

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

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

Introduction

Hello all,

We encourage you to celebrate this Earth Day (April 22nd) by helping clean up your local community, whether that be along your neighborhood block or local park, riverbank, or beach. Participating in a solo or socially-distanced cleanup is a great excuse to get out enjoy the spring weather!

If you missed our March 11th Trash Free Waters webinar, "Reuse Models as Part of the Solution to the Plastic Pollution Crisis," you can access a recording of the event [here](#). We also recently published an issue of *The Flow of... Trash Free Waters* newsletter, which highlights important work addressing the problem of trash in waterways. The *Flow* can be read [here](#).

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.

Thanks,
Romell Nandi
US EPA
Trash Free Waters Program Lead

EPA Announcements

Michael Regan Confirmed as EPA Administrator

The Senate confirmed Michael Regan as the EPA's new Administrator on March 10th and he was sworn in the following day. Administrator Regan will serve as the 16th Administrator to the Agency and has already expressed interest in priorities including climate change and environmental justice.

TFW March Issue of the Flow Newsletter Published

The Flow of... Trash Free Waters program newsletter was published on March 23rd and includes articles covering a number of place-based projects, geographic program grant updates, recommended reading, and more. If you haven't had a chance to read it yet, click [here](#).

TFW Shares Infographic on PPE Disposal

The Trash Free Waters program website was recently updated to include an infographic on proper disposal of Personal Protective Equipment (PPE) like masks and gloves. View the infographic [here](#).

TFW Mentioned During World Water Day

On World Water Day, March 22nd, EPA tweeted “learn what you can do to keep our waters ‘trash-free’ to better protect our drinking water sources, the places we swim and play, and vital ecosystems that support wildlife.” The [tweet](#) directed viewers to the TFW “What You Can Do” [webpage](#).

Trash Free St. Louis Project Covered in Media

The Trash Free St. Louis trash capture project has received plenty of local coverage after its official kickoff in February. St. Louis Public Radio recently featured a conversation about the pilot and discussed project partners and goals. Read a full article outlining the conversation [here](#).

Funding Opportunities

2021 Ocean Solutions Accelerator Program

Inviting all entrepreneurs with for-profit, market-driven ocean solutions to apply to the Sustainable Ocean Alliance Ocean Solutions Accelerator Program. Solutions must relate to the targets and outcomes of UN SDG 14. Historically, key impact areas we focus on include aquaculture & fisheries, new materials, packaging, and ocean data. Applications will be reviewed on a rolling basis now through April 12. Read more about the program, benefits, expectations, and what we look for in our participating companies [here](#).

Coastal Environmental Justice Grant Program

The California Ocean Protection Council (OPC) recently released a solicitation for Letters of Intent on coastal projects that benefit communities entitled to environmental justice and improve water quality. OPC is especially seeking projects that include community-based organizations in project implementation. Letters of Intent are due on April 23. Read about grant guidelines and submission requirements [here](#).

D.C. DOE Trash Free Shorelines RFA

The Washington D.C. Department of Energy & Environment (DOEE) has issued a Request for Application (RFA) from eligible entities who wish to propose projects that will protect and restore the District’s water bodies by capturing and removing litter from the shorelines of the Anacostia River and Washington Shipping Channel using non-permanent structural control devices and monitoring them for their effectiveness. The amount available for the project is approximately \$60,000. The deadline for application submissions is April 30. Read more about the opportunity [here](#).

Healthy, Resilient and Sustainable Communities Grants in EPA Region 10/PNW

This grant program will support communities in US EPA Region 10 (Alaska, Idaho, Oregon, and Washington) as they develop and implement pollution prevention and/or sustainable materials management systems that help make their communities safer, healthier, and more resilient. The region anticipates awarding approximately \$120,000 total under this announcement in the form of 2-4 grants. The deadline to submit an application is April 30, via Grants.gov [here](#).

EPA Region 7 Healthy, Resilient, and Sustainable Materials Management Grant Program

EPA Region 7 recently announced the availability of up to \$600,000 in grant funding for local organizations to support projects that build community health and resilience in Iowa, Kansas, Missouri, Nebraska, and nine Tribal Nations. This grant program will support Midwestern

communities as they develop and implement source reduction, reuse and recycling, and sustainable materials management systems that help make their communities, safer, healthier, and more resilient. Applications are due May 3. Apply for this funding opportunity [here](#).

National Science Foundation's Networked Blue Economy Funding

The National Science Foundation (NSF) just announced a fresh funding track for "Networked Blue Economy" to support a range of innovative partnerships involving stakeholders in ocean-related science and engineering and coastal communities. NSF will award \$750,000 first-year monies to between 25 and 30 grantee teams. Winners may be awarded an additional \$5,000,000 for another two years. Non-binding Letters of Intent are due May 5, followed by full proposals on June 14. To view detailed instructions on eligibility, application, and selection process, click [here](#).

The Environmental Justice Collaborative Problem-Solving (EJCPS) Cooperative Agreement Program & Environmental Justice Small Grants (EJSG) Program

EPA recently announced the availability of up to \$6 million in annual environmental justice grants. EPA will be giving special consideration to the following focus areas: (1) Addressing COVID-19 concerns faced by low-income communities and communities of color, (2) Climate Change and Natural Disaster Resiliency outreach and planning, (3) New applicants to either opportunity, (4) Ports Initiative to assist people living and working near ports across the country, and (5) Small non-profits. Proposal applications must be submitted by May 7. Learn more about the funding opportunities [here](#) and [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. Learn more about this funding [here](#).

2021 Ocean Awareness Contest

Bow Seat Ocean Awareness Programs invites students ages 11-18 to create visual art, film, music, poetry, web-based media, dance, music, or creative writing that explores their connection to water and creatively communicates the need to protect this vital resource. Students may earn cash awards of up to \$1,500, and student work becomes part of a global art collection that is helping to raise awareness and inspire the protection of our oceans. Bow Seat also offers \$750 Educator Innovation Awards to teachers who use the 2021 Ocean Awareness Contest in their physical or virtual classroom. The contest is free to enter. For more information and classroom resources and to submit an application online by June 14, click [here](#).

Other opportunities...

EarthEcho's Our Echo Challenge

The OurEcho Challenge is a STEM competition that empowers U.S. middle school students (grades 5 - 9) to take a closer look at biodiversity in their communities. Students will first identify threats to local ecosystems and then propose solutions to help preserve, protect, or repair those natural resources. Entries will be accepted until April 22. 10 finalists will be selected to virtually present their ideas to restore and protect local biodiversity and the top three teams will be awarded grants to turn their projects into a reality. Read more about the challenge [here](#).

Save the Dates/Calendar

April 1st (9AM-12PM EDT): SETAC Virtual Seminars- Effects and Risks of Microplastics Within the Environment

Sixth in the seminar series “What We Know and What We Need to Know: The Analysis, Monitoring, and Effects of Microplastics in Humans and the Environment,” hosted by SETAC. The goals of this session will be to discuss recent findings related to the ecological risks associated with microplastics and consider the quality criteria necessary to produce comparable data across laboratories. Learn more about the series [here](#).

April 6th (9AM-12PM EDT): SETAC Virtual Seminars- Effects of Microplastics On Human Health

Seventh in the seminar series “What We Know and What We Need to Know: The Analysis, Monitoring, and Effects of Microplastics in Humans and the Environment,” hosted by SETAC. In this session, speakers will reflect on the evidence of humans exposed to microplastics, the potential effects and risks of microplastics on human health, and consider the relation between evidence and public perception of microplastics risk. Learn more about the series [here](#).

April 6th (3PM EDT): Reopen with Reuse - A Livestream for World Health Day

Leading up to World Health Day on April 7th, UPSTREAM invites you to a virtual media briefing with lead experts Dr. Shanna H. Swan, author of Countdown, and Dr. Leonardo Trasande, author of Sicker, Fatter, Poorer. In this special event, you’ll learn about the potential health impacts of plastic food packaging and hear how reusable systems can be part of the solution. Register [here](#).

April 8th (12PM EDT): Plastics- The Last Straw for Big Oil? An Investor Brief on the Risks of Overinvestment in Petrochemicals Webinar

Join As You Sow for a webinar discussing ‘Plastics: The Last Straw for Big Oil?’, a report addressing the risks of overinvestment in plastics infrastructure. We will provide a brief overview of the report and hear from subject matter experts on the issues of stranded assets, climate risks, environmental justice, community health, plastic waste, and corporate commitments. Register for the event [here](#).

April 8th (1PM EDT): Preventing Litter and Reducing Waste Through Data and Engagement

Join the global litter intelligence company Litterati for a live panel discussion where government officials, waste professionals, and smart cities professionals will learn how Litterati’s platform is providing cities with the tools to take a data-driven approach to prevent litter and reduce waste. To register, click [here](#).

April 15th- May 2nd: International Ocean Film Festival

The 18th Annual International Ocean Film Festival will feature films virtually from April 15-May 2, 2021. You can access the on-demand catalog of content [here](#). Featured themes include coastal communities and culture, restoration and conservation of marine ecosystems, and more. Preorder your tickets [here](#).

April 19-23rd: Global Freshwater Virtual Summit – Honoring the Great Rivers

The Mississippi River runs through the heart of America, providing the freshwaters that nurture life, land, economy from the Headwaters in Minnesota to the Gulf Sea in Louisiana. Over the five days, the Summit will cover five topics: State of the River, Governance, Protecting the River, Food and Agriculture, and Lifestyles in Harmony with Nature. To register, click [here](#).

April 19-23rd: National Monitoring Conference

Join us for the 12th National Monitoring Conference, “Working Together, Virtually, for Clean Water.” All federal, state, tribal, and local water professionals, nonprofits, academia, and volunteer citizen scientists are welcome at this important national forum. Lakes and wetlands, rivers and streams, coastal waters and estuaries, groundwater, and processed water—all water resources—will be represented. To learn more about this year’s conference themes and to register, click [here](#).

April 22nd: EARTH DAY!

April 22nd (2:30PM EDT): NOAA’s Marine Debris Monitoring and Assessment Project

Third in the California Trash Monitoring Webinar Series, this webinar will feature presenters Sherry Lippiatt, California Regional Coordinator at the NOAA Marine Debris Program, and Hillary Burgess, Monitoring Coordinator at NOAA. The event will cover the Trash Monitoring and Assessment Protocol (MDMAP), a citizen science initiative engaging citizens to survey and record the amount and types of marine debris found on shorelines. View how to participate in the webinar [here](#).

April 28th (3PM EDT): Salvaging Solutions - During Fair Winds and Following Seas

Join for the third webinar in the NOAA Marine Debris Program’s series, Salvaging Solutions to Abandoned and Derelict Vessels Webinar: During Fair Winds and Following Seas. Presenters include representatives from the Florida Fish and Wildlife Conservation Commission, Washington State Department of Natural Resources, and Richardson Bay Regional Agency. Join the webinar via Adobe Connect [here](#).

April 29th (10PM EDT): California Plastic Crisis Conference Series - Story of Plastic Screening

Join us for the kickoff to our 4-part conference series, hosted by the Newkirk Center for Science and Society and the University of California, Irvine starting with a special viewing of the film, The Story of Plastic, and a Q&A with the producers. This conference series will discuss the scope of the plastic problem, the impact of plastic pollution in California and beyond, as well as plastic alternatives, and policy solutions. Register for the conference series [here](#).

Save the dates for future months...

May 6th (7AM EDT): [Tentative] EPA’s Solid Waste Management Guide for Developing Countries

EPA will be hosting a webinar on the “Solid Waste Management Guide for Developing Countries.” Speakers include Energy Resources Institute and Brazilian Solid Waste Association. **Registration link TBD.**

May 6th (3PM EDT): California Plastic Crisis Conference Series- Plastic Impacts and Solutions

Join us for the first in our 4-part UC-Irvine Plastic Crisis Conference Series, Impacts and Solutions at Home and Beyond. This session will cover an overview of the plastic pollution problem and its impact on coastal ocean ecosystems, waterways, and public health. Register for the conference series [here](#).

May 10- 14th: Association of State Floodplain Managers Annual Conference

Join us for the 45th annual gathering of floodplain managers in this virtual conference. We invite you to share your experiences with local, state, regional, tribal, and federal officials, industry leaders, consultants, and a wide variety of subject matter experts from diverse fields. The early

bird registration discount ends on April 30. View the program schedule and register for the conference [here](#).

May 13th (3PM EDT): California Plastic Crisis Conference Series - Plastic Health Impacts

Join us for the second in our 4-part UC-Irvine Plastic Crisis Conference Series, Impacts and Solutions at Home and Beyond. This session will cover the impacts of plastics on front-line communities in California and how California's actions affect the global community. Register for the conference series [here](#).

May 17-20th: River Rally 2021

Hosted annually by River Network, River Rally brings together thought leaders and practitioners to accelerate progress towards an equitable and sustainable water future. Workshop tracks include Water & Agriculture, Resilient Communities, Drinking Water, Policy & Advocacy, Science & Climate, and Organizational Capacity Building with specific presentations on addressing floatable trash in the Gulf of Mexico watershed and the Bronx and East Harlem, NYC. Register and view the conference program [here](#).

May 20th (2:30PM EDT): Taking Out the Trash - Trash Capture and Compliance

Fourth in the California Trash Monitoring Webinar Series, this webinar will feature presenter Chris Sommers, Vice President at EOA, Inc. The event will explore how Municipal Separate Storm Sewer Systems (MS4s) are achieving compliance and improving our environment by reducing the amount of trash discharged from stormwater conveyances. View how to participate in the webinar [here](#).

May 20th (3PM EDT): California Plastic Crisis Conference Series - Community Impacts, at Home and Abroad

Join us for the third in our 4-part UC-Irvine Plastic Crisis Conference Series, Impacts and Solutions at Home and Beyond. This session will discuss the landscape of current and newly introduced California legislation on plastic pollution, specifically plastic waste, recycling and reuse, and reducing plastic. Register for the conference series [here](#).

May 26th (3PM EDT): Salvaging Solutions - Funding the Issue

Join for the fourth webinar in the NOAA Marine Debris Program's series, Salvaging Solutions to Abandoned and Derelict Vessels Webinar: Funding the Issue. Topic and presenters TBD. Join the webinar via Adobe Connect [here](#).

May 27th (3PM EDT): California Plastic Crisis Conference Series - Debunking Common Myths and Best Solutions

Join us for the third in our 4-part UC-Irvine Plastic Crisis Conference Series, Impacts and Solutions at Home and Beyond. This session will debunk common myths and present environmental justice, community-based and regional solutions, best practices, plastic alternatives, and case studies. Register for the conference series [here](#).

June 8th: Capitol Hill Ocean Week

Capitol Hill Ocean Week (CHOW), hosted by the National Marine Sanctuary Foundation, convenes policymakers, scientists, managers, business leaders, conservationists, educators, students, and members of the public to engage in dialogue and debate on significant issues that impact our ocean and Great Lakes and to propose innovative policies and partnerships to address these issues. This year's focus is on diversity, equity, inclusion, and justice and the event will be completely virtual. Learn more about this opportunity [here](#).

June 15-17th: Circularity 21 – Accelerating the Circular Economy

Circularity 21, the largest online circular economy event, offers an engaging and informative program, expo, and networking opportunities. Conference tracks include Business Innovation & Strategy, Next-Gen Products & Packaging, Rethinking Supply Chains, People & Policy, Bio-Based Solutions, and Stakeholders & Storytelling. Register [here](#).

June 17th (2:30PM EDT): A Healthy River and Healthy Communities through Citizen Science and Community Partnerships

Fifth in the California Trash Monitoring Webinar Series, this webinar will feature presenter Rob Hutsel, President and CEO of the San Diego River Park Foundation. The Healthy River, Healthy Communities Program is the San Diego River Park Foundation's signature stewardship program which utilizes an ongoing effort to survey 20+ miles of the River to inform program collaboration, advocacy, and action. View how to participate in the webinar [here](#).

June 23rd (3PM EDT): Salvaging Solutions- Taking an Inventory of the Issue

Join for the fourth webinar in the NOAA Marine Debris Program's series, Salvaging Solutions to Abandoned and Derelict Vessels Webinar: Taking an Inventory of the Issue. Topic and presenters TBD. Join the webinar via Adobe Connect [here](#).

June 28-30th: Waste Expo

Waste Expo, hosted by Waste360, is the leading solid waste and recycling event in North America. 2021 Conference Tracks include Operations, Fleet & Safety, Recycling & Landfill, and Business Insights & Policy. The conference will take place at the Las Vegas Convention Center. To view the conference program overview and list of exhibitors, click [here](#).

July 15th (2:30PM EDT): Big Data for Trash Monitoring Programs Big or Small

This webinar, the sixth in the California Trash Monitoring Webinar Series, will feature presenter Win Cowger, Ph.D. student and NSF graduate research fellow at the University of California Riverside. This presentation will discuss leveraging big data tools (e.g., open data, trash taxonomy, AI, machine learning, web applications, etc.) to turn data into information leading to action. View how to participate in the webinar [here](#).

July 20-22nd: Mid-Atlantic Marine Debris Regional Summit

Each of the three virtual half-day sessions will inspire collaboration and empower partners to work on solutions to marine debris. Attendees will represent state and federal agencies, NGOs, academia, and other groups tackling marine debris in the five Mid-Atlantic coastal states (New York, New Jersey, Delaware, Maryland, and Virginia) and Washington, DC. The public also is encouraged to participate. Agenda and registration details will be available soon [here](#).

[In case you missed it...](#)

EPA's Reuse Models as Part of the Solution to the Plastic Pollution Crisis

Our Trash Free Waters Webinar #5: "Reuse Models as Part of the Solution to the Plastic Pollution Crisis," took place on March 11th and featured presentations from Crystal Dreisbach, Executive Director of Don't Waste Durham and Founder of Durham GreenToGo, Annika Greve, Business Development Director for Loop, and Miriam Gordon, Policy Director, UPSTREAM Solutions. If you missed it, the recorded webcast is available to view [here](#).

A Circular Economy for Plastics: How Companies are Moving from Strategy to Action

GreenBiz hosted this webinar on the circular economy for plastics on April 1st. Speakers from the Coca-Cola Company, WWF, and U.S. Plastics Pact discussed how companies are taking

collective action on ambitious goals and facing common challenges. Watch the archived webcast [here](#).

Ocean Plastic Webinars

The Ocean Plastic Webinars is a monthly webinar series to encourage ocean plastic scientists from any field (biologists, physicists, chemists, economists, etc.) to share research on the origin and fate of ocean plastic and collaborate internationally. They have a range of archived webinars available [here](#).

Recent Legislation

Break Free From Plastic Pollution Act

The Break Free From Plastic Pollution Act was reintroduced on March 25th by Senator Jeff Merkley and Representative Alan Lowenthal. The bill places emphasis on Extended Producer Responsibility (EPR) of products and packaging, targets single-use plastics bags and styrofoam take-out containers, and calls for increased post-consumer recycled content in products. Read the bill [here](#).

CLEAN Future Act

The Climate Leadership and Environmental Action for our Nation's (CLEAN) Future Act were introduced on March 2nd with the goal of achieving net-zero greenhouse gas emissions by 2050. The bill calls for several improvements to the U.S. recycling system and if passed, would establish an EPA grant program to support zero-waste initiatives and recycling and waste reduction education. Among other activities, the bill outlines the need for a National Academy of Sciences study on single-use products and the potential environmental, economic, or other effects of product bans. Read the bill [here](#).

The RECYCLE Act

The Recycling Enhancements to Collection and Yield through Consumer Learning and Education (RECYCLE) Act was reintroduced on March 23rd after first being presented in November 2019. The bill focuses on improving the U.S. recycling system through increased public participation and reduced contamination in residential recycling programs. Read the bill [here](#).

The Microplastics Breakdown

MICROPLASTICS REMOVAL METHODS

A Novel Approach for the Bio-Friendly Extraction of Microplastics with Ascidians

William Li and Rowan Ross

This study explored whether Ascidians, a kind of filter-feeding invertebrate, could be effective in filtering microplastics from water. Six tanks containing equal amounts of fluorescent microplastics were used in this study. Three tanks only contained the microplastics, while each of the other three tanks contained MPs and three Ascidians. Microplastic concentrations in the tanks with the Ascidians decreased significantly; by day 4, the concentration of microplastics had decreased by 94.7%. No change in the microplastic concentration were found in the microplastic only tanks. The authors concluded that these study results could lead have practical implications, including the possibility that Ascidians can be commercially farmed for the

purpose of microplastic extraction and they assert that Ascidians could be used on mass scales around the oceans to filter out microplastics. Read the full abstract [here](#).

Removal of Microplastics from Waters through Agglomeration-Fixation Using Organosilanes—Effects of Polymer Types, Water Composition and Temperature

Michael Toni Sturm, Harald Horn and Katrin Schuhen

The authors of this study examined the use of microplastic removal via organosilanes, which are silicone-based chemicals composed of one organic group and three reactive groups of chemicals. Biologically treated municipal wastewater, seawater and demineralized water at temperatures ranging from 7.5–40 °C were compared. The authors also compared the efficiency of the process for different polymer types. The temperature variations and tested water compositions were shown to have no negative effect on microplastic removal. The authors found that the chemical composition and surface chemistry of microplastics strongly influenced the removal process and physical interaction with the organosilanes. However, they pointed out that organosilanes can be adapted specifically to improve the removal of certain polymer types by adjusting the organic group to the surface chemistry of the polymer. The authors concluded that the use of organosilanes to remove microplastics has a huge potential to be applied on a technical scale, which could be transferable to use in wastewater treatment processes or to processes employing seawater. Read the full abstract [here](#).

HUMAN EXPOSURE TO MICROPLASTICS AND HEALTH EFFECTS

The Current Status of Studies of Human Exposure Assessment of Microplastics and their Health Effects: A Rapid Systematic Review

Yong Min Cho and Kyung-Hwa Choi

After evaluating 276 review articles and 475 original articles, the authors selected and analyzed 8 review articles and 13 original articles focused on human exposure to microplastics (MPs) and their potential effects. They noted that MPs have various forms, chemical compositions, exposure routes, and delivery media so the mechanisms of MP exposure to the human body and the patterns of their effects are diverse. They asserted that it is reasonable to assume that exposure to MPs has already occurred in the general population and that the health effects of the general population due to MPs exposure have already occurred. However, they concluded that there is a lack of clear evidence of human exposure and health effects. The authors highlighted the need for the identification of the chemical composition of MPs and the establishment of exposure assessment guidelines to facilitate the definition and identification of health outcomes caused by human exposure to MPs. The authors recommended that MPs be defined in terms that make sense in the context of the exposure pathway being evaluated; studies should be performed to identify appropriate surrogates and markers of MP exposure. Read the full abstract [here](#).

Microplastics: A Threat for Male Fertility

Stefania D'Angelo and Rosaria Meccariello

This article examined the effects of microplastics (MPs) on male fertility in mammals. The authors found that in the past three years preliminary assessments of the effects of MPs exposure in mammalian reproduction have emerged indicating that MPs affect spermatogenesis and sperm quality in exposed animal models and have indirect effects on the offspring occurring via gestational exposure. These effects were found to depend on the size and molecular structure of MPs. The authors noted possible effects of MP exposure on reproductive health: 1) MPs can set the conditions for the development of inflammatory states and oxidative stress damage, thus compromising spermatogenesis and SPZ quality, and 2) MPs can make organisms more sensitive to environmental factors that affect male fertility during the lifespan serving to intensify and aggravate the toxic effects of endocrine-disrupting chemicals on reproduction. The

authors also found that existing research indicates that nanoplastics may represent an additional threat to fertility. Read the full abstract [here](#).

Microplastics in Seafood: How Much Are People Eating?

Wendee Nicole

This *Environmental Health Perspectives* article explored a literature review estimating the level of MP contamination in seafood and how much people may ingest each year. This review included 50 primary peer-reviewed papers—all field studies that sampled mollusks, crustaceans, fish, and echinoderms for MP contamination—and 19 studies were used in the meta-analysis. The authors developed a novel risk of bias (RoB) quality assessment tool to evaluate all aspects of experimental design, execution, and reporting for each paper. They found that mollusks collected in Asia tended to be the most contaminated. In addition, mollusks collected directly from fishing waters were more contaminated than those purchased from markets. Another significant review finding was that every single study identified the presence of microplastics in at least part of their samples, which were coming from four phyla comprising more than 20 families collected from all around the world, living in different habitats and different environmental compartments. Notably, the most abundant polymers identified in seafood (polyethylene and polypropylene) were the ones that have been most heavily produced in the last 15 years. Read the full abstract [here](#).

FATE AND TRANSPORT OF MICROPLASTICS

Weathering of Microplastics and Interaction with Other Coexisting Constituents in Terrestrial and Aquatic Environments

Jiajun Duan, Nanthi Bolan, Yang Li, Shiyuan Ding, Thilakshani Atugoda, Meththika Vithanage, Binoy Sarkar, Daniel C.W.Tsang, M.B. Kirkham

This literature review paper provided an overview of existing research on the weathering of microplastics (MPs) in terrestrial and aquatic environments. These weathering processes included mechanical fragmentation, photo-degradation, thermal- degradation, and biodegradation. The authors found that: 1) the weathering rate of MPs in the aquatic environment is slower than in the terrestrial environment, and 2) the physicochemical properties of MPs and environmental conditions affect the degree of their weathering. The authors noted that weathering rates were greater for smaller-sized MPs and for MPs with a low degree of crystallinity. Other factors were found to have opposing effects on the weathering of MPs, e.g., biofilm formation on MP surfaces promotes plastic biodegradation, but inhibits photo-degradation. The authors suggest that more studies are needed to investigate the weathering processes of diverse MPs under natural field conditions. Read the full abstract [here](#).

Dispersal and Transport of Microplastics in River Sediments

Beibei He, Mitchell Smith, Prasanna Egodawatta, Godwin A. Ayoko, Llew Rintoul, Ashantha Goonetilleke

In this study focused on the Brisbane River, the largest urbanized tidal river system in South-East Queensland, Australia, researchers used a three dimensional hydrodynamic and particle transport modeling framework to examine the dispersal and transport processes of microplastic particles commonly present in the environment: polyethylene (PE), polypropylene (PP), polyamide (PA), and polyethylene terephthalate (PET). The authors noted that recent modeling studies have estimated that rivers globally discharge about 1.2–2.4 MT of floating plastic pollutants a year from inland areas to oceans. Their study results confirmed the hypothesis that sedimental microplastics with lower density would have higher mobility: PE and PP were found to be transported for a relatively long distance, while the high-density particles PA and PET accumulated close to source points or the drop in the water flow energy. The results of this study

indicated that river sediments would act as a sink for microplastic pollutants instead of being a transport pathway. Read the full abstract [here](#).

Microplastics and Microfibers in Surface Waters of Monterey Bay National Marine Sanctuary, California

Lauren M.Kashiwabara, Shirel R.Kahane-Rapport, Chad King, Marissa De Vogelaere, Jeremy A. Goldbogen, Matthew S. Savoca

From 2017 to 2019, the authors sampled two nearshores and two offshore locations within the Monterey Bay National Marine Sanctuary (MBNMS) using a manta trawl and analyzed these samples for microplastics and microfibers. This study was the first in a decade to report on microparticles in the surface waters of MBNMS. The authors found that the mean concentration of 1.32 particles per m³, across all samples was slightly higher than the global average. The highest concentration of particles was found closest to shore, and the lowest concentration above the remote Davidson Seamount. They observed that the highest concentrations of microparticles of 5–15 particles per m³ occurred at 200–600 m depth. Fiber-like debris was found to be more common offshore, as compared to nearshore, sites. Overall, the particles in the samples were identified as primarily buoyant synthetic polymers, including polypropylene and polyethylene. The authors noted that their sample size was small, so they were unable to conclude that there were no significant differences in offshore or nearshore surface water particles. They recommend additional research to better understand the sources and sinks of microplastics in this area. Read the full abstract [here](#).

**If you'd like to see your posting in this email, please email
Marshall.Layne@epa.gov with any suggestions!**