

The Rapids

US EPA's Trash Free Waters Monthly Update

June 2024

epa.gov/trash-free-waters

Introduction

Hello all,

Zero Waste Europe recently released “[The State of Zero Waste Municipalities Report](#)” for 2023. This report discusses successful zero-waste programs across Europe and globally. The report has sections for each European country and regions around the world and details steps that municipalities have taken to reduce waste in their communities. Best practices in this report can serve as inspiration for city, state and federal agencies in the United States to reduce waste.

The Closed Loop Partner’s Composting Consortium has created “[The Compost Policy Toolkit](#)” to assist policymakers in managing the compostable packaging that is being created to replace single-use plastics in food packaging. The toolkit aims to fill gaps identified in a [study](#) done by the Composting Consortium and Biodegradable Products Institute on U.S. consumer perceptions and understanding of compostable packaging. The toolkit covers information about packaging labeling laws, extended producer responsibility, and the expansion of the compost end market.

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

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EPA Announcements

[EPA Webpage on Sustainable Management of Plastics](#)

The EPA recently created a webpage on the Sustainable Management of Plastics. This webpage provides information on plastic pollution and its impacts, the benefits and challenges of addressing plastic pollution, best practices and regulation and policy related to plastic production, consumption and disposal. The page also links to resources and relevant news.

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.**

State of Oregon Reduce, Reuse, Reimagine: Materials Management Grants

The Oregon Department of Environmental Quality will soon be accepting pre-applications for their Materials Management Grants program. Projects may include education and outreach; training; research; program, project or policy development; or workforce development activities that reduce environmental and human health impacts of materials at all stages of their life cycles. Local governments, nonprofits, Tribal Nations, organizations created through intergovernmental agreements, public education institutions and small businesses are eligible to apply. Up to \$1 million will be awarded in the first cycle, with grants of \$25,000 to \$125,000 for each grantee. **Pre-applications are due by June 18, 2024.**

Upcoming Events

Clean the (Chesapeake) Bay Day

June 1, 2024 (9:00 a.m. to noon), multiple locations across Virginia

The Virginia Office of the Chesapeake Bay Foundation is pleased to announce that registration for the 35th annual Clean the Bay Day is now live. Every year Virginians all over the state volunteer to clean litter that jeopardizes the health of the bay. This three-hour annual event has had a massive cumulative impact. Since the event began in 1989, this Virginia tradition has engaged more than 165,500 volunteers who have removed approximately 7.18 million pounds of debris from more than 8,250 miles of shoreline. This year's event will take place on Saturday, June 1, from 9:00 a.m. to noon at locations throughout the state. To participate in Clean the Bay Day, register [here](#). Please direct any questions to Ctbd@cbf.org.

Ripple Effects: Why Textiles Need to Get Serious About Water Risk

June 5, 2024 (10 a.m. ET), virtual

Hosted in partnership with Planet Tracker and Ceres, this European Union Green Week webinar will discuss what major apparel companies currently disclose about the water usage of their operations and supply chain and why they need to develop “water transition” plans. This webinar is aimed at major apparel companies and their investors. Speakers include John Wielechowski, Senior Investment Analyst (Textiles) at Planet Tracker, and Shama Perveen, Ph.D., Director of Water Research at Ceres.

Greenwashing 2.0: Debunking Recycling Myths

June 5, 2024 (5-6 p.m. ET), virtual

The Plastic Pollution Coalition is hosting a webinar on the realities and harmful impacts of plastic recycling. Panelists will discuss recycling's toxic transfer and magnification of plastic chemicals, plastic's links to waste colonialism and injustice, microplastic pollution and more. Panelists include: 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 will be moderated by Aditi Varshneya, Network Development Manager at Global Alliance for Incinerator Alternatives.

New York State Microplastics Summit

June 5-7, 2024, Buffalo, NY

The New York State Microplastics Summit will provide an opportunity for diverse stakeholders to discuss concerns about microplastics impacts on the environment, human health, wildlife conservation and environmental justice. Participants will connect and collaborate on microplastics issues in New York, discuss current microplastics research, determine research and policy gaps and work to better understand how to move towards solutions. *Registration for this event is by invitation only.*

2024 Global Ocean Cleanup

June 8 – 16, 2024

[The Oceanic Society](#) is organizing the 2024 Global Ocean Cleanup in conjunction with [Sea Turtle Week](#). Interested organizations can plan and register local events using the provided tools and resources. After the Cleanup, users can submit data to be included in an international total of waste collected and hold an art contest using the materials collected to increase awareness of the global aquatic trash and marine debris issues.

Plastics in Politics Livestream!

June 11, 2024 (2-3 p.m. ET), virtual

In the June, Plastics in Politics livestream, Plastics News will be talking about extended producer responsibility, including from Minnesota, where legislators just passed an Extended Producer Responsibility law, as well as in New York and other states. They will also cover some recent updates in the legal action around PFAS and fluorinated high density polyethylene (HDPE) containers.

Webinar: 2024 Plastic Promises Scorecard

June 12, 2024 (12-1 p.m. ET), virtual

As You Sow is hosting 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 include: Kelly McBee, Circular Economy Manager and report author from As You Sow; Venky Kini, co-founder and report partner from Ubuntu; and Conrad MacKerron, Senior Vice President at As You Sow.

Woven: Building a Roadmap to Reduce Microfiber Pollution

June 17-18, 2024, Los Angeles, CA

The 5 Gyres Institute is hosting a symposium for cross-industry collaboration to develop a collective vision for reducing microfiber pollution. Goals for the symposium include unpacking the existing science and research; discussing advances in technology; weaving together ongoing efforts around the world; sharing best practices across industry; identifying challenges within existing frameworks, industries and society; creating a community of like-minded leaders across the textiles sector; and, ultimately, drafting a framework to reduce microfiber pollution.

U.S. Paint EPR: Insights from a Decade of PaintCare Programs

June 18, 2024 (12-1:30 p.m. ET), virtual

The Product Stewardship Institute and PaintCare, a nonprofit paint collection and recycling organization, are hosting a webinar on extended producer responsibility programs for paint. Currently, 31 percent of the U.S. population has access to a paint recycling program. This webinar will discuss how the PaintCare program started, describe the processes that led to the passage of 12 paint EPR laws and present other successes and challenges of the program. Speakers include: Jeremy Jones, Director of Extended Producer Responsibility at the American Coatings Association; Nadja Karpilow, Senior Environmental Planner at Mid-America Regional Council Solid Waste Management District in Missouri; and Megan Warfield, Moderate Risk Waste Coordinator at Washington State Department of Ecology.

Save the date for future months...

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.

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.

MICRO 2024: Plastic Pollution from Macro to Nano

September 23-27, 2024, Lanzarote, Spain

The fifth annual International Conference MICRO is happening this September on the island of Lanzarote, Spain. MICRO 2024 aims to celebrate the growing community of researchers and policymakers concerned about plastic

pollution, with a core focus on microplastics. The conference is accepting abstracts through May 20, and registration is open until June 20.

[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...

[Can the Circular Economy Help Us Tackle Climate Change?](#)

The season premiere of the Ellen MacArthur Foundation's The Circular Economy Show podcast explored the intersection of climate change and the circular economy. Miranda Schnitger, Climate Lead at the Ellen MacArthur Foundation, discussed how the circular economy can help meet climate targets and why the circular economy needed to be mentioned in the official COP28 negotiation outcomes text.

[Circular Packaging & Materials: Regulatory markets, geographical differences and advice for startups](#)

This webinar, presented by GreenBiz, advised startups on the circular packaging and materials technology landscape. The webinar discussed regulation, differences in material handling, the importance of corporate engagement strategies for startups and visions for the future of circular packaging and materials. Speakers included Dr. Felix Philipp, Circular Economy Investment Manager at Lombard Odier, and Neil Cameron, Partner at Emerald Technology Venture. The conversation was moderated by Jake Mitchell, Senior Manager of Startup Programs at GreenBiz Group.

[European Reuse Barometer Webinar](#)

Hosted by Planet Reuse, this webinar discussed "Reuse Barometer," an assessment of the European reusable packaging industry's maturity, challenges and opportunities. The webinar provided insights into trends in packaging types, return and collection systems, funding possibilities and the profitability of reusable packaging ventures. Francois Chartier-Kastler, the co-founder of InOff Plastic, presented during this webinar.

[Making the Honor Role with K-12 Waste Reduction](#)

This webinar presented solutions for waste reduction in K-12 schools through three case studies from Massachusetts, Alberta and Washington. The case studies included overviews of local waste and diversion programs, student engagement and education strategies and efforts to reduce food waste and increase reusables.

[Reducing PFAS in Products: Progress and Challenges](#)

This EPA webinar examined the EPA's PFAS Strategic Roadmap and a new online tool for EPA's [Recommendations of Specifications, Standards, and Ecolabels for Federal Purchasing](#) that highlights how standards and ecolabels address PFAS. Speakers from the EPA, EPA grantees, and a nonprofit organization discussed the progress they have made to increase the availability and use of products without PFAS, and the challenges that remain.

[Plastics Crisis as a Health Crisis: International Health Community Response to Plastic Pollution](#)

This event, presented by the Geneva Environmental Network, is an opportunity to develop an understanding of the harms posed by plastics to human health, the public health dimensions of the plastics crisis, and the role of the public health community in addressing the plastics crisis as a health crisis in the context of the global plastics treaty negotiations.

The Microplastics Breakdown

SOURCES, FATE AND MITIGATION OF MICROPLASTICS POLLUTION

Why You Shouldn't Flush Your Contact Lenses Down the Drain: Tiny Plastics — Roughly Three Inches or Smaller — Shouldn't be Tossed in with the Rest of Your Curbside Recycling.

Allyson Chiu

This news article centered on disposable plastic contact lenses as a source of microplastic pollution. The author observed that the lenses are typically packaged in single-use plastic blister packs and are often stored in plastic cases and kept moist via the use of solution from a plastic squeeze bottle. The results of a 2018 nationwide study estimated that about 15 to 20 percent of people who use contact lenses discard them in sinks or toilets. The article also included a quote from Judith Enck, a former Regional Administrator at the Environmental Protection Agency, indicating that these items should not be disposed with curbside recyclables because they can fall through the equipment at recycling sorting facilities. Because of this sorting challenge, recycling facilities do not accept plastic items that are roughly three inches or smaller. Methods for recycling contact lenses were identified and included recycling through the lens manufacturers and specialized recycling programs. It was observed that daily use soft lenses generate more lens and blister pack waste, but do not require storage cases or the use of solutions to keep them moist so they could potentially create less plastic waste than monthly or biweekly lenses. Hard lenses can be less pollution-generating than soft lenses since these lenses, with proper care, can last a year or more without needing to be replaced. **Read the full article:** <https://www.washingtonpost.com/climate-solutions/2024/05/24/contact-lens-recycling-plastic/>

A Cheap and Portable Solution for the Removal of Microplastics from Natural Waters

Philip Nelson Mosely

This paper focused on current strategies and mechanisms for the removal of microplastics from freshwater and saltwater environments. It also described some of the limitations of existing methods and highlighted the need for innovative solutions. The researcher proposed what was described as a new eco-friendly approach, using a superhydrophobic sponge. According to him, this approach provided a practical, cost-effective and efficient method for removing microplastics without the need for external energy sources or complex machinery. Furthermore, he observed that this innovative approach was suitable for integration with existing waterway structures or as part of a standalone filtration system and offered a scalable and versatile option for mitigating microplastic pollution. The article highlighted the importance of advanced treatment methods in wastewater treatment plants to enhance the removal of smaller microplastic particles. A multifaceted approach involving stringent source control measures and household treatment to limit microfiber release and the establishment of rigorous regulations was suggested as a necessity for addressing microplastics pollution. Recommendations for future research was suggested, including focusing on enhancing the specificity and efficiency of microplastics removal techniques, exploring the potential of bioremediation, and developing low-cost advanced treatment methods. **Read the full abstract:** [A Cheap and Portable Solution for The Removal of Microplastics from Natural Waters](#)

Bottled Water is Full of Microplastics. Is it still 'Natural'?

This blog article summarized six lawsuits filed against the companies that own six brands of bottled water: Arrowhead, Crystal Geyser, Evian, Fiji, Ice Mountain and Poland Spring. The suits claimed that these companies used labels like "100 percent mountain spring water" and "natural spring water," which were deceptive because the water was likely tainted with microplastics. According to this article, the lawsuits used similar arguments, one of which was that reasonable consumers would read the labels and assume that the water was free of contaminants; if consumers knew the truth, they might not have bought water. Additionally, several of the complaints referenced a [2018 study](#) that found microplastic contamination in 93 percent of bottles tested across 11 brands in nine countries. The study found more than 1,000 pieces of microplastics per liter in half of the brands tested. As described, the complaints included arguments asserting that bottled water contaminated with microplastics cannot be "natural," as implied by the product labels. The complaints referenced the U.S. Food and Drug Administration approach of not strictly regulating the use of the word "natural" but asserted that the agency has "a longstanding policy" of considering the term to mean that a food is free from synthetic or artificial additives that would not normally be expected to be in that food." The article concluded with the acknowledgement that there is a readily available alternative to using water from plastic bottles in the United States, namely tap water, which typically has lower concentrations of microplastics and other contaminants and is hundreds of times cheaper than water from plastic bottles. **Read the full article:** <https://grist.org/accountability/bottled-water-microplastics-natural-evian-poland-spring-arrowhead-crystal-geyser-fiji-lawsuit/>

MICROPLASTICS IN ANIMALS AND HUMANS

Microplastics in Human Blood: Polymer Types, Concentrations and Characterization using μ FTIR

Sophie V. L. Leonard, Catriona R. Liddle, Charlotte A. Atherall, Emma Chapman, Matthew Watkins, Simon D. J. Calaminus, Jeanette M. Rotchell

This study explored the presence of microplastics in human blood. Blood samples were taken from 20 healthy volunteers attending the Centre of Biomedicine, University of Hull. Twenty-four polymer types were identified in samples from 18 volunteers. Polyethylene (32 %), ethylene propylene diene (14 %), and ethylene–vinyl–acetate/alcohol (12 %) fragments were the most abundant types of microplastics. These polymer types differed and were a greater range of sizes than the polymer types detected in previous research. Most of the particles in this study were categorized as fragments and were white/clear. The researchers also found a variety of plastic additive chemicals in the samples including endocrine disrupting-classed phthalates. According to the authors, their study adds to the growing evidence that microplastics are taken up into the human body and are transported via the bloodstream. They asserted that the shape and sizes of the particles raise important questions with respect to their presence and associated hazards in terms of potential detrimental impacts such as vascular inflammation, build up within major organs, and changes to either immune cell response, or haemostasis[1] and thrombosis[2]. **Read the full abstract:**

<https://www.sciencedirect.com/science/article/pii/S0160412024003374#s0060>

[1] Haemostasis is a complex process that ensures the maintenance of blood flow under normal physiological conditions and prevents major blood loss following vascular injury.

<https://www.sciencedirect.com/science/article/abs/pii/S1472029919300050>

[2] Thrombosis occurs when blood clots block blood vessels.

<https://www.hopkinsmedicine.org/health/conditions-and-diseases/thrombosis>

Microplastic Presence in Dog and Human Testis and its Potential Association with Sperm Count and Weights of Testis and Epididymis

Chelin Jamie Hu, Marcus A Garcia, Alexander Nihart, Rui Liu, Lei Yin, Natalie Adolphi, Daniel F Gallego, Huining Kang, Matthew J Campen, Xiaozhong Yu

This article observed that there is limited data that exists on microplastics within the human reproductive system and their potential consequences on sperm quality. The researchers' goals were to quantify and characterize the prevalence and composition of microplastics in canine and human testis and to investigate potential associations with the sperm count, and weights of testis and epididymis. Advanced sensitive pyrolysis-gas chromatography/mass spectrometry were used in conducting the research. Microplastics were found in all canine and human testes examined, with significant inter-individual variability. Mean total microplastic levels were 122.63 µg/g in dogs and 328.44 µg/g in humans. Twelve types of microplastics were found in the 47 canine and 23 human testis investigated. Both humans and canines were found in relatively similar proportions of the major polymer types, with polyethylene (PE) being dominant. A negative correlation between specific polymers such as Polyvinyl Chloride (PVC) and Polyethylene terephthalate (PET) and the weight of the testis was observed. These findings, the researchers asserted, highlighted the pervasive presence of microplastics in the male reproductive system in both canine and human testis, along with the attendant potential consequences on male fertility. **Read the full abstract:** <https://academic.oup.com/toxsci/advance-article/doi/10.1093/toxsci/kfae060/7673133>

HEALTH EFFECTS AND EXPOSURE TO MICROPLASTICS

Animal Exposure to Microplastics and Health Effects: A Review

Eunju Jeong, Jin-Yong Lee, Mostafa Redwan

This literature review explored the relationship between animal exposure to microplastics and health effects. Exposure to microplastics was found to affect a wide range of animal species in both terrestrial and aquatic habitats. One set of central themes the authors observed in the studies reviewed was interspecies differences in ingestion, accumulation, and responses to microplastics arising from factors including feeding behavior, physiology and ecological niches. The health implications of microplastic exposure were found to be highly variable: animals may suffer physical harm, endure chemical exposure to adsorbed contaminants, provoke inflammatory responses and undergo behavioral modifications. The chronic exposure to microplastics was found to raise concerns about long-term health consequences. Additionally, microplastics' ability to adsorb and transport chemicals has implications for the bioaccumulation of pollutants within food webs. The researchers observed that the ecological ramifications of microplastic exposure are profound, impacting animal behavior, population dynamics and ecosystem processes. Furthermore, they highlighted that the intricate interplay between animals and microplastics underscores the need for interdisciplinary research uniting fields such as biology, ecology, chemistry and toxicology. They also noted that the relationship between animal exposure to microplastics and health effects has significant implications, particularly as the potential for microplastics to enter the human food chain through animals underscores the need for research on human health risks. **Read the full abstract:** <https://www.sciencedirect.com/science/article/pii/S2405665024000702>

Gastrointestinal Incomplete Degradation Exacerbates Neurotoxic Effects of Polylactic Acid Microplastics via Oligomer Nanoplastics Formation

Boxuan Liang, Yanhong Deng, Yizhou Zhong, Xiaoqing Chen, Yuji Huang, Zhiming Li, Xiyun Huang, Xiaohong Yang, Jiaxin Du, Rongyi Ye, Hongyi Xian, Yu Feng, Ruobing Bai, Bingchi Fan, Xingfen Yang, and Zhenlie Huang

This study examined the impact on the in vivo digestive system on the biotransformation, biodistribution and toxicity of Polylactic Acid (PLA)[3] polymer and PLA oligomer[4] microplastics (MPs). Over 28 days, mice were fed PLA polymer and oligomer MPs with the same particle size to mitigate the influence of particle size on experimental outcomes. The results indicated that PLA polymer and oligomer MPs undergo incomplete and complete degradation, respectively, in the gastrointestinal tract. Incompletely degraded PLA polymer microplastics was found to have transformed into oligomer nanoplastics, which increased the bioavailability and toxicity exacerbating the overall toxic effects. Conversely, the researchers asserted that the complete degradation of PLA oligomer microplastics reduced bioavailability and mitigated toxicity, which offered a potential avenue for toxicity reduction. Additionally, the study results indicated that both PLA polymer and PLA oligomer MPs operated through shared targets and toxicity mechanisms and induced a Parkinson's disease-like neurotoxicity. According to the researchers, the penetration of PLA polymer MPs into the brain and their subsequent toxicity can solely be attributed to their digestion and degradation into smaller-sized PLA oligomer nanoplastics. Furthermore, they observed that their results demonstrated that even when controlling for size factors the neurotoxicity of PLA oligomer MPs surpassed that of PLA polymer MPs. The researchers noted that a similar phenomenon had been previously observed in intestinal cells in a different study; thus, they concluded that the incomplete degradation of PLA polymer MPs in the gastrointestinal tract not only increased their bioavailability but also heightened their toxicity, amplifying their overall toxic effects. This is consistent with smaller-sized MPs and nanoplastics typically exhibiting broader biodistribution in organs and more severe toxicity. **Read the full abstract:**

<https://onlinelibrary.wiley.com/doi/pdf/10.1002/advs.202401009>

[3] Polylactic acid (PLA) is a biodegradable as well as recyclable polyester made from [renewable feedstock](#). Lactic acid as the raw material is produced by fermentation of glucose or [sucrose](#) and is refined to a high purity.

<https://www.sciencedirect.com/topics/materials-science/polylactide>

[4] Oligomers are low molecular weight polymers comprising a small number of repeat units whose physical properties are significantly dependent on the length of the chain.

<https://www.sciencedirect.com/topics/chemistry/oligomer#:~:text=Oligomers%20are%20low%20molecular%20weight,direct%20applications%20in%20material%20science>.

Polystyrene Microplastics Disturb Maternal Glucose Homeostasis and Induce Adverse Pregnancy Outcomes

Ruiying Zhang, Yueying Feng, Penghui Nie, Wanzhen Wang, Hua Wu, Xianxian Wan, Hengyi Xu, Fen Fu

The researchers in this study observed that MPs can induce a variety of toxic responses in mammals and highlighted those recent studies verified an association between MPs and metabolic disorders. In this study, polystyrene microplastics (PS-MPs) of 1 μm size were consumed by 28 female mice at different concentrations during pregnancy. The PS-MPs were found to have activated inflammatory response and oxidative stress by increasing hepatic lipopolysaccharide (LPS) that inhibited the hepatic SIRT1/IRS1/PI3K pathway, which ultimately lead to insulin resistance, glucose metabolism disorders and adverse pregnancy outcomes. PS-MPs were also found to have induced placental malfunction and fetal growth retardation. According to the researchers, their study results provide a basis for preventing environment-related gestational diabetes and concomitant adverse pregnancy outcomes. Their findings, they asserted, are beneficial in better understanding the toxicity of PS-MPs and exploring the targets for alleviating the environmental factors associated with gestational diabetes and would be of great significance for maternal and fetal health. **Read the full abstract:**

<https://www.sciencedirect.com/science/article/pii/S0147651324005682#sec0105>



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