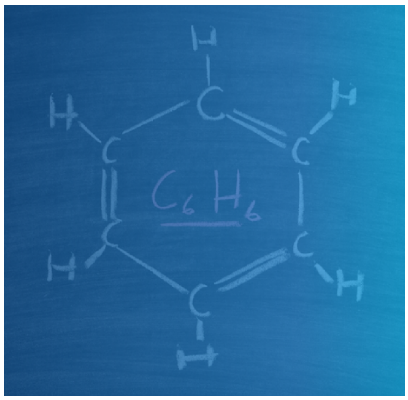
View this email in your browser

Chemical Insights
An Institute of Underwriters Laboratories Inc.

VOLUME 23
OCTOBER 2022

Foresight

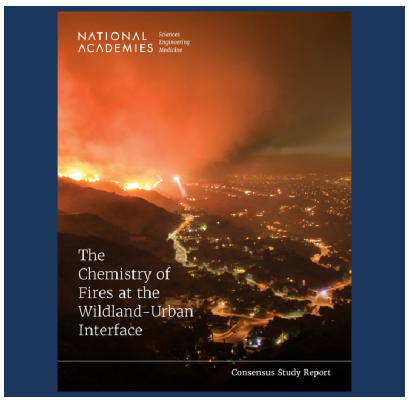
Indoor Air Quality



Benzene—A Common Air Pollutant

The common air pollutant, benzene, is a carcinogenic, volatile organic compound (VOC) found in the indoor air. Primary sources of benzene include emissions from vehicles and gas-powered equipment often found in garages that can infiltrate homes and buildings. Benzene is found in petroleum-based products used in internal and external building materials. Research shows that benzene is a primary emission from burning residential furniture, the leading item to ignite during a house fire. Benzene exposure can result in neurologic, hematologic, and immunologic effects in people. Read more in our latest technical brief, "Benzene— A Common Air Pollutant."

Wildfires and the WUI



The National Academies of Sciences, Engineering, and Medicine Releases its Findings on Research Needed for Understanding the Health Impacts of WUI Fires

The National Academies of Sciences, Engineering, and Medicine published the consensus report, "The Chemistry of Fires at the Wildland-Urban Interface." It describes opportunities for chemistry research to fill critical gaps that decision-makers can use to help mitigate Wildland Urban Interface (WUI) fires and their potential impact on public health. This report describes fuels of concern in WUI fires, examines primary routes of exposure, and identifies communities that are vulnerable to exposures. It recommends a multidisciplinary research agenda to prevent and inform response to WUI fires. Dr. Marilyn Black of CIRI served as a co-author focusing on human exposure and the health impacts of toxicants and mitigative strategies. Visit CIRI's Wildfires and Human Health page to learn more about our research and actionable insights.

Flame Retardants and Furniture Flammability

Selecting Upholstered Furniture to Reduce Safety Risks of Open Flame Fires Without the Use of Hazardous Flame Retardants

October is Fire Safety Month. Today's homes burn more quickly than before giving consumers, in some cases, only minutes to escape potential injury and death from toxic gases and flames. A wise selection of indoor furnishings to reduce indoor fuel loads for open flame fires can make a

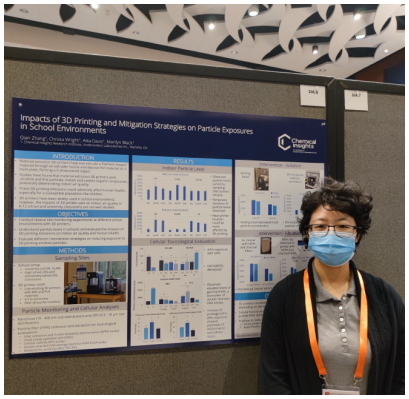
positive difference. Consumers are encouraged to purchase furniture with fire barriers and without added flame retardants. Additionally, interior design and furniture industry professionals can learn how to encourage and protect consumer safety and health through CIRI's "Specifying Residential Upholstered Furniture to Safeguard Human Health and Well-Being: A Toolkit for Reducing Fire and Chemical Risks." This toolkit upskills professionals about why fire and chemical safety must be considered when selecting furniture, how to specify a fire barrier, and meaningful research on flame retardant exposure and furniture flammability.

Global Air Pollution

New Strategic Research Initiative Launched Studying Personal Air Pollution Exposure Levels and Health Impacts in Young Children

Scientific studies have observed clear links between the amount of air pollution where a child resides and symptomatic or clinically relevant health outcomes. However, daily personal air pollution exposure and early development of health impacts for children under five years old have been historically difficult to assess. CIRI's new research initiative with Georgia State University's School of Public Health addresses these research gaps using an integrated pollution exposure and health response strategy. Air pollution in a variety of childcare settings will be measured, as well as children's biological responses. For more information read the full technical brief "A Strategic Research Initiative on Air Pollution Exposure in Child Care Settings."

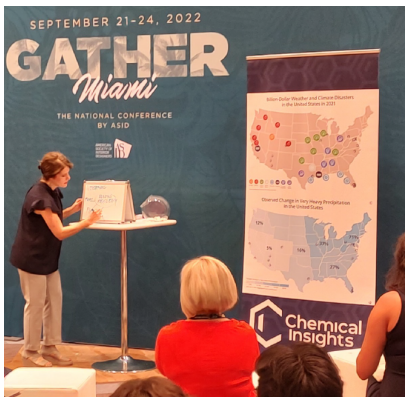
3D Printing



Available New Research on 3D Printer Emissions

CIRI presented the poster, “Impacts of 3D Printing and Mitigation Strategies on Particle Exposures in School Environments,” at the American Association for Aerosol Research's (AAAR's) 40th Annual Conference. Conference attendees learned about CIRI’s recent 3D printing research, conducted in multiple school environments, to evaluate the impacts of 3D printing emissions on indoor air quality and human health and to assess different interventions on reducing exposure to particles during operation. Our research found that 3D printers can elevate indoor particle concentration in schools. Additionally, exposure to certain 3D printing emissions may lead to cellular injury, inflammation, and oxidative damage to biomolecules that serve critical roles in the health of living human cells. Mitigation practices to reduce particle exposure from 3D printing include isolating the printer with a venting hood or enclosure and/or applying a filtration system with a HEPA filter to a printer or the surrounding environment.

Resiliency for the Built Environment



Messaging the Importance of Resilient Buildings for Health to Interior Design Professionals

When we define a resilient building, we usually mean its ability to withstand weather events that threaten its exterior structure. But a resilient building also needs safe conditions inside — where the people are. During the American Society of Interior Designers’ GATHER conference, CIRI educated interior designers on how to design and keep homes healthy, particularly in environments with excessive moisture, extreme heat, and fires. Audience members left with a better understanding of weather events in their state and actionable best

practices to improve resiliency through interior design based on location. Visit our website to learn more about why resiliency matters.

GATHER 2022 – The National Conference by ASID
Video Credit: White Tie Productions

CIRI Happenings

Highlighting the Power of Storytelling to Improve Campus Safety and Health Culture

CIRI recently shared its science storytelling expertise with higher education environmental health and safety (EHS) professionals during the Campus Safety, Health, and Environmental Management Association's (CSHEMA's) annual Fall Symposium. Using CIRI's research on the use of upholstered furniture fire barriers to protect people from fire hazards and flame-retardant exposure and the use of DIY air cleaners for wildfire pollution reduction, CIRI demonstrated its signature "research to Impact" messaging. EHS professionals then had an opportunity to workshop their own stories to help change the safety

culture on their campus to protect the health of students, faculty, and staff.

Sharing the Importance of Common Pollutants, their Sources and Mitigation Strategies for Facility Managers

CIRI presented "Chemistry 101 for Building Managers" at the International Facility Managers Association's (IFMA's) World Workplace Conference. IFMA is the largest and most recognized organization for facility management professionals. The audience learned to recognize common indoor air pollutants and how they behave in the built environment along with strategies to proactively reduce occupant exposure. Understanding the basic science behind these pollutants helps facility managers answer questions they may get from building occupants and do their part to keep the people in their spaces safe and healthy.

Welcome Joe Hess

CIRI welcomes Joe Hess as a Data Scientist to evaluate the trends and health significance of chemical and biological exposure data from various research initiatives. Joe is a PhD candidate in Computational Biochemistry at Clemson University and received a B.S. in Chemistry from Rutgers University. Joe previously worked for the U.S. Food and Drug Administration, applying (Q)SAR methods, RS algorithms, and NLP techniques to analyze toxicological areas of interest.

Join Our Team

CIRI is recruiting key science and communication talent to join our team! Our organization is dedicated to scientific discovery research, education, and communication of environmental exposures and steps for reducing human risks. We are seeking driven, results-oriented, and passionate people who want to contribute to safe working,

living, and learning environments. Click each bullet to learn more about the specific role.

- Communications Specialist
- PR and Amplification Manager
- Research Laboratory Manager
- Research Manager for Field Operations
- Toxicologist
- Toxicology Sciences Laboratory Manager

Recent Publications and Upcoming Events

Recent Publications

- National Fire Protection Association Podcast, "Flame Retardant Chemicals in Furniture"
- Technical Brief, "Benzene—A Common Air Pollutant"
- Technical Brief, "A Strategic Research Initiative on Air Pollution Exposure in Child Care Settings"

Upcoming Events

- Greenbuild International Conference + Expo, November 1-3, 2022, "Wildfires + Resilience: Whole Building Approach from Design to Occupancy"
- ASID Virginia Chapter, November 10, 2022, "Specifying Residential Upholstered Furniture to Safeguard Human Health"
- Ron Blank GreenCE Academy, November 14, 2022, "Chemistry 101 for Building Professionals"
- CSHEMA Webinar, November 17, 2022, "Chemicals of Concern for Building and EHS Managers"

chemicalinsights.org