

IVIVE* In Human Toxicity Assessments of Microplastics

Session Introduction Rob Ellis-Hutchings

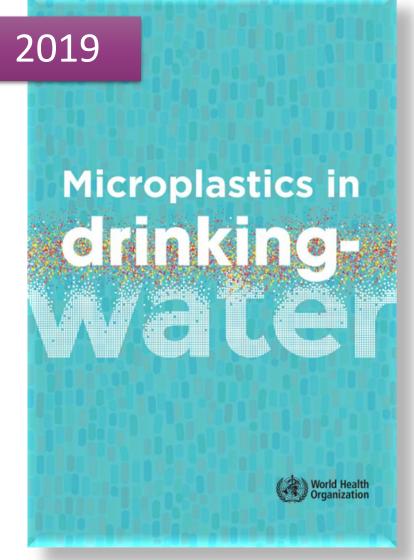
* IVIVE = *In vitro* to *in vivo* extrapolation

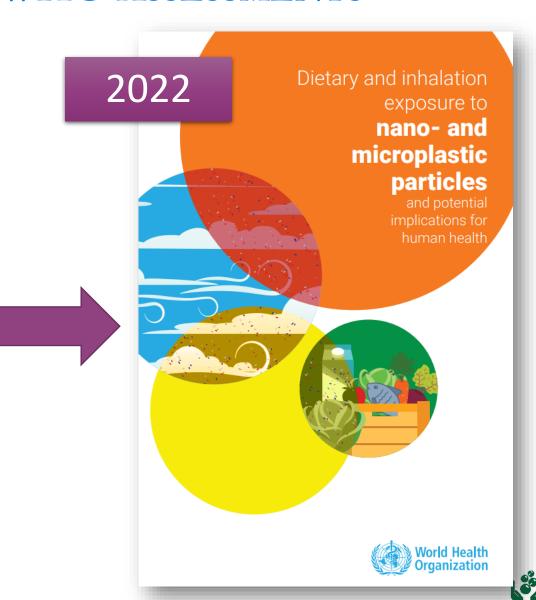




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2019

2022

Dietary and inhalation exposure to nano- and microplastic

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Key Message re: Bioavailability

- Physiological mechanisms for uptake, distribution, and elimination of MP minimize tissue exposure
 - ■Probability ↑ with ↓ particle size
- Insufficient information to assess biodistribution, including likelihood that NMP will cross biological barriers after deposition
- In vitro NMP biokinetics data cannot currently be extrapolated to in vivo





Why is this Session Needed?

- Inhalable and respirable particles have been well studied
 - Bioavailability of microplastic particles remains a gap
- · Barrier restrictions for ingested particles are insufficiently characterized
 - Bioavailability of microplastics is even less understood
- In vitro model approaches predominant
 - All models lack some ability to fully recapitulate intact in vivo barrier function

With these limitations in mind an opportunity exists to incorporate *in vitro* to *in vivo* extrapolations early in the planning and generation of microplastics bioavailability data.





MUCH DATA ARE ALREADY BEING GENERATED!























Session Overview

- Presentations
 - Justin Teeguarden Pacific Northwest National Laboratory
 - Some fundamentals of Particle Dosimetry for Risk-Directed Studies
 - Günter Oberdörster University of Rochester
 - Earlier and Novel Findings from Inhalation Studies of Ultrafine Particles: Predictors for Effects and Biokinetics of Inhaled Micro- and Nano-Plastics?
 - Tanja Hansen Fraunhofer Institute
 - In-vitro inhalation microplastics assessments: IVIVE approaches



- Leah Johnson RTI International
 - Well-characterized nanoplastics for oral exposure studies in vivo
- General Discussion Aim: Identification of science priorities for IVIVE human microplastics assessments

