USE OF EPIDEMIOLOGY IN THE ASSESSMENT OF THE HEALTH RISKS OF EMERGING CHEMICALS AND TECHNOLOGIES

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Though we have a wealth of studies on environmental pollutants, the assessment of causality is often difficult because of confounding, reverse causation, and other uncertainties. Biomarkers and omic technologies may allow better causal attribution, for example using instrumental variables in triangulation. Even more complex is the understanding of how social relationships (in particular socio-economic differences) influence health and imprint on the fundamental biology of the individual. The identification of molecular changes that are intermediate between social determinants and disease status is a way to fill the gap. Another field in which biomarkers and omics are relevant is the study of mixtures. Epidemiology often deals with complex mixtures (e.g., ambient air pollution, food, smoking) without fully disentangling the compositional complexity of the mixture, or with rudimentary approaches to understanding the overall effect of multiple exposures or components. From the point of view of disease mechanisms, most models hypothesize that several stages need to be transitioned through health to the induction of disease, but very little is known about the characteristics and temporal sequence of such stages. To address these problems, we need the establishment of a new generation of cohort studies with appropriately specified biosample collection, improved questionnaire data (including social variables), and the deployment of novel technologies that allow better characterization of individual environmental exposures, ranging from personal monitoring to satellite based observations.

MOVING FROM OBSERVATION TO INTERVENTION: LESSONS LEARNED FROM INTER-DISCIPLINARY RESEARCH PROJECTS ON PESTICIDE-RELATED RISKS IN ORGANIC AND CONVENTIONAL SMALLHOLDER FARMING SYSTEMS IN AFRICA

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Agriculture intensification of smallholder farming systems is accompanied by the increasing use of pesticides and fertilizers. However, there are environmental and public health concerns, for example, due to the poor knowledge, attitudes, and practices of pesticide handling of smallholder farmers, particularly in low- and middle-income countries.

This presentation aims to provide insights from our inter-disciplinary research projects with Ugandan organic and conventional smallholder farmers over the past 7 years. We will highlight the lessons learned from observational longitudinal studies on pesticide use and their related human and environmental exposure and health risks. Also, we will showcase the opportunities that arose when moving towards intervention-oriented study designs to reduce pesticide exposure with face-to-face training and SMS-based interventions.

JOINT EFFECTS OF FIVE MAJOR OCCUPATIONAL LUNG CARCINOGENS AND THE RISK OF LUNG CANCER (SYNERGY)

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Introduction: Little is known about joint effects between occupational carcinogens on lung cancer risk. We investigated