Nanosafety Training School: from Basic Science to Risk Governance

Interprofessional Education Training School 2021

Speakers & Session Outlines

Key Note Lectures

Georgios Katalagarianakis, former European Commission

"Let's celebrate: Eleven years of the Venice Training School, sixteen years of European Nanosafety research. History, lessons learned and perspectives"

Steffi Friedrichs, AcumenIST

"Concepts of sustainable Nanofabrication"

From Nanosafety to Nanomedicine: a 10-year Perspective

Bengt Fadeel, Karolinska Institutet

The lecture will provide a perspective on nanosafety research conducted in the past decade and provide a view to the application of nanomaterials in medicine (aka nanomedicine). The speaker has been involved in several EU-funded and national projects focused on nanosafety including MARINA and BIORIMA as well as the EU-funded Graphene Flagship. Focus on lessons learned from these projects with emphasis on the synthetic and biological “identities” of nanomaterials and interactions of nanomaterials with biological systems.

Hazard to Human Health & Environment

Hedwig Braakhuis, RIVM National Institute for Public Health and the Environment
Sabina Halappanavar, Health Canada
Fiona Murphy, Heriot-Watt University
Samantha Llewellyn, Swansea University

In this session, the latest progress in nanomaterial hazard testing will be presented. This includes the use of the Adverse Outcome Pathway (AOP) concept to unravel the mechanisms behind nanomaterial toxicity. In addition, the use of alternative methods will be discussed.

- Application of adverse outcome pathways for nanomaterial hazard assessment
- Development of an advanced liver model for nanomaterial hazard testing
- Use of air-liquid exposure models for hazard testing of inhaled

Fate & Exposure Assessment

Teresa Fernandes, Heriot-Watt University
Socorro Vazquez, LEITAT Technological Center
Sam Harrison, UK Centre for Ecology & Hydrology
Joris Quik, RIVM National Institute for Public Health and the Environment

This session will focus on recent developments in the assessment of fate of exposure of nanomaterials. We will discuss how to use the basic information on nanomaterial exposure scenarios description to determine the likelihood & route of exposure, and how we can use this information in the assessment and management of exposure to nanomaterials. We will then progress to provide some information on how to use models to perform nanomaterial environmental exposure assessment, explain what these models are, what they include, why they are useful and the different levels of complexity, to make them more realistic and reflecting environmental reality. During this session you will be able to try for yourself some of our models, input some real data, and analyse the results. The discussion and final conclusions will be led by the presenters.

RRI Roleplay Workshop: Safe-by-Design Sustainability Forum

Sean Hardy, Symlog
Raquel Bertoldo, Symlog

The RRI team of Project SAbyNA is inviting you to participate in the First Annual Safe-by-Design Sustainability Forum! It is now common knowledge that nano-enabled products are important to realising UN Sustainable Development Goals. Recently, the implementation of Safe-by-Design processes have been proposed as a method to achieve these goals.
But what does Safe-by-Design mean in the field of nanotechnology? Is it already in practice or are we far away from it? What are its challenges? What does it imply for each stakeholder group? These questions and more serve as the basis of the session's interactive role-play workshop, which will allow participants to discuss and debate with their peers the various meanings of "Safe/r/ty-by-Design" from their own as well as stakeholders' perspectives.

Similarity, grouping and read-across approaches

Vicki Stone, Heriot-Watt University
Agnes Oomen, RIVM National Institute for Public Health and the Environment
Nina Jeliazkova, IdeaConsult Ltd
Richard Cross, UK Centre for Ecology and Hydrology

This session will address the following topics:

- Grouping hypotheses, IATAs and the GRACIOUS Framework
- A quick introduction to Read Across in a regulatory setting
- How similar do nanoforms need to be to allow grouping and read-across
- Environmental case studies for similarity, grouping and read-across

Risk Assessment & Management

Alex Zabeo, Greendecision S.r.l.

This session will provide training in using the BIORIMA Decision Support System (DSS). This system employs advanced models to support the occupational, consumer and environmental risk assessment of nanomaterials and biomaterials along the lifecycle of nano-enabled consumer products and medical applications. In situations where the risks are not controlled, the DSS proposes suitable Risk Management Measures (e.g., engineering controls, Personal Protective Equipment) and provides information about the efficacy of these measures.

Risk Governance

Martin Himly, University of Salzburg
Sabine Hofer, University of Salzburg
Nobert Hofstaetter, University of Salzburg
Dmitri Ciornii, Bundesanstalt für Materialforschung und -prüfung
Daan Schuurbiers, De Proeffabriek

Risk assessment with social dimension: how does risk governance differ from risk assessment or management? Starting with introducing the process of risk governance, this session adresses how data support decision-making, what data are needed, and what researchers can do in order to provide such data. This also covers FAIR databases and quality assurance, defined by the Knowledge Readiness Level, KaRL. Next to that, different stakeholder views and how socioeconomic aspects can be included into the risk governance process to warrant inclusiveness for different values into the risk/benefit estimation will be discussed.

Modelling

Giulia Mancardi, Politecnico di Torino
Vio Buchete, University College Dublin
Agur Sevink, Leiden University

This session will address the following topics:

- Upscale from classical Molecular Dynamics to Brownian Dynamic for nanoparticle clustering and aggregation
- Nanoparticle-protein docking
- Nanoparticle-membrane interactions

Contacts
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