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RECOVERY: Wildfire Recovery, Adaptation, and Long-Term Health Impacts

Forum on Medical and Public Health Preparedness for Disasters and Emergencies
June 15, 2026

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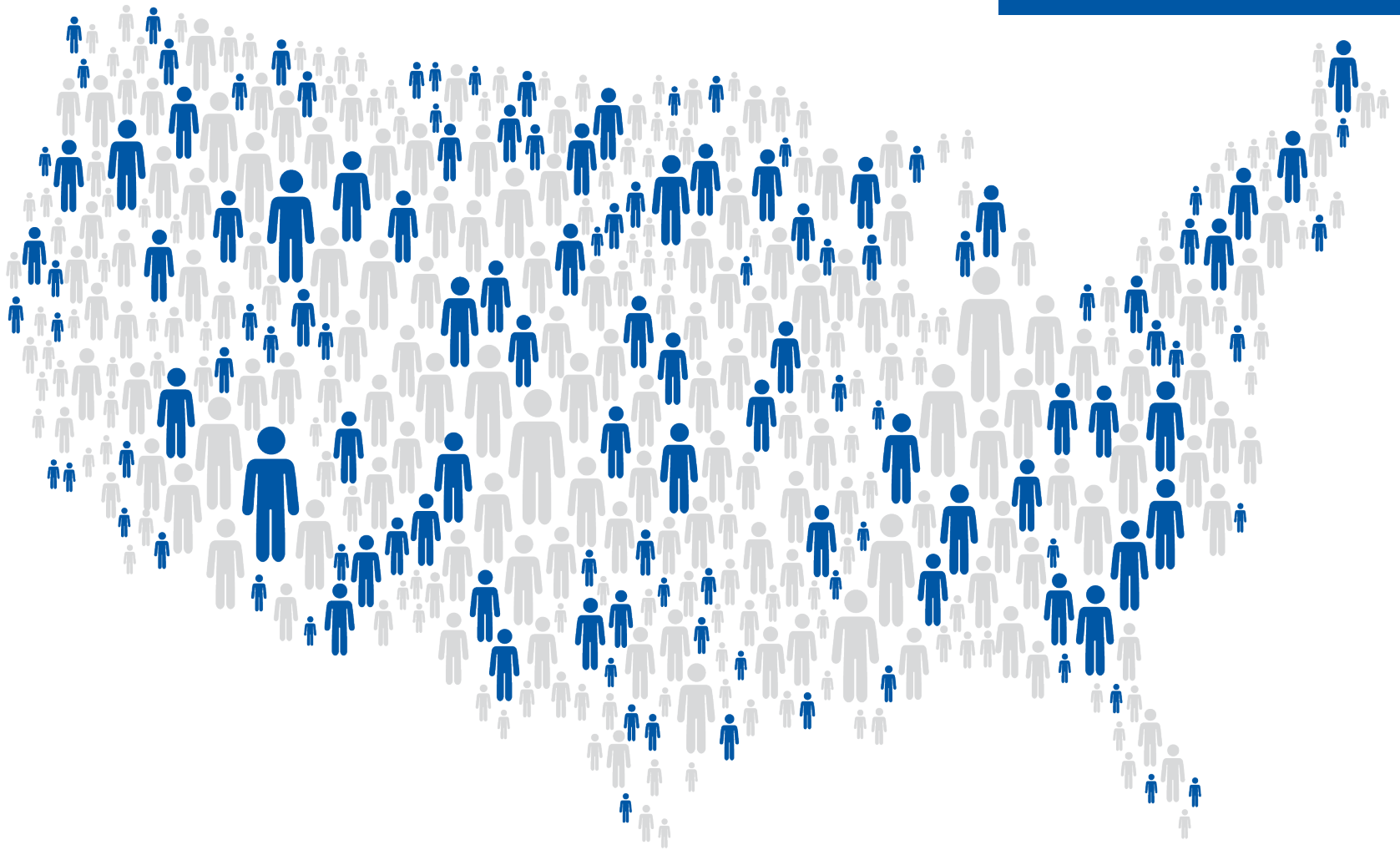
UL Research Institutes' Chemical Insights

Science for a safer, healthier tomorrow.

The Size of the WUI

1/3 of the U.S. population lives in the WUI



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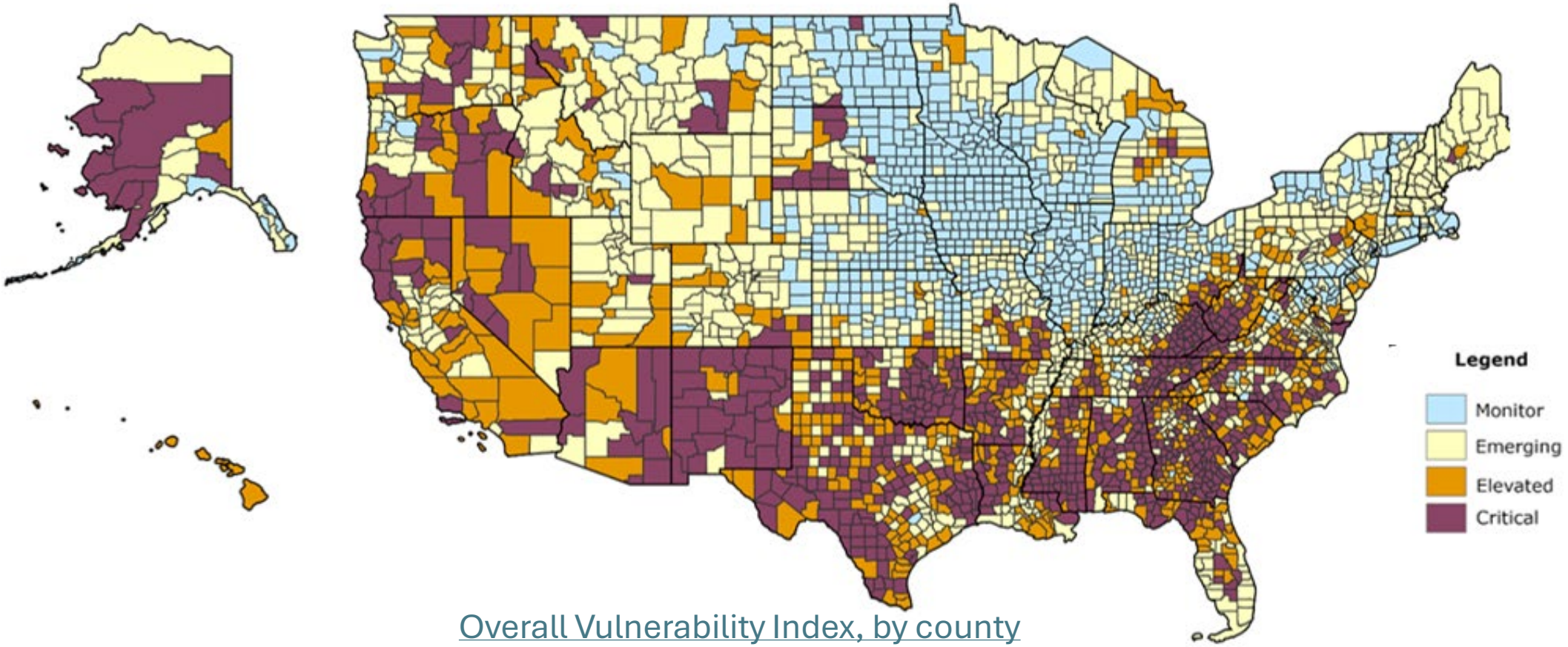

Overall Vulnerability Index, by county

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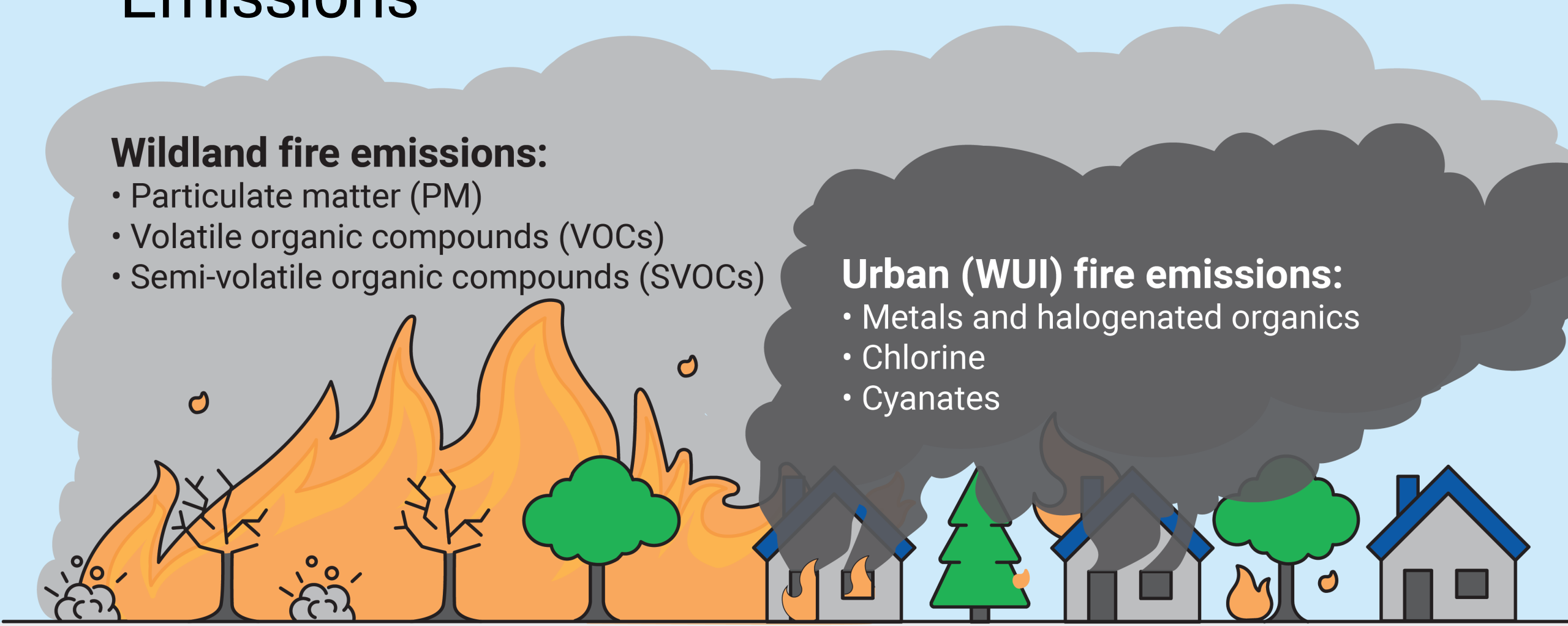
National Network of Public Health Institutes

COLORADO HEALTH INSTITUTE

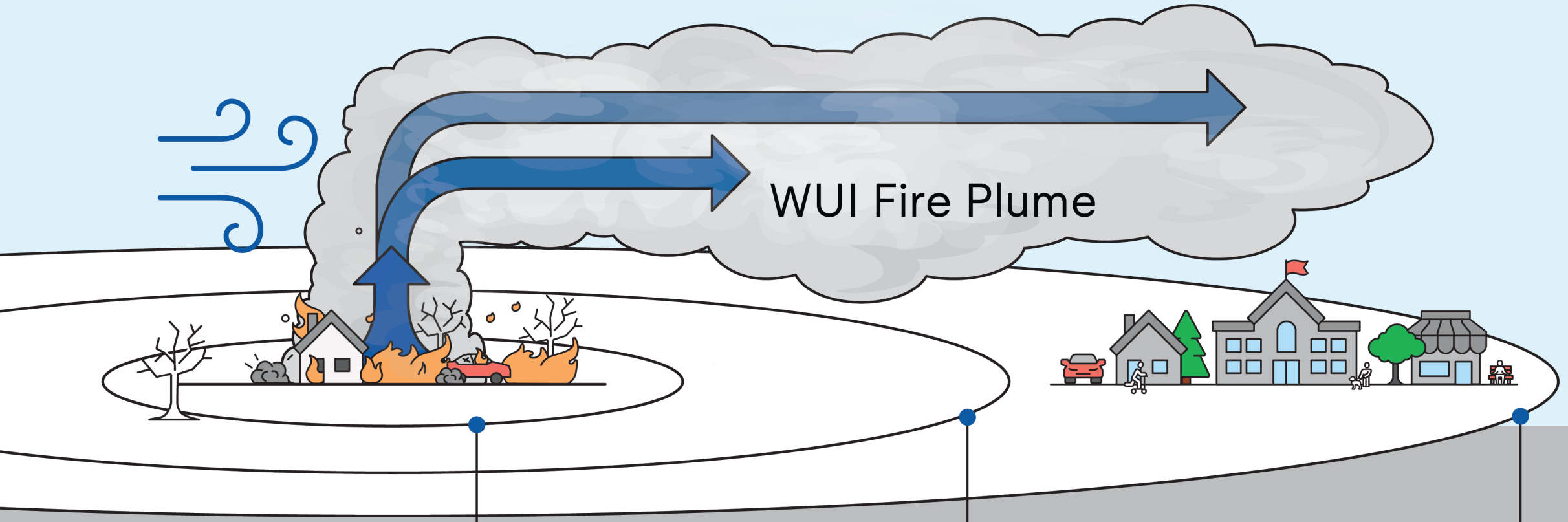
Wildland Emissions and Urban (WUI) Emissions

Wildland fire emissions:
- Particulate matter (PM)
- Volatile organic compounds (VOCs)
- Semi-volatile organic compounds (SVOCs)

Urban (WUI) fire emissions:
- Metals and halogenated organics
- Chlorine
- Cyanates



The Plume



Immediate exposure
0–6 miles

Regional exposure
7–600 miles

Continental exposure
600+ miles

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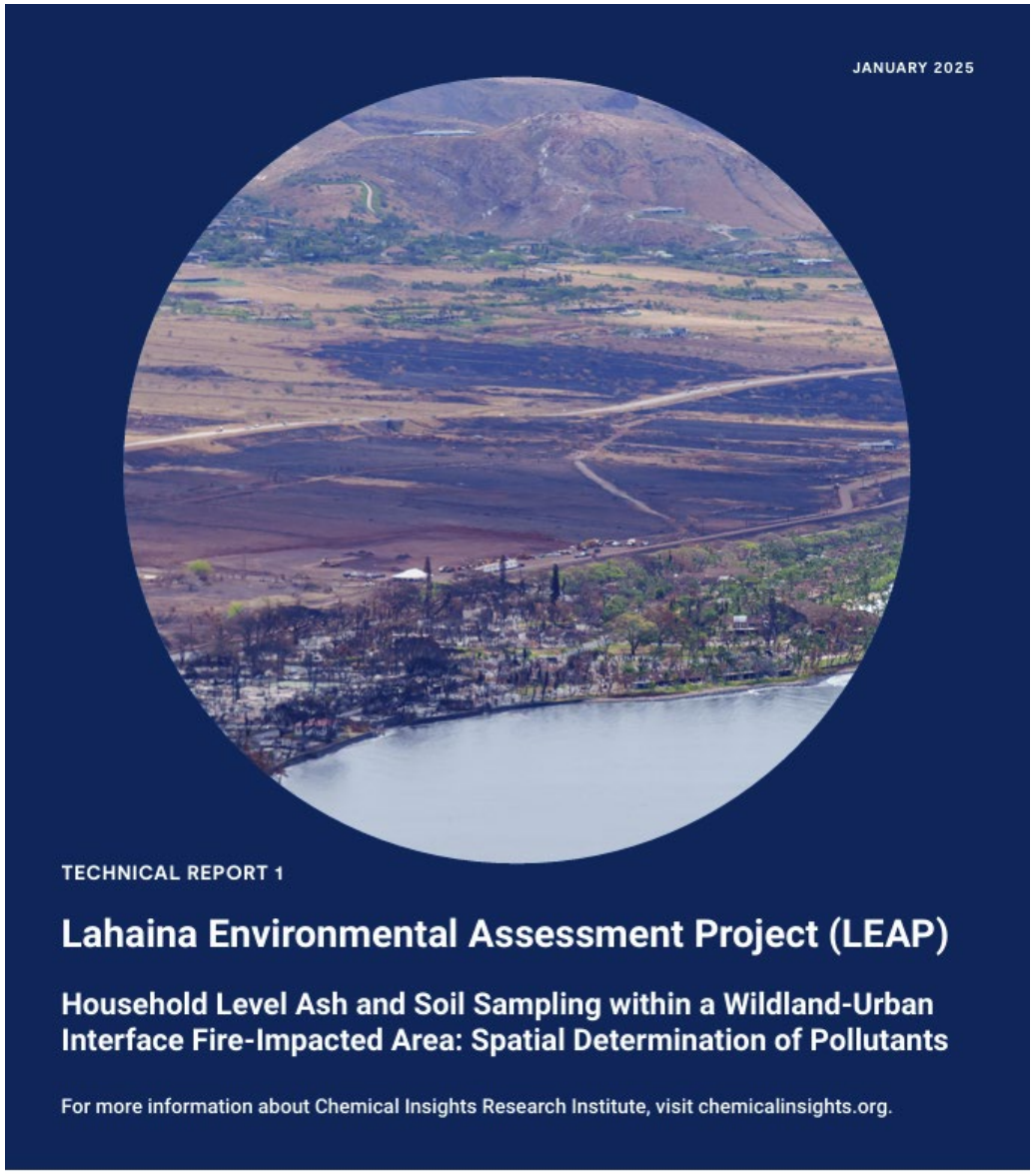

LEAP Phase 1

Enrollment of commercial and residential properties in Lahaina & Kula	Spatially-linked sample collection	Sample processing and chemical analysis
Institutional Review Board approval & USDA APHIS soil import permit issue date – 4/2024	Sample collection- 4/2024 - 5/2024	ICP-MS Sample processing, digestion & analysis- 5/2024 – 7/2024

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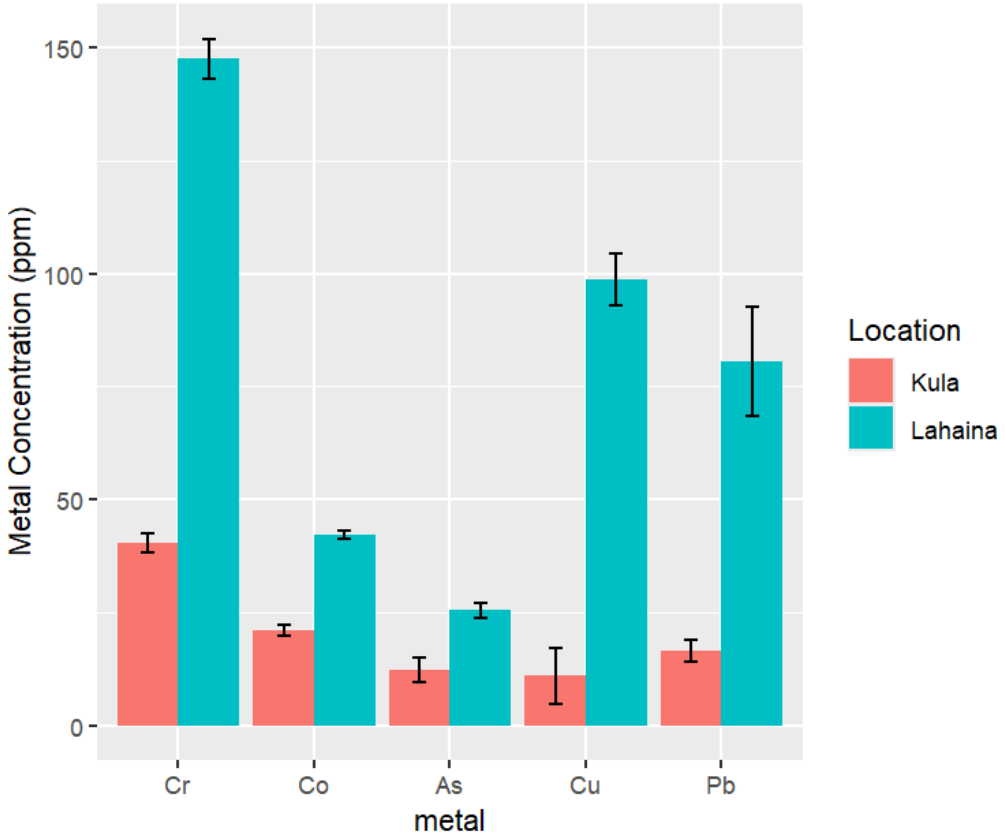
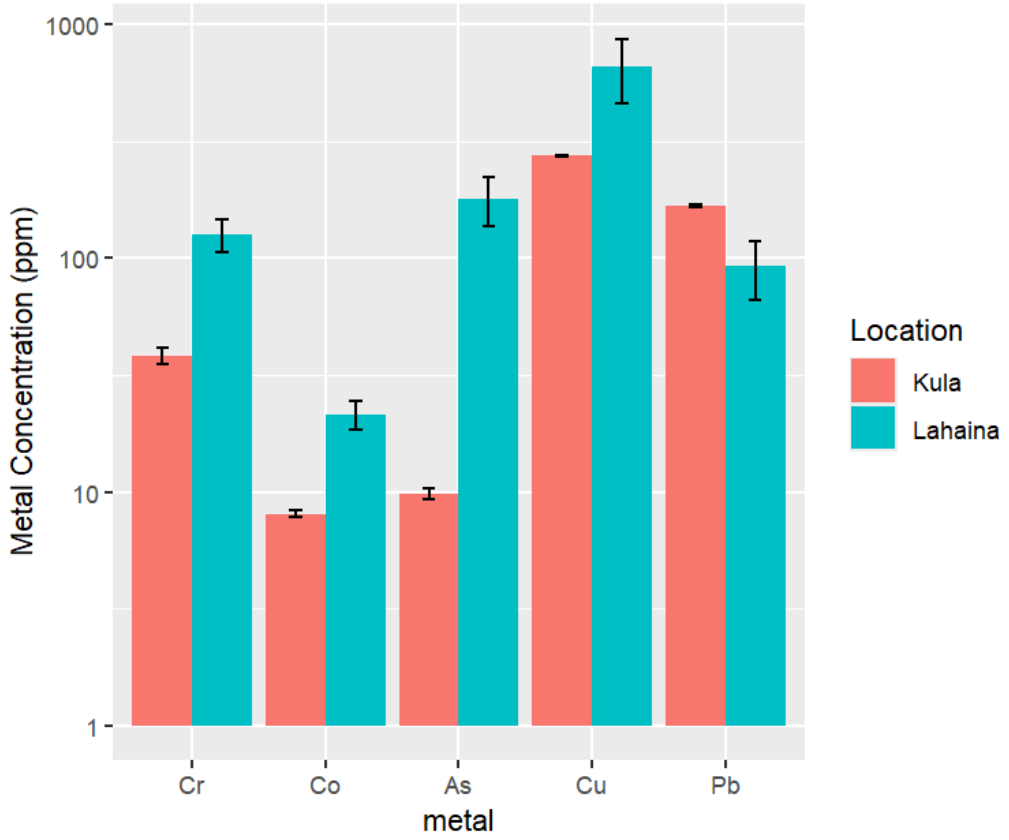
LEAP soil and dust analysis results

Soil metals ICP-MS



Household dust metals ICP-MS



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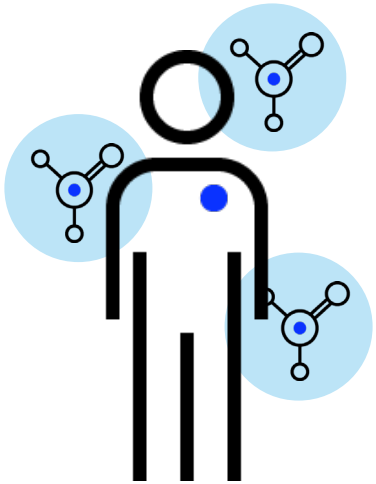
Hazard & Exposure Are Key Elements of Chemical Risk Characterization



Hazard ✖ **Exposure** = **Risk**

The inherent property of a substance to cause harm (e.g., toxicity of a chemical)

The contact between a hazard and a receptor (such as a person, population, or environment)

The **likelihood and severity of harm** occurring as a result of exposure to a hazard

Take-home Messages

- Significant knowledge gaps exist related to potential health impacts associated with the recovery phase of WUI fires
- Spatially resolved & publicly available demographic data on WUI populations and building characteristics is a needed resource
- Linking spatial data with environmental monitoring of pollutant residues and biomarker of exposure data can improve health risk modeling in post WUI fire environments

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