

Microplastics Risk Assessment and Remediation



AECOM is a leader in the use of innovative risk-based strategies to develop solutions to solve worldwide complex environmental problems for emerging contaminants.

Areas of Expertise

- Contributors to Interstate Technology & Regulatory Council emerging contaminants guidance
- Contributors to Washington State Sediment Cleanup Users Manual II
- Innovative solutions to nonconventional pollutants for remediation
- Applied risk assessment procedures to develop cost-effective solutions for sites with multiple contaminant sources



More Information: AskEnvironment@aecom.com

Overview

Federal and regional government and non-government organizations have begun tracking the types and quantities of microplastics reaching our waterways. The impacts these microplastics have to human health and aquatic life is quickly gaining interest worldwide. The environmental concerns associated with microplastics are complex and span three major areas:

- Toxicity of the plastics themselves
- Physical hazards
- Persistent organic pollutants that sorb to the plastics

Currently, there are no federal or state risk assessment guidance documents to adequately address this emerging contaminant. AECOM is at the forefront of this pursuit to develop reliable methods to assess the risks microplastics pose to human health and the environment.

Our Approach

AECOM's risk assessors are developing a risk-based framework for assessing microplastics in the environment that will comply with federal risk assessment guidelines. We use a conceptual site model approach to understand the sources, fate and transport mechanisms and exposure pathways specifically associated with microplastics. Further, the team is assessing types of chemicals in microplastics, including the parent chemicals in the original plastic product, breakdown products, and persistent organic chemicals that sorb to the plastic surface. This information will help identify the chemicals of potential concern to human health and the environment.

Areas of Expertise

AECOM's human health and ecological risk assessment team is currently working with the USACE to assess microplastics in offshore sediments potentially subject to dredging. AECOM and the USACE are collaborating on a series of presentations that will be delivered at this year's Society of Environmental Toxicology and Chemistry North America 39th Annual Meeting in Sacramento, CA. These presentations will convey new information on the types (size, color, shape) and quantities of microplastics in offshore sediments, identify the benthic and aquatic species most susceptible to exposure, and evaluate the toxicological effects exposure to these microplastics could pose. Data gaps in the literature on exposure and toxicity information for aquatic and benthic communities will also be presented.

Key AECOM Attributes

AECOM is at the forefront of discovering how plastics and microplastics can make their way into the life cycle, and the potential risks they pose. This life cycle assessment includes:

- Waste stream assessment and management
- Quantification of nature and extent in environmental media
- Alternatives evaluation
- Exposure and risk assessment
- Remediation

Our knowledgeable team of human health and ecological risk assessors have extensive experience investigating emerging contaminants, assessing sources, fate and transport and determining exposure pathways.

AECOM'S technical practice network keeps our staff connected globally on this important issue, sharing regulatory developments and evolving treatment technologies, as well as best practices for technical aspects of this emerging contaminant.



KEY REFERENCE MATERIALS

National and International Reports, Environmental Regulations, and Risk Assessment Strategies Addressing Microplastics

- European Commission's Risk Assessment Approach for Microplastics (October 2017)
- U.S. Army Corps of Engineers Microplastics in Dredged Material
- H.R. 1321 Microbead-Free Waters Act of 2015
- U.S. EPA Microplastics Experts Workshop (December 4, 2017)
- U.S. EPA State of Science White Paper on Aquatic Toxicity of Plastics (2016)