

The Rapids: US EPA's Trash Free Waters Monthly Update January 2021

<https://www.epa.gov/trash-free-waters>

Introduction

Hello all,

Happy 2021! I recently came across a new [UN report](#) titled “Water pollution by plastics and microplastics: A review of technical solutions from source to sea” which many of you may find useful. The report goes into great detail on the wide range of existing technologies available to address plastic pollution, from those which prevent pollution at the source to in-stream trash capture devices, wastewater treatment technologies, and technologies deployed downstream of discharge points. In addition, I encourage you to read a new study published in [Science](#) which provides an updated estimate on U.S. plastic waste generation and loadings to coastal ecosystems.

Please continue to share any upcoming events with Layne Marshall (marshall.layne@epa.gov) so that the Trash Free Waters team can advertise these opportunities with all of you on the first Monday of each month.

Happy New Year,

Romell Nandi
US EPA
Trash Free Waters Program Lead

EPA Announcements

Save Our Seas 2.0 Signed by President Trump

On Friday, December 18th, President Trump signed [Save Our Seas 2.0](#) into law. The bill includes a number of initiatives, programs, and studies that collectively address and examine the marine litter issue domestically as well as enhancing the United States’ engagement internationally. Amongst the programs the bill creates is a new national Trash Free Waters grant program (authorized at \$10 million per year for Federal fiscal years 2021-25). The bill also calls for a public EPA strategy for improving post-consumer materials management and water management.

EPA Administrator Wheeler and Taiwan's Foreign Minister Commit to Continued Collaboration on Marine Litter

On December 21, EPA Administrator Andrew Wheeler and Taiwan's Minister of Foreign Affairs, Joseph Wu committed to extending the International Environmental Partnership between EPA and Taiwan and supporting a new Indo-Pacific Marine Litter Initiative with Taiwan's Oceans Affairs Council and Environmental Protection Administration. According to the Administrator, the initiative “should make dramatic improvements to the problem of marine litter in the

coming years." Read a full news release about this example of international environmental collaboration [here](#).

Long Island Sound Futures Fund Supports Trash-Related Projects

Long Island Sound Futures Fund grant awardees were recently announced. The grants, totaling over \$2.8 million, will provide local governments, non-governmental organizations, and community groups funding to improve the watershed. Several of the awarded projects support trash-related efforts, including community engagement in shoreline cleanups and a variety of environmental education programs about aquatic trash pollution and its impact on local communities and waterways. Read the full EPA news release [here](#).

Trash Free Waters Efforts Recognized in GLRI 10th Anniversary Event

The U.S. EPA celebrated the 10th anniversary of the Great Lakes Restoration Initiative (GLRI) in early December, highlighting the 2019 GLRI Trash Free Waters grant program which funded over \$2 million in projects in the watershed. A second GLRI TFW RFA totaling \$5 million is expected to be announced soon with the intention of funding projects that use mechanical devices, vessels, and other technology to remove trash from Great Lakes harbors and waterfronts. Read the full EPA news release [here](#).

EPA Announces Two Plastics-Related P3 Awardees

The EPA announced approximately \$792,036 in funding for 32 student teams through its "People, Prosperity and the Planet" (P3) grant program. Each team will receive funding to develop and demonstrate projects that help address environmental and public health challenges. Two student groups, a team from New York University, researching "Urban Food Lab: Composting Plastic in Aquaponics" and Xiaoxia "Nina" Lin from University of Michigan-Ann Arbor, researching "Biodegradation of Microplastics in Water Treatment" received funding to address the plastics problem through their innovative approaches. Read more about their research [here](#).

EPA's #GreenTheHolidays Focus

Holiday food waste and other throw-away items like shopping bags, bows, ribbons, packaging, and wrapping paper contribute an additional 1 million tons a week to our landfills. Throughout the month of December, EPA promoted "greening your holiday season" by highlighting eco-friendly holiday celebration ideas like purchasing gift items with less packaging and using recycled or reused wrapping paper to wrap presents via the [EPA Pinterest page](#). For tips about what you can do to reduce your waste footprint in the new year, click [here](#).

EPA Partners with U.S. Census Bureau for Opportunity Project Demo

One of the three main themes of the U.S. Census Bureau's Opportunity Project Demo Week focused on the natural environment, including developing markets for recycled materials and reducing plastic pollution in our oceans. Parties used open data, technology, and cross-sector collaboration to support the development of an online marketplace to efficiently connect recycling facilities with buyers. Watch all of the Opportunity Project demo sessions [here](#).

Funding Opportunities

Protecting Marinas and Inland Waterways Via Stormwater Tech

Thanks to a new grant program sponsored by Dart Container Corporation and UltraTech International, Inc. Dart will provide up to \$100,000 in grants (\$4,000 per qualifying organization) for the purchase and installation of UltraTech's patented Ultra-Drain Guard

stormwater management products, which prevent litter, oil, and sediment from entering waterways via storm drains. Apply for this funding opportunity via a form [here](#).

NFWF Five Star and Urban Waters Restoration Grant Program RFP

This opportunity funds small but impactful projects that advance water quality improvements and engage communities on water quality and habitat restoration opportunities. Program priorities include restoration, environmental outreach, education and training, community partnerships, measurable results, and sustainability. Approximately \$1.5 million in project funding is available. Proposals are due January 28, 2021, and awards are expected to be announced next summer. Watch the applicant webinar recording and learn more about the application process [here](#).

NOAA Marine Debris Prevention and Removal Grants

The NOAA Marine Debris Program's FY2021 North America Marine Debris Prevention and Removal grant competition is open and soliciting proposals for review. NOAA will award up to \$5 million in FY21 to fund marine debris prevention and removal projects in the U.S.-Mexico and U.S.-Canada border areas. Applications are due before midnight on January 29, 2021. Please follow all submission instructions outlined in the Notice of Funding Opportunity published at Grants.gov [here](#).

KAITEKI Challenge Program RFA

Greentown Labs requests applications from innovative startups who are reimaging proteins, plastics, or packaging. They are interested in startups with a post "proof of concept" solutions in recycling technologies and processes that are more energy and resource-efficient, recycling design and systems which improve the recyclability of waste plastic and help shift consumer attitudes, and innovative management systems that help facilitate a circular economy. Completed applications are due February 10, 2021. Learn more about the opportunity [here](#).

Clean Coast, Clean Waters Initiative Fund

The British Columbia government's Clean Coast, Clean Waters Initiative Fund is making \$9.5 million in grants available for groups and local governments to use for coastal cleanup projects. The fund is intended to support local governments, coastal First Nations, and non-profit groups in removing marine debris from B.C.'s coastlines. The Fund will support two types of projects: marine shoreline clean-up and derelict vessel removal. Applications for the funding close February 15, 2021. Submit your application [here](#).

Chesapeake Bay Watershed Education and Training Grant Program (B-WET)

Chesapeake B-WET is a competitive grant program that supports existing, high-quality environmental education programs and fosters the growth of new, innovative programs. The Chesapeake B-WET Program funds locally relevant, authentic experiential learning for K-12 audiences through Meaningful Watershed Educational Experiences (MWEEs) throughout the watershed. The goal is to increase understanding and stewardship of the Chesapeake Bay and its local watersheds, including the rivers, upland streams, and natural habitats found throughout the region. Apply by March 1, 2021, via Grants.gov [here](#).

The Recycling Partnership's Polypropylene Recycling Grant Program RFP

The purpose of the Polypropylene Recycling Grant Program is to facilitate Material Recovery Facility (MRF) processing, sortation, and marketing of polypropylene packaging to ensure the widest possible access to polypropylene recycling in the community recycling collection programs in the United States. Publicly, privately and non-profit owned and operated U.S. MRFs are eligible for funding under this grant program. The next round of grant proposals is due by March 31, 2021. Learn more about this funding [here](#).

BoatUS Foundation and Berkley Recast & Recycle Contest

The BoatUS Foundation for Boating Safety and Clean Water and Berkley have teamed up to seek out new ideas and improvements to the discarded fishing line and soft bait disposal process, new recycled product ideas, or offer a technology breakthrough for the current process that will increase the volume of line and soft baits that are recycled. A total of \$30,000 in prize money is at stake for any boater, angler, armchair technologist, team, student, or anyone willing to submit a contest entry now through May 14, 2021. Learn more about this funding [here](#).

Save the Dates/Calendar

January 5th (1PM EDT): Ocean Plastic Webinars - A Conversation with Ashok Deshpande

This Ocean Plastic Webinar will feature Ashok Deshpande, a research chemist at the NOAA Fisheries James J. Howard Marine Science Laboratory in Sandy Hook, New Jersey. Ashok has been working on the assessment of persistence chemical contaminants in the recreational and commercial fisheries resource species for the past 30 years. His current research is focused on the applications of chemistry principles in addressing the chemical characterization of microplastics polymers by using a novel technique of pyrolysis GC-MS. Tune into the webinar livestream [here](#).

January 13th (12PM EDT): Microplastic 5 - Plastic Pollution as an Ecosystem Problem

Fifth in an interactive webinar series hosted by the EU project LimnoPlast, this series will take a closer look at the wicked problem of plastic pollution and microplastics. This event's speaker is Nicola Beaumont, Professor and Head of Science for Sea and Society at Plymouth Marine Laboratory. Register for the webinar [here](#).

January 13th (7PM EDT): Confronting the Waste Crisis: Beyond Plastics with Judith Enck

This event is a follow-up conversation with Judith Enck, President of Beyond Plastics and former EPA Regional Administrator during the Obama administration. The discussion will revolve around The Story of Plastic documentary, the current waste crisis, and how to take meaningful action to address the global issue. Register for the webinar [here](#).

January 14th (2PM EDT): Addressing Marine Debris in Protected Areas - Best Practices and Examples

This webinar will be hosted by Anna Ruth Robuck of the University of Rhode Island Graduate School of Oceanography and NOAA Marine Protected Areas Center. The event will synthesize recommendations based upon review of research, case studies, and experience from government, academia, and non-profits for protected area managers seeking to reduce marine debris. This webinar will provide suggested actions and current examples from protected areas addressing marine debris in the US and beyond. Register for the webinar [here](#).

January 19th - 21st: Ocean Recovery 2021 Virtual Conference

The Ocean Recovery 2021 conference, put on by Coastal Futures, will include a summit session titled "Reducing the Impact of Our Activities: Reducing Plastic Pollution & Noise Abatement." This event has been hosted annually since 1994, and over 360 delegates from over 160 organizations have participated. Read more about the conference [here](#).

January 20th (7AM EDT): Launch of the PLASTICS netWORK

This event highlights the launch of a new forum for EU businesses across the plastics supply chain (for material suppliers, processors, packaging manufacturers, or those who use plastics in their products or processes), to communicate, meet and transfer knowledge about issues such as sustainability, legislation, the environment, and skills gaps. Presentations will focus on tackling plastics sustainability. Register for the event [here](#).

Save the dates for future months...

February 2nd (11AM EDT): Circular Economy for Plastics in Canada

To address the challenges of plastic waste proliferation, a circular economy for plastics has been proposed as a viable pathway to limit or eliminate the waste disposal problem by collecting, separating, recycling, and reusing plastic products. Hosted by the Canadian Energy Research Institute, this webinar will discuss plastics materials flow analysis, recycling technologies, and the economic impacts of plastic circularity. To register, click [here](#).

February 8th- 11th: Coastal GEO Tools

Coastal GeoTools continues to be the place to experience what's new and forward-thinking in terms of technology and coastal management. In this virtual environment, you will continue to experience everything this conference has to offer – top-notch sessions, training opportunities, the tools showcase, plenaries, and the exhibit hall. Read the conference program and register [here](#).

February 9th (2PM EDT): Building a State Plan to Monitor and Assess Marine Litter: Lessons Learned

Marine litter monitoring programs are essential to determining and promoting feasible and effective actions to combat marine litter, but consistent long-term programs are scarce worldwide. To address this gap, a statewide plan to assess marine litter was developed for São Paulo, Brazil. The plan introduces a set of suggested indicators that can be applied by a wide group of stakeholders and in a variety of locations and contexts. Speakers include representatives from the Oceanographic Institute of the University of São Paulo, Brazil. To register, click [here](#).

February 10th-12th: North Carolina Marine Debris Symposium

Mark your calendars for the 8th Annual North Carolina Marine Debris Symposium at the Duke University Marine Lab and virtually worldwide. Meeting themes include holistic solutions to marine debris prevention, new or expanded marine debris research, policy and advocacy updates, optimizing regional and global solution-based partnerships, and creative virtual outreach. To submit a proposal to present, please email lisar@coastalcarolinariverwatch.org by December 1, 2020. Learn more about the event, click [here](#).

February 16th (2PM EDT): Marine Plastics- From Local to Global

This lecture will discuss the amounts and sources of plastics reaching the oceans, and (focusing on microplastics) the processes by which they may be trapped and accumulate in river and coastal environments, their potential impacts, current knowledge gaps, and methods of reducing the ocean plastic burden. This webinar will be presented by Dr. John Hardy, a lecturer in materials chemistry at Lancaster University and Programme Secretary for the Royal Society of Chemistry Lancaster. Register for the event [here](#).

March 1st-5th: Eighth Annual World Ocean Summit Virtual Week

This week-long event will feature more than 60 sessions and 130 speakers discussing how to create a sustainable ocean economy. One industry track will focus on changing the course of plastic pollution from source to sea, discussing the role of the consumer-goods sector to

minimize plastic use, and covering opportunities for waste collection infrastructure and management. Register for free [here](#).

March 2nd-4th: International Symposium on Plastics in the Arctic

Hosted by the government of Iceland, this conference will cover a range of topics including everything from sources and transport of plastics in the region to insight on research methodologies and a deep-dive on the ecotoxicological impacts of plastic pollution on Arctic habitats. Read the agenda and learn more about the event [here](#).

March 4th-5th: Third Annual Texas Plastic Pollution Symposium

The 3rd Annual Texas Plastic Pollution Symposium will take place both virtually and on South Padre Island, TX. The research symposium and poster session will be held on the first day, and workshops and a beach cleanup will be held the following day. Poster presentations will cover a wide range of topics, including 1) Monitoring, 2) Policy and Urban Communities, 3) Chemistry of Plastic Pollution, 4) to Fish and Wildlife, and 5) Solutions. Registration will cap at 150 people, so remember to register for free [here](#). The call for abstracts is open and closes on February 4, 2021. Submit your abstract [here](#).

[Other Opportunities...](#)

EPA Call for Nominations for the 2021 President's Environmental Student and Teacher Awards

The EPA's Office of Environmental Education is now accepting applications for the 2021 President's Environmental Youth Awards (PEYA) and Presidential Innovation Awards for Environmental Educators (PIAEE). The program recognizes outstanding students and educators who have advanced environmental stewardship in a range of environmental topics, including marine litter and ocean pollution. Applications for both awards programs are due no later than February 19, 2021. To learn more about the PEYA and PIAEE awards, click [here](#) and [here](#).

Open Call for Submissions to the Forthcoming UN Decade of Ocean Science Magazine

To mark the start of the UN's Decade of Ocean Science for Sustainable Development, ECO Magazine and IOC-UNESCO have partnered to produce a digital magazine to showcase upcoming activities that contribute to the Ocean Decade's seven outcomes. IOC-UNESCO invites ocean stakeholders to contribute written, video, and audio submissions related to initiatives, new knowledge, partnerships, or innovative solutions that are relevant to the seven outcomes. To submit a request to contribute, share a 150-word story summary via this [link](#) by January 25th, 2021. Select individuals will be notified in early February if their story has been accepted into the edition. Learn more about the opportunity [here](#).

Ocean Changemakers Challenge: The Next Wave of Innovators

The Ocean Changemakers Challenge aims to showcase innovators working to develop business solutions to ocean-related sustainability challenges. Researchers, early-career professionals, local change agents, entrepreneurs, and innovators with solutions to tackle some of the ocean's greatest challenges, including marine pollution, overfishing, and overexploitation of marine resources, are invited to apply. Entries will close February 5th, 2021. Learn more about the opportunity [here](#).

The Microplastics Breakdown

The section below only includes a selection of notable, recent microplastics study summaries. If you would like to receive the complete Microplastics Breakdown, please contact Bathersfield.Nizanna@epa.gov

MICROPLASTIC POLLUTION AND GLOBAL POLICY

Think Global, Act Local: Local Knowledge Is Critical to Inform Positive Change When It Comes to Microplastics

Chelsea M. Rochman, Keenan Munno,Carolynn Box, Anna Cummins, Xia Zhu, and Rebecca Sutton

The authors of this article looked closely at the results of a recent study on plastics in the San Francisco Bay area by Zhu et al., which found, based on collecting more than 400 samples that wastewater effluent and stormwater runoff were important pathways for microplastics (MP) to reach the Bay -- an annual loading of seven trillion MPs was estimated to have been released by these sources. In the wastewater samples, fibers were the most frequently identified form of MP, followed by fragments. Urban stormwater runoff was found to be a significantly greater pathway of MPs than wastewater. Fragments were the most frequently identified morphology in stormwater, followed by fibers. Nearly half of the fragments were black fragments with a distinctive rubbery texture, found to originate from tire wear. The authors concluded that the extensive research in the Bay demonstrates the importance of local sampling campaigns to inform solutions on the ground and feed into global databases to better understand the issue on a larger scale. Read the full abstract [here](#).

Global Challenges in Microplastics: From Fundamental Understanding to Advanced Degradations Toward Sustainable Strategies

Thuy-HanhPham, Huu-Tuan Do, Lan-AnhPhan Thi, Pardeep Singh, Pankaj Raizada, Jeffrey Chi-Sheng Wu Van-Huy Nguyen

This article focuses on the global challenges posed by microplastic (MP) pollution, including the current production and use status of plastics and their impact on the environment. The authors highlight the need for knowledge about the relevance of different potential entry pathways and the number of MPs entering the environment via different routes. They also point out that despite the vast quantity of studies that have been undertaken, many unanswered issues remain about the environmental impacts of MPs. Research findings on the sustainable degradation of tiny fragment plastics are suggested in the coming years. They recommend that further studies are needed in the areas of biodegradation and photodegradation. Read the full abstract [here](#).

Worldwide Actions Against Plastic Pollution from Microbeads and Microplastics in Cosmetics Focusing on European Policies. Has the Issue Been Handled Effectively?

Lamprini Anagnosti, Athanasia Varvaresou, Panagoula Pavlou, Evangelia Protopapa, Vilelmine Carayanni

This article includes brief summaries of the existing literature on microplastics and microbeads in cosmetics as well as their potential effects on the environment and human health. The authors also examined various governmental efforts to address this issue and found that there have been very few legislative steps against microbeads, and even fewer

against other microplastics used in cosmetic products around the world, mainly because it is a common belief that cosmetic industries responded massively to the call for a phase-out. They also found that active and proposed bans contain loopholes and ambiguities as to how they will be implemented. Read the full abstract [here](#).

[MICROPLASTICS PRESENCE IN AND IMPACT ON ORGANISMS](#)

Microplastics and other Anthropogenic Particles are Prevalent in Mussels from San Francisco Bay, and Show No Correlation with PAHs

Natasha Klasios, Hannah De Frond, Ezra Miller, Meg Sedlak, Chelsea M. Rochman

The authors sampled resident mussels and clams from five sites within the San Francisco Bay for microplastics (MPs) and other anthropogenic microparticles. Cages of cleaned mussels (“transplants”) were deployed at four sites in the Bay for 90 days. Anthropogenic microparticles, some of which were identified as MPs, were found in all samples at all sites. No statistical difference was found between the mean number of MPs found in resident and transplant species. No correlation was found between the number of microparticles and the sum concentrations of polycyclic aromatic hydrocarbons (PAHs), priority PAHs, or any individual PAH. The authors conclude that the results indicate that the observed chemical concentrations reflect broader chemical trends in the Bay rather than direct exposure through MP ingestion. The pattern of spatial distribution of microparticles in transplanted mussels matched that of sediment samples from the Bay, which the authors conclude suggests that bivalves could be a useful bioindicator of MP abundances in sediment, but not surface water. Read the full abstract [here](#).

First record of microplastics in the endangered marine otter (*Lontra felina*)

Luis Santillán, Miguel Saldaña-Serrano, Gabriel Enrique De-La-Torre

In December 2018, scats from the marine otter species, *Lontra felina*, were collected in Punta Corrientes, located on the central coast of Peru. The scats were analyzed and a range of types of microplastics were found in all samples and in all sub-samples. The authors asserted that this is the first documented evidence of the occurrence of microplastics in the scats of *L. felina*. Additionally, they concluded that the study results provide the first insight into the trophic transfer of microplastics in the marine web, where top predators like *L. felina* are also included. These results confirm that plastic in the form of microplastics is already part of the food web in the marine ecosystem. Read the full abstract [here](#).

Effects of Orally Ingested Microplastics in Rats as a Model Organism: Preliminary Results

Benuarda Toto, Maria O’Keefe, Øyvind Barkhald, Gülen Arslan Lied, Anders Goksøyr, Tanja Kögel, Aurora Brønstad, Jutta Dierkes

This study examined the effect of microplastics on the gastrointestinal permeability of the mammalian gut using rats as a model organism. The transmembrane proteins: occludin (Ocln) and zonula occludens-1 (ZO-1), were evaluated as an approach to observe the gastrointestinal barrier function. Rats in the experimental group were exposed to microplastics for 5 weeks through the addition of MPs to their food. The results indicated that gut tissue from rats receiving microplastics had a higher permeability compared to the control group. Read the preliminary results [here](#).

[MICROPLASTIC POLLUTION: SOURCES, FATE AND TRANSPORT](#)

Spatial Distribution of Microplastics in Surficial Benthic Sediment of Lake Michigan and Lake Erie

Peter L. Lenaker, Steven R. Corsi, and Sherri A. Mason

The spatial distribution, concentration, particle size, and polymer compositions of microplastics in Lake Michigan and Lake Erie sediment were investigated. Fibers/lines were the most abundant of the five particle types characterized. Microplastic particles were observed in all samples. The majority of polymers in Lake Michigan samples were poly(ethylene terephthalate) (PET), high-density polyethylene, and semisynthetic cellulose (S.S. Cellulose), and in Lake Erie samples were S.S. Cellulose, polypropylene, and poly(vinyl chloride). The concentrations in sediment from Lake Erie were greater overall compared to those from Lake Michigan for the common particle sizes analyzed (>0.355 mm). Lake Erie microplastic concentrations were greater than those observed for Lake Michigan for the comparable size fractions between the two lakes. There were similar amounts of particles in the smaller size fraction analyzed in Lake Erie compared to the large size fraction, which the authors believe emphasizes the importance of quantifying smaller particle sizes for a more thorough representation of microplastics. Read the full abstract [here](#).

Paint Fragments as Polluting Microplastics: A Brief Review

Christine C. Gaylarde, José Antonio Baptista Neto, Estefan Monteiro da Fonseca

This study was a literature review, which looked at 127 articles focused on various aspects of paint fragments as a pollutant, including detection, sources, and ecological effects. The authors found that non-aqueous paints may be considered as plastics, as their major constituents have a backbone of polymers. Additionally, some “water-based acrylics” may contain polyurethanes, polyesters, polyacrylates, and polystyrenes. The authors note that there is not yet a simple way of reliably differentiating paint from other MPs in the initial samples taken from soils, sediments, or water; visual appearance and brittleness are often used. They suggest that future work should include producing new or adapted methods for determining the proportion of paint-related MPs retrieved from the environment, which will allow better estimates of the quantitative importance of paint fragments to be made, leading, in turn, to better control methods. Read the full abstract [here](#).

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Marshall.Layne@epa.gov with any suggestions!**