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Foresight

Sharing CIRI's 2023 Research Agenda



The Chemical Insights Research Institute (CIRI) of UL Research Institutes is dedicated to rigorous and objective scientific research, publication, education, and communication on environmental exposures resulting from technologies and practices, their impact on human health and processes for reducing risks. Throughout the year, we look forward to sharing with you our research activities and findings in three key areas:

- **The Exploration of Chemical Exposure and Its Health Impact**
- **Climate Change and Resiliency for Health**
- **Systems Toxicology for Characterizing Pollution Exposure Impact and Disease Development**

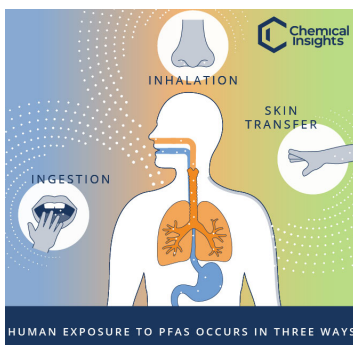
Understanding PFAS



This month we launched our research on per- and polyfluoroalkyl substances (PFAS) to examine human exposure pathways and impact on health. Thousands of these manmade chemicals are widely used in daily life. Soil and water resistance and durability performance properties that make PFAS attractive for use in consumer and occupational textiles also make these chemicals persistent environmental pollutants. As a result, they are often called “forever chemicals.” According to the Centers for Disease Control and Prevention (CDC), approximately 97% of Americans have detectable levels of PFAS in their blood.

Human exposure to PFAS chemicals has been linked to numerous health effects such as increased risks of certain cancers, immune system disorders, and adverse reproductive effects. Read our Science Insights, "[*Exposure and Health Implications of Per- and Polyfluoroalkyl Substances \(PFAS\)*](#)," for comprehensive information about PFAS and their known public health risks.

Launching New Research



CIRI's extensive research will explore PFAS exposure from the use of everyday consumer and occupational wearables. Specific goals of this study include:

- Development of analytical methods for characterizing the presence and levels of PFAS in performance textiles used to manufacture consumer and occupational wearables.
- Evaluation of inhalation, ingestion, and dermal human exposure potentials for PFAS during the use of consumer and occupational wearables containing these chemicals.

Our Technical Brief, "[*A Strategic Research Initiative on the Impact of Perfluoroalkyl and Polyfluoroalkyl Substances \(PFAS\) on Human Health*](#)," details information on this research.

Collaborating to Protect Public Health



We are jointly conducting our PFAS research with [Emory University's Rollins School of Public Health](#). While Emory will contribute its expertise in identification and measurement of the PFAS chemicals, CIRI will apply its human exposure chambers and techniques to evaluate inhalation, ingestion, and dermal transfer opportunities that occur by using these products. Insights gained will assist in understanding potential health impacts and how material design, and use, contribute to human exposure risks. This research initiative is one of many that highlights CIRI's dedication to improving and

protecting public health through the mitigation of environmental pollutant exposure.

[Read the Press Release](#)

Publications and Events

Recent Publications



- American Journal of Respiratory and Critical Care Medicine article, [“Ozone Reaction Products Associated with Biomarkers of Cardiorespiratory Pathophysiology”](#)
- Toxics articles
 - [“Characterization of an Electronic Nicotine Delivery System \(ENDS\) Aerosol Generation Platform to Determine Exposure Risks”](#)
 - [“Toxicological Assessment of Metal and Chemical Hazards Associated with Vaping Frequency and Device Age”](#)
- Fact Sheet, [“Per- and Polyfluoroalkyl Substances \(PFAS\)”](#)
- Science Insights, [“Exposure and Health Implications of Per- and Polyfluoroalkyl Substances \(PFAS\)”](#)
- Technical Brief, [“A Strategic Research Initiative on the Impact of Perfluoroalkyl and Polyfluoroalkyl Substances \(PFAS\) on Human Health”](#)

Upcoming Events



- [Green Schools Conference](#), February 27 – March 1, 2023, “Assessing New Technologies and their Safety for Indoor Air Quality Emerging IAQ Challenges and Solutions in Our Schools”
- [SOT 62nd Annual Meeting and ToxExpo](#), March 19 - 23, 2023,
 - Symposium Session: “The Future of Fire Safety: Exploring the Intersection of Wildfires and Human Health”
 - Poster Presentations
 - “Variances in Vaping Behavior Contribute to Adverse Periodontal Health Effects”
 - “Exposure to Low-Level Vanadium Pentoxide in Drinking Water Triggers Pulmonary Inflammation and Fibrotic Signaling”
- [NSTA National Conference](#), March 22 – 25, 2023, “From Research to Impact – Storytelling Science for a Safer World”

- [IEEE Product Safety Engineering Society](#), Chicago Chapter, April 26, 2023, "Exposure to 3D Printing Emissions and Potential Health Concerns: New Findings from Laboratory and Field Studies"
- [AIHce EXP 2023](#), May 22 - 24, 2023
 - "Secondhand Vape Emissions from Electronic Nicotine Delivery Systems"
 - "Engineering Control to Reduce 3D Printing Exposure"



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