

# The Rapids

## US EPA's Trash Free Waters Monthly Update

### July 2023

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

---

#### Introduction

Hello everyone,

July is [Plastic Free July](#)! Please do check out the Plastic Free July challenge, campaigns, and stories available on the website.

On June 22, the Organization for Economic Cooperation and Development (OECD) released an "[Environmental Performance Review](#)" of the United States focused on both green growth and marine litter. Please go to the link above to read the report - the OECD review team's recommendations are included at the end of the report.

Please share any upcoming events with Cassidy Fredette-Roman ( [fredetterroman.cassidy@epa.gov](mailto:fredetterroman.cassidy@epa.gov)) so that the Trash Free Waters team can advertise these opportunities with all of you on the first Monday of each month.

Thanks,  
Romell Nandi  
US EPA Trash Free Waters National Program Lead

---

References to any non-federal entity, its products, services, or enterprises does not imply an endorsement by the U.S. government or the U.S. EPA and is provided for informational purposes only. USEPA and its employees do not endorse any commercial products, services, or enterprises. USEPA is also not responsible for information on external websites and linking to external websites does not imply or express an endorsement of any non-federal entity, product or service on external websites.

#### EPA Announcements

##### [Draft Strategy to Prevent Plastic Pollution](#)

The public comment deadline for EPA's [Draft Strategy to Prevent Plastic Pollution](#) has been extended to **July 31, 2023**. Please take time to submit any comments you may have [to the Federal Register docket](#) for EPA's consideration.

##### [Escaped Trash Assessment Protocol Now Available in Marine Debris Tracker](#)

A mobile version of EPA's Escaped Trash Assessment Protocol (ETAP) is now available on the [Marine Debris Tracker \(MDT\) application](#), free on all smartphones. ETAP is a quantitative survey tool for collecting and assessing data on trash that has escaped treatment. Users can use the original ETAP item list or customize the list to meet their research needs. A Standard Operating Procedure (SOP) and companion materials are being developed to help ETAP users adapt to an application platform (or combination of app and paper) for categorizing and analyzing collected debris. For more information on the tool, please visit the Trash Free Waters program [ETAP webpage](#).

##### [Trash Free Waters: The Voyage of 5Gyres Webinar](#)

The latest Trash Free Waters webinar (June 13, 2023) followed the story of Anna Cummings and Dr. Marcus Eriksen, co-founders of the non-governmental organization 5Gyres Institute and renowned experts and advocates for a world free of plastic pollution. [View the recording](#) to learn about their journey from awareness to advocacy, the synergies and challenges between their passion for family and cause, and their vision for how to create a healthier world for current and future generations.

## Funding Opportunities

### [NSF Critical Aspects of Sustainability \(CAS\): Micro- and Nanoplastics \(MNP \)](#)

This grant is intended to fund research that helps improve the understanding of micro- and nanoplastics with regard to characterization, behavior, reactivity with the environment, removal from land and water systems, and impacts on human and animal health. **Applications are accepted year-round.**

### [USDA Individual Water and Wastewater Grants](#)

The USDA Rural Development branch provides grants to households in an area that was recognized as a Colonia before October 1, 1989. This money can be used to install plumbing, kitchen sinks, showers, water heaters, etc. This is an opportunity that could be used to install equipment in these households that would limit pollution from water runoff. The money can also be used to close abandoned septic tanks, preventing potential contaminants from entering the waterway. The amount awarded is dependent on the type of work proposed with a maximum of \$5,000. **Applications are accepted year-round.**

### [USDA Water and Waste Disposal Loan and Grant Program](#)

This opportunity provides funding for clean and reliable drinking water systems as well as stormwater management. Most state and local governments, private nonprofits, and federally recognized tribes are eligible applicants. The loans available are long term and low interest. Additionally, a grant and a loan can be provided in tandem if funding allows. **Applications are accepted year-round.**

---

## Upcoming Events

### [Circular Economy in the Textile Sector](#)

*July 6, virtual*

This webinar will provide insight into the challenges and opportunities for achieving a circular economy for the textile industry.

### [International Conference on Environmental Pollution and Public Health \(ICEPPH\)](#)

*July 6-7, New York*

This conference, held by the World Academy of Science, Engineering, and Technology, will address various types of environmental pollution, including water quality and water pollution. The speakers will discuss the various links between water quality and public health.

### [International Conference on Environmental Sustainability and Pollution Sources \(ICESPS\)](#)

*July 12-13, New York*

This conference, held by the World Academy of Science, Engineering, and Technology, will address various types of environmental pollution, the sources of pollution, and the impacts of pollution. Presentations will focus, among other types of solutions, on successful ways of implementing recycling and waste management programs.

### [Plastic Waste and Microplastic Research Conference Co-ordinated by Various Organizations](#)

*July 12-14, Lancaster*

This research conference will address the link between plastic use and microplastic pollution and accumulation. The speakers will also focus on the plastics that have infiltrated the food chain, specifically spotlighting microplastics presence in almost all human organs. There will also be presentations on current microplastics research being conducted at Lancaster University.

### [International Conference on Biodegradable and Recyclable Plastics by World Academy of Science](#)

*July 19-20, Denmark*

From July 19 to July 20, the International Conference on Biodegradable and Recyclable Plastics –will be holding a conference on the development of biodegradable plastics, how the shift to biodegradables would impact the environment. The energy use of production of biodegradable plastics as well as the mechanisms behind landfill degradation will also be discussed. Potential government regulation on biodegradable plastics will be addressed as well.

### [ICEWE 2023: 17. International Conference on Energy, Water and Environment](#)

*July 24-25, Istanbul*

This international conference will cover a wide range of environmental topics from global warming to

solar energy to water quality and pollution prevention. Water reuse, water policy, and wastewater management will all be addressed. In addition, papers are still being accepted for discussion at the conference and can be submitted through this [link](#).

*Save the dates for future months...*

### **12th SETAC Young Environmental Scientists Meeting**

*August 28-September 1, Landau, Germany*

This meeting provides young environmental scientists with the opportunity to practice presenting their research. Training courses and workshops will be offered. Career Talks will be held by established environmental scientists to provide the young audience with career development advice.

### **2023 U.S. Product Stewardship Forum - Product Stewardship Institute**

*September 11-14, Oregon*

From September 11 to September 14, the Product Stewardship Forum conference will focus on Extended Producer Responsibility (EPR). Stakeholders from around the globe will gather to discuss product stewardship. Previously enacted and anticipated packaging EPR laws will also be discussed.

### **3rd Global Symposium on Waste Plastic**

*November 2-4, virtual*

In this symposium, various speakers in different engineering disciplines will discuss what they know with respect to plastics and plastic production with the hope of providing information that can assist with faster development of plastic alternatives.

*In case you missed it...*

### **The Clean Water Pod by the EPA**

The Clean Water Pod, a podcast hosted by the EPA's Office of Water, released its final episode. This episode featured Jeff Berckes speaking with Benita Best-Wong, Deputy Assistant Administrator for Water at the EPA. She spoke on the first fifty years of the Clean Water Act as well as the challenges she anticipates regarding clean water over the next fifty years. All previous series of The Clean Water Pod can be found [here](#).

### **Circularity 23 Livestream Sessions**

This circular economy livestream discussed a variety of problems and solutions regarding single-use plastics and plastic pollution. Speakers presented on an array of circular economy approaches to reduce plastic pollution. A limited selection of presentations from the conference are viewable on [GreenBiz's YouTube channel](#).

### **National Nanotechnology Initiative Public Webinar Addressing Micro- and Nanoplastics Issues**

These two webinars gave an overview of U.S. government agency work addressing micro- and nanoplastics, describing research to characterize and effectively address the problem. Federal experts also spoke about coordination across Federal agencies on this issue. To view the recording, click [here](#) and scroll down to item #5 under the heading "Technical Webinars."

### **CLU-IN | Training & Events Microplastics**

This online course, hosted by the Interstate Technology and Regulatory Council, provides a comprehensive introduction to microplastics. The course discusses the human health and ecological risks associated with microplastic pollution in the environment. Examples of how to reduce the volume of microplastics from entering waterways are also provided.

### **Innovation and Emerging Plastics Technologies Conference**

This conference included presentations by several industry experts on alternative materials to plastic for packaging. The conference included presentations on injection molding technology, materials technology, and executive/management practices.

### **Plastic-Free Seas: Diving Into How Plastic Impacts Health, Climate, and Our Oceans**

The Plastic Pollution Coalition hosted a webinar to discuss how plastic production and waste are impacting marine ecosystems and climate. There was also discussion on the impact of plastic pollution on mental and physical health.

**Effects of Weathering on the Properties and Fate of Secondary Microplastics from a Polystyrene Single-Use Cup**

Olubukola S. Alimi, Dominique Claveau-Mallet, Mathieu Lapointe, Thinh Biu, Lan Liu, Laura M. Hernandez, Stéphane Bayen, Nathalie Tufenkji

The stated goal of this study was to understand how the physicochemical changes to polystyrene microplastics associated with weathering affect the microplastic transport potential and contaminant sorption ability in model freshwaters. As described, single-use plastic cups purchased in Montreal, Canada in 2019 were used to generate circular microplastic disks, some of which were weathered under lab conditions, and some were kept at room temperature in the dark (to minimize light exposure) before use and were labelled unaged microplastics. The study detailed the changes in the physical characteristics after aging and also described the varying effects of the microplastics' exposure to different experimental conditions. For example, the weathered microplastics were found to have increased in density and the surface roughness was also observed to have increased. These microplastics were also found to have become less hydrophobic and exhibited an increase in the settling velocity, which suggested to the researchers that UV aging could increase microplastic deposition to sediments. The impact of weathering, the researchers observed, outweighed the effect of water temperature. Relying on their study results, which showed that the aged microplastics can have a lower affinity for a model hydrophobic contaminant and the unaged polystyrene microplastic partially desorbs more contaminant compared to the aged material, the authors suggested that microplastics from bulk plastic debris may act as vectors for hydrophobic contaminants when in a "cleaner" water body or potentially to an organism when ingested. The conclusion of the study acknowledged some of its limitations and highlighted that there is a need for more studies using microplastics of environmental relevance rather than unaged primary polymers. **Read the full abstract here:**

<https://www.sciencedirect.com/science/article/pii/S030438942301138X>

*HUMAN EXPOSURE TO MICROPLASTICS*

**Plastic Bottles for Chilled Carbonated Beverages as a Source of Microplastics and Nanoplastics**

Yalin Chen, Haiyin Xu, Yuanling Luo, Yuting Ding, Junguo Huang, Honghui Wu, Jianing Han, Linjing Du, Anqi Kang, Meiyong Jia, Weiping Xiong, Zhaohui Yang

This study investigated the release of microplastics (MPs) and nanoplastics (NPs) from plastic bottles containing carbonated beverages, particularly focusing on the effects of plastic type, carbon dioxide (CO<sub>2</sub>) filling volume, temperature, sugar content, and additives on the leakage of MPs/NPs and heavy metals. Five hundred milliliter bottles composed of polyethylene (PE), polypropylene (PP), and polyethylene terephthalate (PET) were subjected to varying conditions, for example, the influence of food additives and sugar in carbonated beverages on the release of MPs was assessed via the addition of frequently used food additives: sucralose, acesulfame, sunset yellow, and carmine to the carbonated water in some of the bottles. The researchers found that polypropylene bottles released more MPs and NPs than polyethylene and polyethylene terephthalate bottles. The release of MPs/NPs was found to increase with increasing CO<sub>2</sub> filling volume, which was attributed to the synergistic effect of CO<sub>2</sub> bubbles and pressure. A significant increase in the release of MPs and NPs was observed after bottles were subjected to four freeze-thaw cycles. Other significant findings included: the presence of sugar was associated with an increase the quantity of in MPs released and additives were found to have negligible effects on MPs release. The article described the study results as highlighting the potential risk of MPs/NPs in carbonated beverages at low temperatures and supporting the need for mitigating humans' ingestion of MPs/NPs through strategies like selecting appropriate plastic materials and minimizing freeze-thaw cycles. **Read the full abstract here:**

<https://www.sciencedirect.com/science/article/pii/S0043135423006796>

**Microplastics in Australian Indoor Air: Abundance, Characteristics, and Implications for Human Exposure**

Kushani Perera Shima Ziajahromi, Susan Bengtson Nash b, Frederic D.L. Leusch

The study described in this article is based on research findings indicating that there is a greater abundance of airborne microplastics (AMPs) in indoor air compared to outdoors, which indicated to the authors that it is important to identify and quantify AMPs in indoor air to understand human exposure to AMPs. The article observed that this exposure can vary among individuals as they spend their time in different locations and different activity levels and thus experience different breathing rates. Between June to July 2022 the researchers collected indoor air samples from seven locations (a house, a childcare center, a restaurant, a school, a home for elderly people, an office, and inside a vehicle) and one outdoor reference location in Southeast Queensland, Australia. Microplastics (MPs) were found in all of the indoor locations with the highest MP concentration being found in the childcare center, followed in

decreasing order by the office, school, home for elderly people, restaurant, house, and then vehicle. They hypothesized that the higher abundance of MPs in the childcare center could have resulted from the high number of MP-generating sources (various types of clothing, toys, and flooring material) as well as the built-in plastic structures in kids' play areas. The outdoor sampling site was found to have the lowest abundance of MPs. Notably, the only shapes the researchers found in the samples were fibers (98%) and fragments, and [polyethylene terephthalate](#) was identified as the most prevalent polymer type. The researchers used the data collected from these samples along with published data on specific physical activities to conduct a human exposure assessment; separately taking into account the gender, age group, and type of the day (weekday or weekend). Males between the ages of 18 to 64 were determined to have the highest AMP exposure, followed by males 65 years or older. The researchers identified females between the ages of 5 to 17 as having the lowest AMP exposure. Based on their study results, they recommended that more research be conducted, which could assist in establishing a realistic appraisal of the human health risk posed by AMPs. **Read the full abstract here:**

[https://www.sciencedirect.com/science/article/pii/S0048969723029133?dgcid=raven\\_sd\\_via\\_email](https://www.sciencedirect.com/science/article/pii/S0048969723029133?dgcid=raven_sd_via_email)

## **MICROPLASTIC POLLUTION MITIGATION AND REMOVAL**

### **Microplastics in Rainwater/Stormwater Environments: Influencing Factors, Sources, Transport, Fate, and Removal Techniques**

Liangfu Wei, Qiang Yue, Guanglong Chen, Jun Wang

The authors identified rainwater and stormwater as enabling the cycling exchange of microplastics (MPs) between the aquatic, terrestrial, and atmospheric environments which serves to promote the exposure of animals, plants, and humans to MPs. As a result, this literature review focused on the abundance, sources, transport, fate, and potential solutions of MPs in rainwater and stormwater. The 150 articles analyzed in this study were retrieved from the databases of Web of Science, ScienceDirect, and Google Scholar between February 2023 and April 2023. The researchers found that the publications reviewed typically involved samples of water and sediments collected from different stormwater/rainwater environments, including rainwater runoff and constructed wetlands. They observed that comparing the abundance and characteristics of MPs continues to be challenging because of the variability in the concentrations of MPs used, differences in sampling methods, analytical techniques and MP target size ranges. They also found that rainfall characteristics, geographic location, and land use influenced study results and their comparability. Techniques like constructed wetlands, bioretention systems, and filtration were identified as showing promise for the removal of MPs, but their effectiveness was found to vary depending on factors like size and mobility. Research limitations and gaps were also discussed; for example, the identification and quantification of specific sources of MPs was highlighted as an area that required future investigation along with further research focused on the influence of flow rate and rainfall intensity, particularly for MPs smaller than 100  $\mu\text{m}$ . **Read the full abstract here:**

<https://www.sciencedirect.com/science/article/pii/S0165993623002340#sec2>

### **Why Glass, Paper and Other Options Aren't the Simple Alternative to Plastic that They Seem to be: Finding a Good Alternative to Plastic — a Ubiquitous Material that's Inexpensive, Robust and Versatile — Hasn't Been Easy**

Allyson Chiu

This article in the *Washington Post* focused on plastic alternatives, describing some of the available materials along with their utility and environmental impacts. For example, paper is described as being thought of as one of the most environmentally sustainable materials but it also included the observation that recycling paper is environmentally damaging process requiring the use of a large amount of chemicals, energy, and water. One section is devoted to bioplastics, biodegradable and compostable materials and emphasized the importance of understanding what each of these terms mean. The discussion highlighted that the term “bioplastics” does not necessarily mean biodegradable or compostable and therefore it's difficult for consumers to discern whether products marketed as biodegradable or compostable actually are. Another issue with these materials, the article pointed out, is the packaging and what happens to it after people are done with it. **Read the full article here:** <https://www.washingtonpost.com/climate-solutions/2023/06/07/plastic-alternatives-glass-aluminum-paper/>

**If you'd like to see your posting in this email, please email**  
[Nandi.Romell@epa.gov](mailto:Nandi.Romell@epa.gov) **with any suggestions!**



EPA Trash Free Waters Program | [nandi.romell@epa.gov](mailto:nandi.romell@epa.gov) | [epa.gov/trash-free-waters](https://epa.gov/trash-free-waters)

