

Microplastics and Health Webinar Series: Webinar 2 – The distribution of microplastics in the environment and human exposure pathways

March 20th, 2025 | 12:00PM – 1:30PM ET



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March 20th, 12:00PM - 1:30PM – All Times in Eastern Time

12:00pm	Welcome and Meeting Overview	Moderator: Margaret Spring, Monterey Bay Aquarium
12:05pm	Session 1: Distribution of Microplastics in the Environment and Human Exposure Pathways	Speakers: Bart Koelmans, Wageningen University Tracey Woodruff, University of California, San Francisco
12:30 pm	Q&A From the Presentations	Submit your question on Slido
12:40pm	Session 2: Multisectoral Panel Discussion: Identify gaps and propose solutions to improve research.	Moderator: Darrell Boverhof, Dow Panelists: Bart Koelmans, Wageningen University Tracey Woodruff, University of California, San Francisco Matthew MacLeod, Stockholm University Jane Muncke, Food Packaging Forum
1:25pm	Brief Reflections and Goals of Future Webinars	Moderator: Margaret Spring, Monterey Bay Aquarium
1:30pm	ADJOURN	Please submit your feedback on our post-event questionnaire

About the Webinar

The second webinar in this series will promote awareness and **provide a standard baseline understanding of microplastics' distribution in the environment and the most prevalent sources or hotspots of human exposure.**

Specifically, speakers and panelists will highlight the major exposure pathways and identify which pathways pose the

highest risk to human health. The goal is to bridge scientific findings with policy and regulatory frameworks by identifying data gaps, research priorities, and regulatory strategies that can mitigate microplastic exposure and inform downstream decision-making.

Learn more and register: https://www.nationalacademies.org/event/44668_03-2025_microplastics-and-health-webinar-series-webinar-2-distribution-of-microplastics-in-the-environment-and-human-exposure-pathways

YOU CAN SET THE AGENDA! We invite you to answer [a very short questionnaire](#) to better understand your concerns and what you hope to get from this and future webinar.

Example Questions that could be covered

Example Questions:

Mapping the Distribution of Microplastics in the Environment

- Where are the highest concentrations of microplastics found in air, water, soil, and consumer products?
- Where is the data for microplastics in different populations, geographic locations, etc.? Where have surveys been done?
- How do urban vs. rural environments compare regarding microplastic contamination levels?
- What are the dominant sources of microplastics in different environmental matrices (e.g., atmospheric deposition, wastewater effluent, road runoff, food packaging)?
- Do we have a way to know what are the primary sources of exposure?
- How do microplastics travel, and what factors influence their distribution? How do environmental conditions affect them?
- What are the global and local trends in microplastic contamination?
- How does the degradation of larger plastic debris contribute to microplastic formation in different ecosystems?

Understanding Human Exposure Pathways

- Does exposure to microplastics translate to harm?
- What are the primary exposure pathways for humans (e.g., ingestion via food and water, inhalation of airborne microplastics, dermal absorption)?
- What are the baseline human exposure levels? Is there know exposure limits?
- Can biomarkers of microplastic exposure be identified?
- What are the cumulative long-term effects of chronic exposures?
- What is the dose-response relationship for microplastics?
- What can we learn from the pharmaceutical/nano-medical community (intended exposure)?
- Who holds the data on community exposure?
- How do we bridge levels of exposure (data) with their impacts on human health?
- How do occupational exposures (e.g., factory workers, textile workers, plastic recyclers) compared to general population exposure?
- Are nanoplastics more bioavailable than microplastics, and what does this mean for human exposure?
- Are there known mechanisms of MPs excretion/elimination from the human body?
- Are there known biological markers for tracking microplastic exposure and accumulation in human tissues?
- How does chronic, low-dose microplastic exposure compare to acute, high-dose exposure regarding health impact?

Data Gaps and Research Prioritization, and Regulations

- What critical data gaps exist in linking microplastic exposure to human health outcomes?
- How can research better distinguish between ingestion, inhalation, and dermal pathways in risk assessments?
- How can we leverage existing environmental monitoring programs (e.g., water quality testing, air pollution tracking) to include microplastic surveillance?
- What are the biggest challenges in establishing microplastic exposure limits in different environmental media?
- What data is needed to inform regulatory standards? How can surveillance programs better support policy development?

- What regulatory actions could be implemented today based on current knowledge of exposure risks?

Speaker Biographies

Bart Koelmans

Dr. Bart Koelmans is an environmental chemist and ecotoxicologist by training, heading the Aquatic Ecology and Water Quality Department at Wageningen University (The Netherlands). In the field of plastic research, his group aims to bridge the gap between conceptual and empirical approaches to obtain a mechanistic understanding of the risks of microplastic for human health and the environment. Dr. Koelmans is a global highly cited researcher (Clarivate analytics), advises international organizations like the World Health Organization and the UN (GESAMP expert groups), and led international working groups about risks of plastic pollution, such as the SAPEA expert group on Microplastics in Nature and Society. Dr. Koelmans founded the Springer journal Microplastics & Nanoplastics. For more information, see www.microplasticlab.com

Matthew Macleod

Dr. Matthew MacLeod is an environmental chemist and modeler studying factors that control human and environmental exposure to pollutants. His research group uses conceptual and mathematical models to quantify exposure, and they design and interpret laboratory experiments and field studies in environmental chemistry that inform exposure assessments and modeling. The overall goals of their research are 1) to build a quantitative and process-level understanding of factors that determine exposure to environmental pollutants, and 2) to develop practical tools and guidance that supports rational management strategies for high exposure-potential pollutants.

Jane Muncke

Dr. Jane Muncke is an environmental toxicologist specializing on chemicals in plastics and other food contact materials. Since 2012 she works at Food Packaging Forum (FPF) as Managing Director and Chief Scientific Officer. FPF is part of the AURORA project investigating the early-life health impacts of micro and nanoplastics, and part of the Horizon 2020-funded CUSP research cluster. Dr. Muncke is a full scientific member of the Society of Toxicology (SOT), the American Chemical Society (ACS), the Society of Environmental Toxicology and Chemistry (SETAC), and the Endocrine Society.

- Resources:
 - Chemicals leaching from plastics: FCCmigex database - <https://foodpackagingforum.org/resources/databases/fccmigex#dashboard>
 - FCChumon database - <https://foodpackagingforum.org/resources/databases/fcchumon#dashboard>
 - Overview of plastic chemicals - <https://plastchem-project.org/>
 - FDA's page on microplastics from food packaging - <https://foodpackagingforum.org/news/us-fda-launches-webpage-on-micro-and-nanoplastics-in-food>
 - US Government Accountability Office report on FDA's food contact materials - <https://foodpackagingforum.org/news/congressional-watchdog-recommends-changes-within-us-fda>

Tracey Woodruff

Dr. Tracey Woodruff is a Professor in the Department of Obstetrics, Gynecology, and Reproductive Sciences and Philip R Lee Institute for Health Policy Studies at the University of California, San Francisco, and the Director of the Program on Reproductive Health and the Environment. She has done extensive research and policy development on environmental health issues, with a particular emphasis on early-life development. Her research includes evaluating prenatal exposures to environmental chemicals and related adverse pregnancy outcomes and characterizing developmental risks. Dr. Woodruff has authored numerous scientific publications and book chapters and has been quoted widely in the press. She was previously at the US EPA, where she was a senior scientist and policy advisor in the Office of Policy and author of numerous government documents. She was appointed by the governor of California from 2012 to 2023 to the Science Advisory Board of the Developmental and Reproductive Toxicant (DARTIC) Identification Committee.

- Resources:
 - UC California State Evidence Policy Consortium (CalSPEC) report on microplastics - <https://uccs.ucdavis.edu/calspec/2022-research-topic>

- Rapid systematic review of MPs and health effects - <https://pubs.acs.org/doi/10.1021/acs.est.3c09524>
- Tips for reducing exposures to plastics and other plastic related chemicals from UCSF - <https://prhe.ucsf.edu/toxic-matters>