

# The Rapids

## US EPA's Trash Free Waters Monthly Update

### July 2024

[epa.gov/trash-free-waters](https://epa.gov/trash-free-waters)

#### Introduction

Hello all,

In June, the U.S. Plastics Pact released an [updated roadmap](#) from its original 2020 version. The U.S. Plastics Pact Network is a partnership convened by the Ellen MacArthur Foundation, comprised of companies, governments, nonprofits and public-sector organizations working toward a circular economy for plastics. Updates to the plan include: greater emphasis on reuse innovations and implementation, more efforts to reduce virgin plastics and the addition of human health and community impacts of virgin plastics manufacturing and use. The updated roadmap also includes a revised timeline, pushing back the date for companies to eliminate the group's identified "[problematic and unnecessary](#)" plastics packaging items to 2030 instead of 2025.

In addition, the Ocean Conservancy, the 5 Gyres Institute and the Nature Conservancy collaborated to create "[Fibers to Filters: A Toolkit for Microfiber Solutions](#)." This toolkit demonstrates how microfiber filtration in washing machines can significantly reduce microplastic pollution. It also provides a comparison of the types of filtration technologies available as well as a case study that estimates the cost for utilizing the filters in different sectors across California.

Please share any upcoming events with me at [nandi.romell@epa.gov](mailto:nandi.romell@epa.gov) so that the Trash Free Waters Team can advertise these opportunities.

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#### EPA Announcements

##### [EPA to Award \\$9.75 Million in Grants to Support Water Quality Monitoring and Protect the Health of Beachgoers](#)

In June, the EPA announced almost \$10 million in grant funding to help coastal and Great Lakes communities protect the health of beachgoers. About 40 states, territories and Tribes will use the funding to test beach waters for harmful bacteria, identify sources of pollution and notify the public.

##### [EPA Releases Information that States and Tribes Can Use to Protect Local Fish from Toxic Tire Chemicals](#)

The EPA recently published water quality screening values under the Clean Water Act for chemicals linked to runoff from automotive tires. The chemicals, 6PPD and 6PPD-quinone, quickly cause fish-kill events when they enter freshwater. The EPA's new screening values for short-term concentrations of 6PPD and 6PPD-quinone are non-regulatory and non-binding, but provide helpful information for Tribes, states and local governments to protect aquatic life in their waterways.

#### Funding Opportunities

### [Hurricane Response Marine Debris Removal Fund 2024](#)

The National Fish and Wildlife Foundation and the National Oceanic and Atmospheric Administration are accepting proposals for projects that assess, remove and dispose of marine debris in and around communities impacted by hurricanes. The program will prioritize projects that provide benefits for both human communities and fish and wildlife. To be eligible, projects must reduce marine debris from coastal habitats and nearshore waters of coastal counties impacted by Hurricanes Fiona, Ian and Nicole or Typhoon Merbok in Alaska, Florida, Georgia, Puerto Rico and South Carolina. Up to \$6 million will be distributed among grant recipients. **Full proposals for this funding opportunity are due on July 26, 2024.**

### [Abandoned and Derelict Vessel Removal Grant Program](#)

With the help of a \$10 million grant from the National Oceanic and Atmospheric Administration's Marine Debris Program, the BoatUS Foundation is administering a grant program to remove abandoned and derelict vessels in U.S. coastal waterways and Great Lakes. Eligible applicants include any non-federal agency, organization or business, including states, Tribal organizations and territories. Awards will range from \$50,000 to \$1,000,000. **Letters of intent for this funding opportunity are required for all applicants and are due on August 12, 2024.**

## Upcoming Events

### [Existing U.S. Federal Authorities to Address Plastic Pollution Webinar](#)

*July 1, 2024 (12 – 1:30 pm ET) virtual*

The Environmental Law Institute is hosting a webinar to provide an overview of a recent report published by ELI and the Monterey Bay Aquarium, which provides a comprehensive overview of the existing legal authorities the U.S. federal government can leverage to achieve the national goal to eliminate plastic released into the environment by 2040 while safeguarding human health and the environment. Join the authors of the report and plastic and chemical pollution experts for a presentation on the plastic pollution crisis, an overview of the report, key takeaways and opportunities for the United States domestically.

### [California Ocean Litter Strategy Webinar](#)

*July 10, 2024 (1 pm ET), virtual*

The California Ocean Protection Council is hosting one of its semiannual webinars on the California Ocean Litter Strategy. Developed in conjunction with the National Oceanic and Atmospheric Administration's Marine Debris Program, the Ocean Litter Strategy provides a framework for preventing and reducing ocean litter in California. This webinar will include presentations on policy developments, a modeling tool to combat plastic pollution, global producer responsibility for plastic pollution and abandoned and lost fishing gear. Presenters include: the Surfrider Foundation and the California Product Stewardship Council, UCSB Benioff Ocean Science Laboratory, Moore Institute for Plastic Pollution Research and the California Department of Fish and Wildlife.

### [Moving the Needle on Reuse: Reusable Food Service Ware \(Part II\)](#)

*July 10, 2024 (2 pm ET), virtual*

Join Jennie Romer, the EPA's Deputy Assistant Administrator for Pollution Prevention, and the EPA's [Environmentally Preferable Purchasing](#) program for a webinar to continue the conversation about reusable food service ware, an important strategy for preventing pollution. Hear from reuse experts from across the country on how businesses, cities, states and non-profits are working together to scale reuse in their communities, including a community-wide reusable food service ware system in Hilo, Hawaii, supported through an EPA Pollution Prevention grant. The webinar is hosted by Jennie Romer, the EPA's Deputy Assistant Administrator for Pollution Prevention. Additional speakers include Pat Kaufman, PR3; Margie Bell, Recircable; Jocelyn Chui, Seattle Public Utilities; Jennifer Navarra, Zero Waste Hawai'i Island; and Alison Rogers Cove, USEFULL. Held in April, a [recording](#) is available for Part 1 of Moving the Needle on Reuse: Reusable Food Service Ware.

### [Virtual Training—Strengthening Cities' Climate Resiliency through Improved Solid Waste Management](#)

*July 11, 2024 (8 am ET), virtual*

The United States Agency for International Development's Clean Cities, Blue Ocean program is hosting a virtual training about how cities can strengthen climate resiliency by improving their solid waste management. This training will discuss the connections between climate-related challenges and waste management systems, including how litter reduction can help maintain urban drainage systems. Attendees may receive certification for completing the course.

### [Stormwater to Potable – A Blended Perspective on Stormwater Recycling](#)

*July 18, 2024 (2 pm ET), virtual*

Hosted by Stormwater University, this webinar will discuss the opportunities and challenges of recycling urban runoff, by focusing on pilot stormwater reuse projects in Australia and California. Learning objectives of the webinar include: identifying key benefits associated with stormwater capture and use, explaining how stormwater to potable projects can be applied in different political and regulatory settings, discussing feasibility of these projects and identifying efficient ways of reusing stormwater. Julia Schmitt, an environmental engineer focused on water projects in California, will present during this webinar.

### [Designing a Plastic-Free Future with Regenerative Materials](#)

*July 18, 2024 (5 pm ET), virtual*

This Plastic Pollution Coalition webinar will focus on solutions for moving away from plastic products. Individuals from companies focused on manufacturing goods with non-plastic materials will explore the landscape of plastic alternatives, including two ocean-based feedstocks, and learn how these materials are being employed for a healthier future. Panelists include: Hoa Doan, Head of Impact and Sustainability at Notpla; Renata Massion, Senior Sustainability Manager at Cruz Foam; and Baillie Mishler, Co-Founder and Design Director at PROWL Studio.

### [3M's Decades-Long Attempt to Cover-Up the "Forever Chemicals" In All Our Blood](#)

*July 24, 2024 (7 pm ET), virtual*

Beyond Plastics is hosting a webinar featuring Sharon Lerner, an award-winning investigative journalist whose article about 3M's cover-up of the dangers of PFOS/PFAS chemicals was recently published in ProPublica and the New Yorker. Lerner will explain what these forever chemicals are, how they relate to plastics and how they impact human health and the environment.

### [2024 National Marine Educators Conference](#)

*July 28 – August 01, 2024, Boston, MA*

The National Marine Educators Conference brings together professional educators dedicated to teaching about our marine, coastal and aquatic environments. The conference will showcase will include inspirational speakers, field adventures and excursions, engaging presentations, institutional collaborations and community partnerships.

***Save the date for future months...***

### [California Resource Recovery Association Conference & Trade Show](#)

*August 18-21, 2024, Anaheim, CA + virtual*

The California Resource Recovery Association is hosting its annual conference in a hybrid format taking place both in Anaheim, California, and virtually. This year's theme, "Shifting the Conversation," will feature speakers and breakout sessions focused on recycling and sustainable materials management. Many events throughout the conference focus on reuse and zero waste. Registration is open through August 2, 2024.

### [2024 StormCon](#)

*August 27-29, 2024, Reno, NV*

StormCon is a conference and exhibition focused on stormwater and surface water quality. This year, the conference will feature presentations and discussions on: green infrastructure; flood modeling & mitigation; programs, permits and compliance; transportation & construction stormwater; BMP monitoring; industrial stormwater management; and erosion control.

### [National Zero Waste Virtual Conference](#)

*October 2-3, 2024, virtual*

Zero Waste USA is hosting its annual virtual conference in October. The first day will focus on Zero Waste Businesses and Institutions, while Day 2 will focus on Zero Waste Communities. The detailed program is not available yet, but early registration is discounted through June 30.

***In case you missed it...***

### [Greenwashing 2.0: Debunking Recycling Myths](#)

The Plastic Pollution Coalition hosted a webinar on the realities and harmful impacts of plastic recycling. Panelists discussed recycling's toxic transfer and magnification of plastic chemicals, plastic's links to waste colonialism and injustice, microplastic pollution and more. Panelists included Davis Allen, Investigative Researcher at the Center for Climate Integrity; Jim Puckett, Executive Director of the Basel Action Network; and Kristine Kubat, Executive Director of Recycle Hawaii. The webinar was moderated by Aditi Varshneya, Network Development Manager at Global Alliance for Incinerator Alternatives.

### [Indisposable Live: The "Secret Sauce" to Scaling Circular Systems](#)

This episode of Upstream Policy Institute's Indisposable Live was recorded at the Circularity 24 conference in Chicago. Upstream CEO, Crystal Dreisbach, spoke with panelists on what they see as the most promising way to advance reuse. Panelists included: Caroline Vanderlip, Founder & CEO of Re:Dish; Elizabeth Balkan, Director of reLoop North America; Jennie Romer, Deputy Assistant Administrator for Pollution Prevention at the US EPA; and Nicole Ceroni, Vice President of Sustainability at L'Oréal.

### [CIRCLE Alliance: Catalyzing Inclusive, Resilient, and Circular Local Economies](#)

The U.S. Agency for International Development, Unilever and Ernst & Young hosted a virtual event in honor of the launch of the CIRCLE Alliance, a collaboration between the U.S. government and leading businesses aimed at reducing plastic use, tackling plastic waste and developing circular economies. Rebecca Marmot, Chief Sustainability Officer of Unilever, and Amy Brachio, Global Vice Chair- Sustainability at Ernst & Young, discussed details of the collaboration. In addition, Senator Sheldon Whitehouse and Senator Dan Sullivan presented remarks as the lead co-sponsors of the bipartisan Save Our Seas 2.0 Act, key legislation aimed at reducing ocean plastic pollution. USAID Administrator Samantha Power also spoke at this event.

### [Webinar: 2024 Plastic Promises Scorecard](#)

As You Sow hosted a webinar to discuss their new Plastic Promises Scorecard 2024. Produced in partnership with the environmental solutions platform Ubuntu, the Scorecard ranks 230 companies across 20 industries on packaging sustainability, including plastic reduction, recyclability, reuse, end-of-life collection and more. Panelists included: Kelly McBee, Circular Economy Manager and report author from As You Sow; Venky Kini, co-founder and report partner from Ubuntu; Aisha Stenning, Global Commitment Program Manager at the Ellen MacArthur Foundation; and Freek van Til, Project Manager Sustainability & Responsible Investment at VBDO.

### [Where the Rubber Meets the Road: Emerging Environmental Impacts of Tire Wear Particles and Their Chemical Cocktails](#)

The EPA's Office of Research and Development hosted a webinar on the scope and scale of tire pollution and discussed what the EPA and others are doing to address tire-related pollution in the United States and globally. Paul Mayer, Ph.D., a Research Ecologist at the Office of Research and Development presented.

## **The Microplastics Breakdown**

### ***HUMAN EXPOSURE TO MICROPLASTICS***

#### **Analysis of Microplastics in Assorted Tea Ingredients Available in Wah Cantt Pakistan**

Muhammad Zuhair Asif, Fiza Sarwar, Amara Dar, Syed Umair Ullah Jamil, and Waqar Un Nisa

This study explored the presence of microplastics in tea and in the ingredients used in its preparation for consumption in Wah Cantt, a large city in Pakistan. The researchers analyzed 23 samples of local and branded tea, powder milk and tea whitener. Microplastic polymers were detected in these samples via the use of Fourier Transform Infrared Spectroscopy and Scanning electron microscopy with energy dispersive X-ray spectroscopy. All samples were found to contain microplastic polymers such as polyethylene, polyethylene terephthalate, polyvinyl alcohol, polystyrene, and nylon. Other toxic contaminants such as chromium hydroxide, phosphorus and polyamide were also detected. Additionally, the authors described the scanning electron microscope images as showing irregular, rod shape fragments and thread-like structures commonly observed in microplastics. The results for local and branded samples were compared. and the branded samples were found to contain two types of microplastics polymers namely polyethylene and polyethylene terephthalate. Local samples were found to be more contaminated with microplastic polymers than the branded samples. Furthermore, along with polyethylene and polyethylene terephthalate, local samples also included contaminated nylon, polystyrene and polyvinyl

alcohol. The article concluded people consuming branded tea, dry powder and tea whitener are at less risk compared to people who consume non-branded ones, as non-branded samples contain more toxic microplastics. The researchers asserted that the microplastics polymers found in tea ingredients are highly toxic and capable of damaging the nervous system and immune system, creating hormonal imbalances and causing cancer. Consequently, they recommended the minimization of the use of plastic particularly for the packaging of tea, powder milk and tea whitener. **Read the full abstract here:** [http://nceg.uop.edu.pk/GeologicalBulletin/Vol-57\(2\)-2024/Vol-57\(2\)-2024-Paper1.pdf](http://nceg.uop.edu.pk/GeologicalBulletin/Vol-57(2)-2024/Vol-57(2)-2024-Paper1.pdf)

### **Microplastics in Fish and a Bivalve Species Sampled from Freshwater Environment and Retail Outlets and the Assessment of Human Exposure**

Patralika Mukhopadhyay, Shibu Arkkakadavil Valsalan

Black clams (*Villorita cyprinoides*) and two species of fish (*Etroplus suratensis*, *Etroplus maculatus*) were collected from the Periyar River in Kerala, a southern state in India, as well as from local retail outlets, and were analyzed for microplastic abundance. The quantity of microplastics was found to be significantly higher in the fish and clams obtained from the retail outlets than the ones collected from the river. Fibers were identified as the most prevalent microplastic shape found in the samples. Polyethylene, polypropylene and polystyrene were the most common polymer types. Based on estimates from the European Food Safety Authority, the researchers asserted that humans are at risk of consuming approximately 936 microplastic particles annually from the consumption of two species of fish and 26 microplastic particles per 100 g of clam meat consumed. If the per capita annual consumption is considered, they estimated that Indians are at a risk of consuming approximately 379 microplastic particles in a year. According to the researchers, the consumption of microplastics by humans presents a substantial health risk, particularly considering that the species examined in this research are commercially important and extensively consumed. Furthermore, they described the specific study finding that microplastics were present in the seafood purchased from retail outlets as raising serious concerns regarding food safety. **Read the full abstract here:** <https://www.sciencedirect.com/science/article/pii/S0956713524003815>

### **Microplastics or Micro-Bioplastics Released by Wrinkling Paper Cup**

Cheng Fang, Zixing Zhang, Xian Zhang, Ravi Naidu

This study explored the potential release of microplastics from the thin layer of plastic (traditional plastic or bioplastic) that is coated onto the inner wall surface of disposable paper cups to help make them waterproof and prevent leakage. It was noted that the potential for release was likely greater when the cup is wrinkled/crumpled to break and peel off the coating layer. Samples of paper cups were collected from the drinking services from two Australian flights for Virgin and Qantas, respectively, as well as from another airline's breakfast service. The researchers identified the broken coating layer resulting from wrinkling the cups via the use of a scanning electron microscope. Raman imaging<sup>[1]</sup> was used to identify the coating material as plastic and to identify the released debris as microplastics. The authors concluded that to achieve the goal of avoiding the potential release of microplastics or micro-bioplastics particularly before and during the drinking process, cups should not be wrinkled. They also cautioned that if these plastic lined cups are wrongly categorized as paper for recycling, the coating layer of plastic might release microplastic debris. They asserted that the fate and transformation of cups with these linings (whether traditional or bioplastic based) needs more research with the goal of developing a comprehensive risk assessment, no matter the coating layer is made of traditional or bioplastics. **Read the full abstract here:** <https://www.sciencedirect.com/science/article/pii/S0048969724042712>

**[1]** Raman imaging is a powerful technique in chemistry that allows for the generation of detailed chemical images, enabling the identification and localization of different chemical species. It offers advantages such as high sensitivity to biological samples, resolved peaks for data analysis and good quantification for inorganic compounds. Despite some limitations, Raman imaging has advanced significantly and has potential applications in various field, including industry and clinical diagnostics. <https://www.sciencedirect.com/topics/chemistry/raman-imaging>

### **Prevalence of Environmental Microplastics in Taiwan and Its Impact on the Seafood Safety: An Integrative Review**

Meng-Wei Lin, Vivian C. H. Wu, Chih-Sheng Lin

The authors of this review observed that the residents of Taiwan can easily acquire seafood as a source of dietary protein and noted that this can expose them to microplastics. They cited recent research results issued by [Greenpeace](#), which showed that via their consumption of fish, the Taiwanese eat an estimated 16,000 microplastic particles per year. The authors highlighted the potential health risks to the local community via food chains that could result from exposure to microplastic physical and chemical toxicity. Monitoring microplastic contamination in seafood was emphasized as imperative to provide helpful information for the government and local communities. The article suggested that efforts should be undertaken to reduce microplastic pollution at the

source to minimize potential effects on ecological and health safety. It also highlighted an urgent need for further research on microplastic pollution in Taiwan and the challenges associated with tackling this environmental threat, food safety hazards associated with microplastic contamination in seafood. **Read the full abstract here:** <https://onlinelibrary.wiley.com/doi/full/10.1111/jfs.13148>

### **MICROPLASTICS FATE AND TRANSPORT**

#### **Changes In Characteristics and Risk of Freshwater Microplastics Under Global Warming**

Mengjie Chang, Peipei Sun, Linyu Zhang, Yuxuan Liu, Ling Chen, Hongqiang Ren, Bing Wu

In this study, 2793 sample sites from literature and datasets were collected to create a new risk assessment and rank methodology, known as the Multi-characteristics Potential Ecological Risk Index (MPERI). The MPERI was described as incorporating microplastic characteristics, such as concentration, size distribution, color, shape and polymer diversity. Global warming is expected to lead to an increase in the concentration and proportion of small-sized microplastics while reducing the variety of color, shape and polymer composition. These changes in microplastic properties could escalate associated risks, ultimately reshaping the overall risk landscape of microplastics in freshwater systems. Accordingly, the researchers, based on the use of a [regression random forest model](#), predicted that a 10 °C increase in temperature would result in an increase in the concentration of microplastic concentration. In contrast, the actual study results indicated an initial decrease in the percentage of small-size microplastics (from 69.10 % to 68.72 %) and then an increase (from 68.72 % to 68.78 %), while the diversity of color, shape, and polymer decreased by 0.29 %, 3.24 % and 0.17 % respectively. Based on the MPERI method, global warming was found to potentially increase the rank of microplastic risks from high to dangerous. While other microplastic characteristics had a lesser impact when compared to concentration, they still were found to have influenced the risk ranking. This study was described as providing a systematic analysis of the impact of global warming on microplastic properties and associated risks, offering new perspectives for microplastic research within the context of global warming. **Read the full abstract here:**

<https://www.sciencedirect.com/science/article/pii/S0043135424008613>

#### **Microplastics in Urban Stormwater Sediments and Runoff: An Essential Component in the Microplastic Cycle**

Madushika Sewwandī, Abhishek Kumar, Shiran Pallewatta, Meththika Vithanage

This literature review characterized urban stormwater as one of the main sources of microplastics in aquatic systems. The researchers analyzed available research on the environmental fate and behavior of microplastics in urban stormwater runoff. They also suggested future research regarding approaches to collect more robust abundance data through standardized microplastic extraction protocols. Some of the key findings included: 1) fibers/lines were the most common microplastic shape in stormwater and sediment; 2) polyethylene microplastics was the most prevalent in stormwater systems across the globe; 3) black is the most abundant color found among stormwater microplastics; and 4) the majority of microplastics ranged from 100 μm to 500 μm. The study found that there were diverse distribution patterns of microplastics in stormwater and stormwater sediment, which was attributed to regional inequalities in climate change, hydrological conditions, traffic load, urban pollution and land use patterns. The authors observed that while stormwater pollution control policies are emerging, further research is needed to fully understand the causes, occurrence, migration, fate, abundance and potential effects of stormwater microplastics and their potential mitigation strategies. Furthermore, they asserted that standardized identification and quantification methods for stormwater microplastic analysis are still needed to establish more reliable abundance data. **Read the full abstract here:**

<https://www.sciencedirect.com/science/article/pii/S0165993624003078>

### **HEALTH EFFECTS OF MICROPLASTICS EXPOSURE**

#### **Effects of Microplastics on the Kidneys: A Narrative Review**

Rodrigo Bueno de Oliveira; Lauter E. Pelepenko; Daniela A. Masaro; Glauco M.M. M. Lustosa; Mariana Cassani; Noemí A.V. Roza; Marina A. Marciano; Luciene M. dos Reis; Saïd Kamel; Loïc Louvet; Talita Mazon.

This article reviewed general aspects of microplastic generation, available analytic methods for identifying microplastics and the main known biological toxic effects. It also described and analyzed some of the key experimental and clinical studies that identified a role for microplastics in kidney disease. The authors observed that while microplastic particles are difficult to detect in humans, they have been identified in different biological fluids and tissues, such as the placenta, lung, intestines, liver, blood, urine and kidneys. Human exposure to microplastics, they pointed out, can occur by ingestion, inhalation or dermal contact. They reported that data from experimental and clinical studies have demonstrated the ability of microplastics to promote inflammation, oxidative stress and organ dysfunction and negatively affect clinical outcomes associated with their accumulation in body fluids and tissues. However, this article also acknowledged the paucity of evidence of how microplastic exposure affects the human kidney, while also noting that there is growing interest in studying microplastics in

this organ. In addition, the article highlights the need to investigate microplastics and their effect on chronic kidney disease (CKD). **Read the full abstract here:** [https://www.kidney-international.org/article/S0085-2538\(24\)00404-6/abstract](https://www.kidney-international.org/article/S0085-2538(24)00404-6/abstract)



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