

Human Biomonitoring and Integrated Exposure Science of Chemical and Particulate Agents for Risk Assessment and Prevention

Proposed PhD Topics

Topic 1 – Controlled exposure studies (mechanistic approach)

Human toxicokinetics and early biological effects of inhaled volatile chemical exposures

This project will investigate human exposure to volatile chemical agents representative of air pollution using controlled exposure chamber studies combined with biomonitoring (exposure and effect biomarkers). It will aim to characterise toxicokinetic and toxicodynamic processes and to identify early biological changes following inhalation exposure. The project will contribute to improving the interpretation of biomonitoring data and to a better understanding of exposure–effect relationships in humans.

Topic 2 – Occupational field studies (applied approach)

Assessment of occupational exposure to chemical and particulate agents using air monitoring and human biomonitoring

This project will assess exposure to chemical and particulate agents in occupational settings using an integrated approach combining air monitoring and human biomonitoring (exposure and effect biomarkers). It will explore how real-world exposures are associated with early biological changes that may be linked to adverse health effects. The project will aim to better characterise exposure determinants and support efforts to reduce harmful exposures in the workplace.