



World Fire Congress
Communities of Practice

Turning Shared Insights Into Global Impact

Uniting global fire-service expertise, evidence, and innovation
to drive solutions that shape the future of fire safety worldwide.



Research
Institutes | Fire
Safety

World Fire Congress: Communities of Practice



The World Fire Congress Communities of Practice (CoPs) give the global fire service a structured, sustained mechanism to share knowledge, align on emerging risks, and rapidly translate research into practice across borders.

Brought to you by UL Research Institutes' Fire Safety Research Institute, CoPs establish a continuous, facilitated infrastructure for global collaboration. Through monthly thematic sessions, shared governance, robust knowledge management, and direct integration of frontline research, the CoPs transform a biennial Congress into year-round collective progress.

Join a Community of Practice

Your expertise strengthens the global fire-service network. Register for one or more CoPs and help shape the future of the fire service and fire safety.

World Fire Congress: Communities of Practice

- Climate-Driven Large-Scale Events
- Emerging Technology and Artificial Intelligence
- Data: The Foundation of Evidence-Driven Fire Services
- Fire in Low- and Middle-Income Nations (LMICs)
- Firefighting: Tactics and Training
- Firefighter Health and Safety
- Women in the Fire Service
- Fire and Civil Defense in Conflict and Hostile Environments

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Climate-Driven Large-Scale Events: Response and Resilience

Fire, storm, and flood events are exceeding the planning assumptions, resource capacities, and tactical doctrine of even the most well-resourced emergency response services. During the 2024–2026 fire season alone, more than 100 million people were exposed to fire worldwide, while 2025 brought 95 named tropical storms and three Category 5 hurricanes — the most in a single season since 2005. The challenge is no longer suppression alone, but systemic resilience across every hazard.



Focus of this Community

- Cross-border, all-hazard mutual-aid architectures
- Compound, cascading risk — wildfire, storm, and flood
- Pre-positioning, early warning, and evacuation strategies that work across contexts

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Emerging Technology and Artificial Intelligence

From AI-powered detection and satellite monitoring to autonomous apparatus, smart PPE, and decision-support tools, emerging technologies can synthesize vast data streams and give commanders unprecedented situational awareness when seconds matter. Technology adoption is advancing fastest in high-income nations, and fire chiefs worldwide are urging caution: powerful tools still require governance and human oversight.



Focus of this Community

- Share what's working — and what isn't — across resource levels
- Build governance and human-oversight frameworks for responsible adoption
- Close the equity gap in access to emerging technology
- Share evidence-based research results



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Data: The Foundation of Evidence-Driven Fire Services

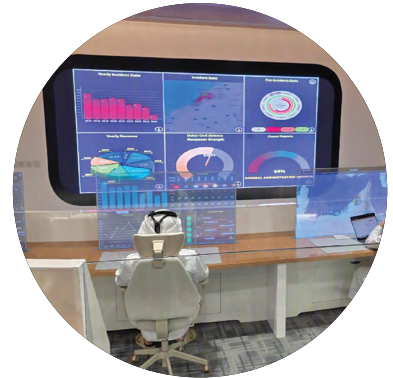
Fire-service decisions — on the incident ground, in the department, and at the policy level — are only as strong as the data behind them.

Yet today, fire data remains fragmented, inconsistent, and rarely shared across jurisdictions or borders — and the gap is most acute in lower-resource settings, where limited capacity for data collection and modeling constrains fire policy itself.

Without common standards, we cannot fully understand the global fire problem — or measure what is working.

Focus of this Community

- Data governance and interoperability
- Minimum viable data schema and standards for low-resource settings
- A global fire-intelligence ecosystem that serves every nation



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Fire in Low- and Middle-Income Nations (LMICs)

Fire is one of the world's most inequitable killers. More than 150,000 people die from fire and burn-related injuries every year — over 95% of them in low- and middle-income countries, where death rates run nearly six times higher than in high-income nations. Dense informal settlements, combustible construction, open-flame cooking, and under-resourced rescue services compound the toll.

This is not a distant problem. It is a shared global responsibility, and a call for partnership, not charity.

Focus of this Community

- Capacity building and technology transfer
- Community-based fire risk reduction in informal settlements
- Genuine partnership that centers LMIC voices and leadership



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Firefighting: Tactics and Training

The nature of fire is changing faster than the doctrines and training curricula designed to fight it. At the wildland-urban interface (WUI), burning structures become the primary fuel — yet traditional wildland training rarely bridges into structural response. Beyond the WUI, services face mounting complexity: lithium-ion battery fires, high-rise and informal-structure fires, industrial and chemical hazards, and large-scale disaster co-response.

Firefighter training and response tactics that are standardized in one nation may be unknown to another. These tactics may be directly transferable across borders or may need adaptation to fit the culture of some nations.

Focus of this Community

- Compare doctrine and share incident lessons
- Close the training gap on lithium-ion, WUI, and industrial hazards
- Advance simulation and technology-enhanced training toward shared standards
- Share evidence-based research results

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Firefighter Health and Safety

Firefighters face some of the most serious occupational risks of any profession. The World Health Organization (WHO) deemed firefighting a group 1 carcinogen. In higher-income nations, occupational cancer has become the leading cause of line-of-duty death — roughly 75% firefighter occupational related deaths in 2025 were attributed to cancer. Yet the nature of those risks, and the protections against them, remain deeply uneven worldwide.

In many regions, foundational safeguards are still missing: basic PPE, rehabilitation, and even the most minimal health monitoring.

Focus of this Community

- Build shared knowledge on firefighter cardiovascular risks, mental health, cancer risk, and toxic exposure
- Compare effective health and safety practices across nations
- Advocate for a universal standard of firefighter health and safety
- Share evidence-based research results



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Women in the Fire Service

Women remain dramatically underrepresented in fire and civil defense services worldwide — many departments are just 4–5% (or fewer) female, a figure that has grown slowly over four decades. The global picture is far from uniform, and the variations across nations offer some of the community's most valuable lessons.

The barriers aren't about capability — globally, women perform roughly 57% of all volunteer work. A service that translates into communities that are more capable, more trusted, and more resilient.

Focus of this Community

- Recruitment, retention and leadership pathways
- PPE that fits — today it fails an estimated 80% of female firefighters
- Culture change and policy that works



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Fire and Civil Defense in Conflict and Hostile Environments

Fire and rescue personnel in many nations are now responding to deliberate attacks — and in some cases becoming the targets. Aerial strikes, sabotage, drone incursions, terrorism, and hybrid incidents are expanding globally, and fire services are increasingly operating in environments shaped by instability, insecurity, and gray-zone tactics.

This Community of Practice brings together leaders working in these environments to share lessons, strengthen protection, support continuity of service, and advance recovery efforts. It's operational, humanitarian work — not political.

Focus of this Community

- Responder protection and operational doctrine for hostile environments
- Legal protection and continuity of service, documenting attacks under International Humanitarian Law (IHL)
- Hybrid and gray-zone readiness, coordinating with security services



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UL Research Institutes' Fire Safety Research Institute (ULRI) Role in the Communities of Practice

ULRI brings rigorous, field-tested science directly into the global CoPs dialogue, ensuring discussions are grounded in evidence — not anecdote.

Members gain access to a trusted international network, curated best practices, and direct engagement with ULRI researchers whose work leads the world in lithium-ion battery safety, EV fire risk, climate adaptation, firefighter health and safety, and evidence-based tactical decision-making.

ULRI serves as the technical anchor and convening authority of the CoPs, providing the scientific foundation that accelerates members' ability to respond to fast-evolving threats without duplicating effort or reinventing solutions nationally.



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Leadership



Steve Kerber

Vice President and Executive
Director, Fire Safety

Steve Kerber is Vice President and Executive Director of the UL Research Institutes' Fire Safety Research Institute. He leads a fire safety research team dedicated to addressing the world's unresolved fire safety risks and emerging dangers to reduce death, injury and loss from fire. Steve is also a 13-year veteran of the fire service, with most of his service at the College Park Fire Department in Prince George's County Maryland where he served at ranks up through Deputy Chief.



Dr. Lori Moore-Merrell

Principal Fire Safety Strategist

Dr. Lori Moore-Merrell is the Principal Fire Safety Strategist for UL Research Institutes' Fire Safety Research Institute. She served as U.S. Fire Administrator (2021 - 2025) where she oversaw the launch of NERIS, co-chaired the Commission on Wildfire Mitigation and Management, and founded the Inaugural World Fire Congress. Her work spans global fire safety collaboration, risk assessment methodologies, emerging technology adoption, leadership in the World Fire Congress, and support for the newly formed U.S. Wildland Fire Service.



Mark Hardingham

World Fire Congress Communities
of Practice Ambassador

Mark Hardingham is one of the UK's most respected fire and rescue leaders, with a career spanning four decades from firefighter to national figure. He served as Chief Fire Officer for Suffolk (2013–2021) before being elected Chair of the National Fire Chiefs Council in 2021, where he led the sector through post-Grenfell building safety reform and strengthened the UK's international fire service links, including co-hosting the 2024 World Fire Congress. Mark was awarded the Queens Fire Service Medal in 2019 and the Commander of the British Empire in 2026 for his services to the fire and rescue service.



Diane Haithcock

Director, Standards Program

Diane Haithcock serves as Project Coordinator for all Communities of Practice (CoPs) from the 2024 and 2026 World Fire Congress. She joined UL in 1998 as a Project Engineer in Fire Protection and moved into her current role in 2010 as Standards Program Manager for UL Standards & Engagement. Diane oversees chairs and project managers across ULSE Technical Committees, guiding expert panels that develop and maintain consensus safety standards for the United States and Canada.



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The World Fire Congress Communities of Practice bring experts together to accelerate shared learning and develop cross-border strategies that strengthen fire service capability worldwide.

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