

The Rapids: US EPA's Trash Free Waters Monthly Update December 2020

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

Introduction

Hello all,

We hope you had a wonderful holiday. On November 16-17, EPA hosted the [America Recycles Innovation Fair and Summit](#) (content available until December 17th, registration required). Along with virtual vendor booths and online presentations, EPA discussed the draft [National Recycling Strategy](#) and EPA Administrator Andrew Wheeler [announced the National Recycling Goal](#) to increase the national [recycling rate to 50% by 2030](#).

You may also want to peruse Oceana's recently released report ["Choked, Strangled, Drowned: The Plastics Crisis Unfolding in Our Oceans."](#) The report provides a thorough analysis of the negative wildlife impacts associated with marine litter as well as helpful recommendations for how to address this issue globally.

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.

Enjoy the final Rapids issue of 2020!

Romell Nandi
US EPA
Trash Free Waters Program Lead

EPA Announcements

America Recycles Innovation Fair

The 2nd Annual America Recycles Innovation Fair took place on November 16th. It showcased more than 40 innovators from across the recycling system via a virtual and interactive platform demonstrating their state-of-the-art products, services, outreach, and technologies. To read a press release about the event, click [here](#).

America Recycles Summit

The November 17th America Recycles Summit featured opportunities to virtually attend panel discussions with public and private sector speakers about the future of recycling. During the event, US EPA Administrator Andrew Wheeler announced the new national goal of increasing the recycling rate to 50% by 2030. To read a press release about the event, click [here](#). Speakers from Dow Chemical, the American Chemistry Council, Berry Global, Circulate Capital, and the Alliance to End Plastic Waste discussed the recently released ["U.S. Federal Strategy for Addressing the Global Issue of Marine Litter"](#) in a dedicated Summit breakout session.

In case you missed them, watch the Summit presentation recordings and view the Innovation Fair exhibits until December 17th [here](#).

Pilot Project with D.C. Government Kicks Off

The EPA's Trash Free Waters Program is partnering with the D.C. government on a Curbside Disposal Education Pilot, seeking to reduce unintentional littering associated with Curbside Collection Day. In early November, 8,000 stickers were distributed to target neighborhoods in the District to help educate residents about proper disposal techniques. Take a look at some of the social media messaging associated with the campaign [here](#) and [here](#).

US EPA Administrator Wheeler Speaks Up About Marine Litter

US EPA Administrator Andrew Wheeler wrote an opinion piece in the Panama City News Herald in mid-November, stating "EPA is an international leader that other nations look to for guidance on addressing marine litter, and we recognize international partnerships are vital to solving this global problem." He also highlighted the role of the Trash Free Waters Program in implementing successful on-the-ground projects which can then be expanded upon and adopted in other nations. Read the full article [here](#).

Save Our Seas 2.0 Bill

The [Save Our Seas 2.0](#) bill, sponsored by Senators Sheldon Whitehouse (D-RI) and Dan Sullivan (R-AK), focuses on addressing marine litter and plastic pollution. On December 1st, the Senate agreed to the House amendment of the original Senate bill by unanimous consent. The bill will now go to the President. 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.

US EPA Region 4 Regional Administrator Touts the TFW Program

US EPA Regional Administrator Mary Walker highlighted the TFW Program in a guest column in the Pensacola News Journal, stating "Since the Trash Free Waters program began, EPA has awarded \$5.35 million for 14 projects in communities across the Southeast. Some remarkable results have been achieved, including the removal of over 24,500 pounds of trash from Gulf waters and watersheds." Read the full article [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 last month's applicant webinar recording and learn more about the application process [here](#).

NOAA RESTORE Science Program: Planning for Actionable Science

The NOAA RESTORE Science Program will provide natural resource managers, researchers, and other stakeholders with funding to plan a research project that informs a specific management decision impacting natural resources in the Gulf of Mexico. \$2.5 million is expected to be made available, with minimum and maximum individual award amounts at \$25,000 and \$125,000, respectively. The application period closes on December 15, 2020. For updates, check [here](#).

USDA's Solid Waste Management Grant Program

The USDA's Solid Waste Management (SWM) Grant Program was established to assist communities through free technical assistance and/or training provided by the grant recipients. Qualified organizations will receive SWM grant funds to reduce or eliminate pollution of water resources in rural areas and improve planning and management of solid waste sites in rural areas. The estimated total program funding is \$4 million. Applications are due December 31, 2020. Read more about the funding opportunity, "SWMFY2021" on Grants.gov [here](#).

Alliance to End Plastic Waste: Request for Proposals (RFP)

The Alliance to End Plastic Waste is now accepting project proposals on the implementation of infrastructure to eliminate leakage of plastic waste through collection and containment. This RFP prioritizes support to cities in Asia, Africa and Latin America. The first window for submission of Concept Papers closes December 31, 2020. To submit your proposal, please visit the [Plastic Free Waste Cities page](#).

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 post Proof of Concept solutions in recycling technologies and processes that are more energy and resource efficient, recycling design and systems which improve 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](#).

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](#).

Save the Dates/Calendar

December 7th (12- 3 PM EDT): US Contributions to Global Ocean Plastic Waste Committee Meeting 2

This meeting, hosted by the National Academy of Sciences, is an open session meeting focusing on waste management in the United States. The Committee on United States Contributions to Global Ocean Plastic Waste will be evaluating US contributions to global ocean plastic waste, assessing prevalence of marine debris and mismanaged plastic waste, examining the import and export of plastic waste to and from the United States, and assessing the potential value of a national marine debris monitoring system. View the agenda and register for the meeting [here](#).

December 8th (8PM EDT): Unwrapped- The Good, Bad and Ugly Side of Plastic

Join us for an exclusive interview between Richard Kirman, CEO and Managing Director of Veolia Australia and New Zealand, and Ricki Hersburgh, Executive Director of Plastic Oceans Australasia. The interview will be hosted by Ricki Hersburgh, Executive Director of Plastic Oceans Australasia, whose mission is to change the world's attitude towards plastic within a generation. Register for the free event [here](#).

December 9th (9AM EDT): Stormy Outlook for US Plastics Refiners - Risk of stranded assets in the Gulf of Mexico

Growth in both capacity and production is forecast until at least 2035 across the U.S. Plastics Production Corridor, an area which runs along the U.S. Gulf Coast in Texas and Louisiana. This despite increasing risks to capital infrastructure posed by storms and climate change. Join Gabriel Thoumi, Head of the Plastics Programme at Planet Tracker to discuss the outlook for the US Plastics Refining sector. Gabriel will be joined by a panel of experts including Gretchen Goldman of the Union of Concerned Scientists and Horace Chan, Chemicals Analyst at Bloomberg Intelligence. Register for the webinar [here](#).

December 10th (2PM EDT): Plastic Packaging - Advancing the Transition to a Circular Economy

Hosted by Plastic News, this webinar will review industry goals and market challenges in increasing the use of rPET and achieving full recyclability of plastic packaging. Featured speakers include two representatives from Avient Corporation, Kristin Meyers, Senior Industry Manager of Food and Beverage Packaging and Alan Barcon, Associate Director of Technology, Color and Additives. Register for the event [here](#).

December 16th (12PM EDT): Microplastinar 4- Plastic Pollution as a Chemical Problem

Fourth 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 Jane Muncke, Managing Director and CSO of the Food Packaging Forum. Register for the webinar [here](#).

Save the dates for future months...

January 13th (12PM EDT): Microplastinar 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 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](#).

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 10-12th: 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 1-5th: 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 2-4th: 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 4-5th: 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 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](#).

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

MICROPLASTICS IN AQUATIC ORGANISMS AND ECOSYSTEMS

Ingestion of microplastics by *Hypanus guttatus* stingrays in the Western Atlantic Ocean (Brazilian Amazon Coast)

T Pegado, L Brabo, K Schmid, F Sarti, TT Gava

Between August 2018 and March 2019, the authors of this study examined 23 specimens of *Hypanus guttatus* stingrays from the Brazilian Amazon coast and found microplastic particles in the stomach contents of almost a third of the individuals, which were identified using 2D imaging - Fourier Transform Infrared (FTIR). This was the first time the ingestion of microplastics (MPs) by Longnose stingrays in the Western Atlantic Ocean was demonstrated. Eighty-two percent of the microplastics found were fibers, blue was the most frequent color (47%) and Polyethylene Terephthalate (PET) was the most frequent polymer recorded (35%). The authors concluded that the present study provides an important baseline for future studies of microplastic ingestion by dasyatid rays and other batoid species in the Atlantic Ocean, and contributes to the broader understanding of the spatial and temporal dimensions of the growing problem of plastic pollution in aquatic ecosystems and organisms. Read the full abstract [here](#).

Nanoplastics in aquatic systems - are they more hazardous than microplastics?

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

The authors reviewed and summarized studies from 2018 onwards focused on the effects of nanoplastics (NPs) on ecosystems, their uptake and transport of polluting molecules, and the challenges that are faced by workers in this area. The authors noted that the

current quantity of NPs in the environment is unknown because the technologies to identify them have not yet been formulated; the pores of traditional filtration devices are too large for their collection. Laboratory nanotechnology techniques are available to assess small quantities of liquid, but because of the absence of suitable methodology, many workers have relied on the production of models to investigate the production and fate of NPs in aquatic environments. Based on their review, the authors identified the primary need in this area of research as the development of acceptable standard methods for extracting, isolating and analyzing these minute particles for studying the effects of NPs on ecosystems and then their relative prevalence in different areas of the world can then be effectively assessed. They also noted that information about “biodegradable” nanoplastics is particularly scarce. Read the full abstract [here](#).

HUMAN AND ANIMAL EXPOSURE TO MICROPLASTICS

Mapping of Microplastics and Endotoxins As A Potential Workplace Hazard

Alessio Gomiero, Kjell Birger Øysæd, Emily Lyng, Bjørg Meling, Geir Skogerbø

This study focused on the indoor air of an industrial unit at IVAR’s fertilizer production facility located in Mekjarvik, Randaberg. This facility turns sewage sludge from the nearby Nord-Jæren Sewage Treatment Plant into fertilizer products via several consecutive processes. A selection of six indoor and one outdoor air samples were collected and analyzed for microplastic (MP) content via both pyrolysis-GCMS and μ -FTIR method. MPs were found in both indoor and outdoor samples. The authors also looked at the occurrence of endotoxins in the samples. The results of the analysis found a strong correlation between the total amount of MPs and the endotoxins. A weaker correlation was found between MPs and dust as well as between endotoxin content and dust. The authors concluded that their results indicated a potential direct human exposure to microplastic contamination via indoor air in the working environments addressed in this study, and though the correlation between the plastic content and the levels of endotoxins is also interesting, the low number of analyzed samples did not allow conclusions to be drawn regarding human health safety. More frequent sampling and a larger sample set is recommended. Read the full abstract [here](#).

Immunotoxicity and intestinal effects of nano- and microplastics: a review of the literature

Nell Hirt & Mathilde Body-Malapel

The goal of this review was to provide a comprehensive overview of current knowledge regarding the effects of nano- and microplastics on intestinal homeostasis. The authors conducted a literature search focused on the in vivo effects of nano- and microplastics on gut epithelium and microbiota, as well as on immune response. They found that many animal studies have shown that exposure to nano- and microplastics leads to impairments in oxidative and inflammatory intestinal balance, and disruption of the gut’s epithelial permeability. Other notable effects of nano- and microplastic exposure include changes in the gut microbiota and immune cell toxicity. They also noted that microplastics contain additives, adsorb contaminants, and may promote the growth of bacterial pathogens on their surfaces: they are potential carriers of intestinal toxicants and pathogens that can potentially lead to further adverse effects. The authors also observed that this review brings together a growing body of evidence showing that nano- and microplastic exposure disturbs the gut microbiota and critical intestinal function and such effects may promote the development of chronic immune disorders. They

recommend further investigation of this threat to human health is warranted. Read the full abstract [here](#).

FATE AND TRANSPORT OF MICROPLASTICS IN AQUATIC ENVIRONMENTS

A spatially variable scarcity of floating microplastics in the eastern North Pacific Ocean

M Egger, R Nijhof, L Quiros, G Leone, SJ Royer

The goal of the study was to assist in better understanding the transport and transformation processes of positively buoyant plastic debris at the sea surface. The authors collated data from 679 neuston net trawls, completed during seven expeditions to the eastern North Pacific Ocean between 2015 and 2019. The results demonstrated that the relative abundance of floating microplastics increases from the outside to the inside of the North Pacific Garbage Patch. The authors found that the results highlight that global estimates of the accumulation and removal of positively buoyant microplastics need to consider spatial aspects such as variations in ocean productivity, the dominant physical transport processes in a given area, as well as the time needed for a plastic object to reach the specific offshore location. Read the full abstract [here](#).

The presence and significance of microplastics in surface water in the Lower Hudson River Estuary 2016–2019: A research note

Helen Polanco Siddhartha Hayes, Carrie Roble, Marika Krupitsky, Brett Branco

Since 2016, Hudson River Park has collaborated with Brooklyn College to survey microplastics within Park waters between Chambers and 59th Streets in Manhattan, New York. This study investigated the hypothesis that microplastic concentration is influenced by proximity to combined sewer overflow (CSO) points, precipitation, and tides in the Lower Hudson River Estuary. Samples were collected at channel and near-shore locations at downtown and midtown sites. These samples were then analyzed following NOAA methods via stereo microscope. Microplastic concentrations in 2018 were found to be higher than in 2016, 2017 and 2019. Near-shore sites were found to exhibit higher concentrations than channel sites. Microfibers were not fully accounted for and fragments were found in 70% of all of the samples. The authors concluded that CSOs may have an impact on microplastics concentration, but that more data is required and that more factors are considered to clarify the relationship. Furthermore, they suggest that additional data will also improve the understanding of the presence of microplastics in the Lower Hudson and would serve to elucidate the effects of wet weather on plastic concentrations. Read the full abstract [here](#).

IDENTIFICATION OF MICROPLASTICS AND METHODS

Impact of weathering on the chemical identification of microplastics from usual packaging polymers in the marine environment

V. Fernández-González, J. M. Andrade-Garda, P. López-Mahía, S. Muniategui-Lorenzo

The focus of this work is to characterize the weathering of the most abundant plastics found in the environment: the packaging materials. Pristine polymers of the most common polymers used in packaging: LDPE, HDPE, PP, PS and PET, were weathered

under controlled, standardized conditions simulating dry and marine conditions for more than 10 weeks, and their changes were monitored. Then selected band ratios were calculated to monitor and study their behavior. The selected polymers responded differently to weathering, e.g., weathered PS presents new overlapping spectral bands in the fingerprint region so that its identification becomes difficult while weathered PET remained easy to identify because its spectral shape is not too different from pristine PET. As a result, the authors concluded that the evolution of each studied polymer has to be considered independently and that the incorporation of weathered spectra of the polymers within the searching databases is necessary to get a reliable chemical identification of the microplastics. Read the full abstract [here](#).

Two simple washing procedures allow the extraction of positively buoyant microplastics (>500 µm) from beach wrack

Sinja Dittmann, Mark Lenz

The authors assert that so far there is no procedure established that allows the extraction of microplastics from organic-rich environmental matrices such as beach wrack. As a result, the authors explored the use of two easy and cost-effective methods for extracting microplastics from Baltic Sea beach wrack consisting of *Zostera marina* L. seagrass or *Fucus* spp. brown algae. Samples of either *Zostera marina* L. or *Fucus* spp. were first spiked with defined amounts of either expanded polystyrene (EPS) or polypropylene (PP) in three size classes. The authors then placed the material between two grids inside a water-filled container and tested the separation efficiency by applying one of two methods: moving the grids up and down manually or bubbling the container with air. The manual washing method was found to be slightly more effective than bubbling the beach wrack with air, while it was easier to extract the particles from the *Fucus* spp. than from the *Zostera marina* L. matrix. In all cases, however, the differences were not large. The authors concluded that both procedures were efficient and easy to apply, and would be suitable for government agencies, NGOs, school and citizen science projects. Read the full abstract [here](#).

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