of that research and use it to keep UL standards current. We also want to be seen as a partner to our research family by helping to provide avenues for publication globally.

In addition to research teams, UL Standards includes a data science team, that is always looking for ways to utilize publicly available data to strengthen standards. I encourage other groups to consider where data may be valuable to show effectiveness of requirements, and areas where revision may be needed to address a specific demographic.

Host: You are also working on addressing UN Sustainable Development Goals, how can standards play a role in supporting the SDGs?

Sonya: Thank you for this question! The UN SDGs are so important at creating a better future for us all! I am so pleased to be a member of the IEC TF addressing SDGs. In that task force, we have seen a direct link between the standards development work and the SDGs. For example, consider standards for renewable energy and energy storage, both of which can help bring electricity to remote villages living off the grid. In addition, technical committees now consider the SDGs as they prepare new standards, encouraging the experts to think about sustainability in addition to safety.

Host: Given your mission, if you were right now addressing a workshop on Why Standards matter, what would be the key takeaways?

Sonya: I laugh a little at this question, because there is a hashtag used in the standards world that literally is “#standardsmatter.” Standards matter for so many reasons – they establish a baseline for addressing safety, security, and sustainability. They provide rules for product design, and they establish common requirements to facilitate trade across borders. And, as we just mentioned, they directly impact the people of the world through contribution to the UN SDGs.

Host: For those women listening to this conversation what is your one piece of career advice, that you believe has brought you this far?

Sonya: Don't hold yourself back! I have never considered that I would in any way be hampered by being a woman. I have simply wanted to do the best job that I could, and meet the commitments that I have made. So, I encourage young women in STEM to do the same. Find your passion and look for ways to get involved. For me, that passion is knowing that I am making a difference globally in the areas of safety, security, and sustainability! SO, find your passion and get involved. Actively participate. Join project teams. Take on leadership roles. Build your network. And in all cases, do what you say you will do. Making commitments is easy – it's the follow through that is hard.

Host: Sonya Bird, thank you ever so much for speaking to the Word to the WISE podcast.