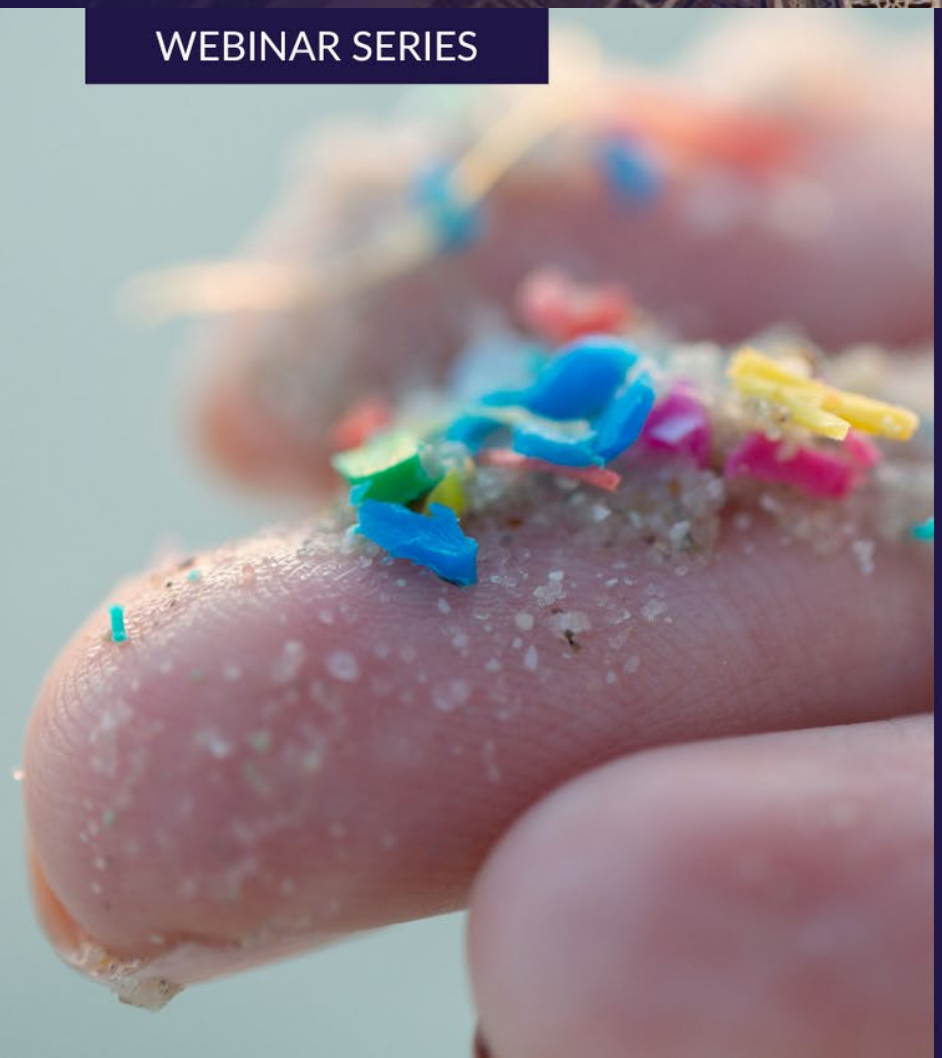
NATIONAL ACADEMIES Sciences Engineering Medicine

Dr. Gina Solomon,
Professor and Division Chief
University of California, San Francisco

WEBINAR SERIES

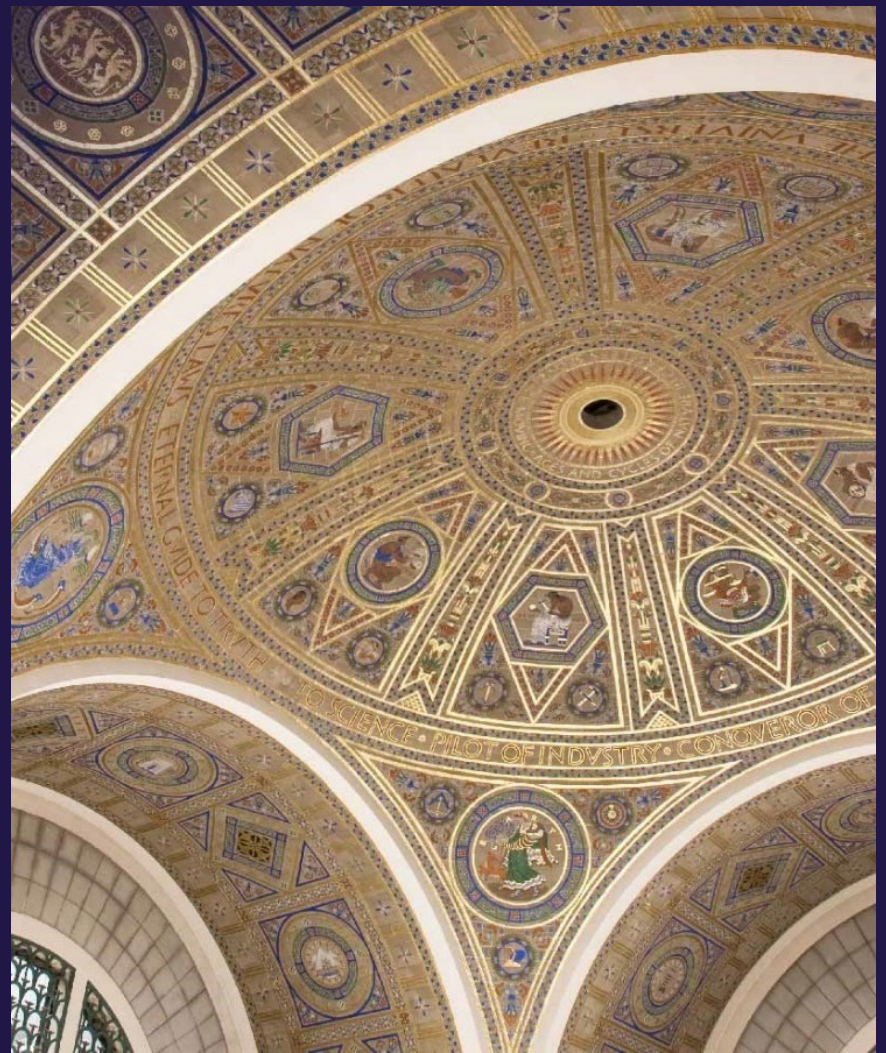


NATIONAL ACADEMIES Sciences Engineering Medicine

Microplastics and Health: Research Priorities, Mitigation Strategies, and Public Communication in the Face of Uncertainties

June 9, 2025 | 11:00 AM-1:00 PM ET

Mitigation Strategies in the Face of Uncertainties



Advance Testing Protocols, Quality Assurance and Standardization

- Expand ISO/ASTM standards across media (air, water, soil, tissues).
- Implement rigorous QA/QC protocols; improve transparency in reporting.
- Develop certified reference materials for aged/weathered microplastics.
- Expand FTIR/Raman libraries; adopt advanced detection technologies.
- Standardize definitions for terms such as "biodegradable" and "recyclable" plastic.

Strengthen Monitoring, Surveillance, and Exposure Assessment

- Establish long-term environmental monitoring programs (e.g., California drinking water monitoring program).
- Prioritize high-risk exposure pathways: water, food, air, and occupations.
- Invest in human biomonitoring, focusing on vulnerable populations (e.g., infants, children, pregnant individuals).
- Integrate microplastics into existing regulatory monitoring systems.

Actions Taken to Reduce Plastic Production at the Source

- Prevent pellet release through voluntary (e.g., Operation Clean Sweep) and mandatory programs (e.g., CA AB 258).
- Legislative action to ban intentionally added microbeads in personal care products.
- Safer Consumer Products Program (CA) to identify high-risk consumer products like synthetic turf and textiles.
- Restrict/ban sludge application in agriculture.
- Cap/reduce new plastic production, targeting single-use plastics (e.g., CA SB 54).

Consider Regulation for Key Products and Exposure Sources

- Conduct testing of food contact materials for micro/nanoplastic release.
- Develop product-specific regulations for textiles, artificial turf, tires, packaging.
- Establish safe exposure thresholds (e.g., MCLs for drinking water)
- Reform chemical safety laws for plastic-associated additives.
- Include microplastics in air quality frameworks (e.g., PM2.5).

Build Systems for Long-Term Prevention

- Promote sustainable packaging alternatives and reduce processed food reliance.
- Strengthen recycling, waste management, and circular economy systems.
- Prevent plastic release throughout the plastic life cycle through redesign and better controls.
- Conduct LCAs of plastic alternatives to prevent regrettable substitutions and unintended consequences.

Strengthen Occupational and Indoor Exposure Protections

- Update occupational health rules to reflect microplastic risks.
- Develop exposure limits for high-risk industries.
- Improve indoor air quality controls (e.g., ventilation, HEPA filters, fewer synthetics) to reduce exposure.

Apply Health-Protective Policy Approaches

- Modernize risk assessment frameworks to apply to MPs (i.e., heterogeneous mixtures, aggregate exposure, cumulative impacts).
- Integrate social and public health considerations, especially for early-life and highly exposed populations.
- Consider how to apply a precautionary approach amid uncertainty, especially for persistent/bioaccumulative particles.

Foster Cross-Sector, Public, and International Collaboration

- Promote interdisciplinary partnerships across science and policy.
- Support public-private initiatives and academic consortia (e.g., MARII, Duke working group, Minderoo Foundation).
- Leverage international platforms like ITRC, UNOC, for coordinated action.

Enhance Public Education, Transparency, and Social Engagement

- Raise awareness of exposure sources and promote safer alternatives.
- Stay informed and support legislation to reduce plastic pollution.
- Ensure public disclosure of monitoring data to enable informed action.
- Communicate risk clearly and ethically, especially to vulnerable groups.