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

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

Introduction

Hello all,

We hope you got to get out and celebrate Earth Day last month! The Trash Free Waters Program released a new technical resource in April called **The Escaped Trash Assessment Protocol (ETAP)**. I encourage you to read more about this resource below.

In other news, Keep America Beautiful recently published a press release highlighting the top-line results of their forthcoming KAB 2020 National Litter Study **here.** I also highly recommend reading a striking article recently published in *the Marine Pollution Bulletin* which highlights the prevalence of single-use plastics in deep-sea ecosystems (3500-6500 meters), **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

Release of the EPA's Escaped Trash Assessment Protocol (ETAP)
The Escaped Trash Assessment Protocol (ETAP) is a quantitative survey tool that provides a standard method for collecting and assessing litter data. The protocol can be used to assess item age and level of fouling and analyze and compare across specific material types and categories of trash collected. This highly adaptable method for trash monitoring will provide practitioners and citizen scientists with a comprehensive and rigorous method for quantifying trash loadings. Download the ETAP Reference Guide and Excel Spreadsheet Tool **here**.

EPA Region 7 Launches the Healthy Environments Challenge
On April 13th, EPA Region 7 announced the launch of the Trash-Free Waters Healthy Environments Challenge designed to educate students about the impacts of trash in the environment and what they can do to help prevent it. Educators and other youth leaders can get started by visiting the EPA Healthy Environments Challenge **here** to find helpful

instructions on how to complete the social media challenge, and then challenge others using the hashtag #HealthyEnvironmentsChallenge and webpage link.

EPA Small Business Innovation Research Awardee Announcement
EPA announced almost $2.5 million in awards to 24 U.S. small businesses to develop innovative technologies that help support EPA's mission of protecting human health and the environment. Two selected proposals included a system to produce recycled plastic lumber products from locally collected plastic ocean waste and a synthetic biology approach to recycling waste plastic into biodegradable plastic. Read more about these proposals **here.**

GLRI TFW Grant Awardees Host Earth Day Cleanups
Two recipients of last year's Great Lakes Restoration Initiative Trash Free Waters grant program hosted coordinated state-wide cleanup efforts last month in honor of Earth Day. Buffalo Niagara Waterkeeper led a coordinated week-long trash removal event called the Great Lakes CleanUP in collaboration with several local Waterkeeper groups. Read more about the effort **here.** Belle Isle Conservancy, a critical member of the Detroit River Coalition, helped host a series of Earth Week activities including cleanups, a photo contest, and educational seminars. Read more about this initiative **here.**

Funding Opportunities

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 $5,000,0000 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.**

National Estuary Program Coastal Watersheds Grant Program

The National Estuary Program (NEP) Coastal Watersheds Grant (CWG) Program supports projects that address urgent and challenging issues threatening the well-being of coastal and estuarine areas within 28 determined estuaries of national significance. Projects should address Loss of key habitats; Recurring harmful algae blooms; Unusual or unexplained marine mammal mortalities; Invasive species; Flooding and coastal erosion; Excess nutrients and warmer water temperatures; or contaminants of emerging concern such as pharmaceuticals, personal care products, and microplastics. Letters of Intent are due on June 7, followed by full proposals (by invitation only) by September 20. To read the full RFP, click **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.**

Food Waste Repackaged Innovation Challenge

The Sustainable Packaging Coalition's "Food Waste Repackaged" Challenge is a multi-phase project which aims to raise awareness about packaging's role in food waste and spur innovations for food packaging that will help prevent food waste. Eligible entrepreneurs and startups with food packaging solutions that address food waste through design and optimization features or technology-based solutions are encouraged to apply by June 18. Visit the Sustainable Packaging Coalition website for more information **here.**

Other opportunities…

Food Waste Repackaged Innovation Challenge

The Sustainable Packaging Coalition's "Food Waste Repackaged" Challenge is a multi-phase project which aims to raise awareness about packaging's role in food waste and spur innovations for food packaging that will help prevent food waste. Eligible entrepreneurs and startups with food packaging solutions that address food waste through design and optimization features or technology-based solutions are encouraged to apply by June 18. Visit the Sustainable Packaging Coalition website for more information **here.**

Save the Dates/Calendar

May 6th (7AM EDT): EPA's Solid Waste Management Guide for Developing Countries
This one-hour webinar will introduce the EPA's new publication, **Best Practices for Solid Waste Management: A Guide for Decision-Makers in Developing Countries**. EPA will provide an overview of the guide, including where to find the guide, how to use the guide, and an overview of the content and best practices. Guest speakers include representatives from the Energy Resources Institute and the Brazilian Solid Waste Association. Register **here.**

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 12th (12PM EDT): "Reuse To-Go- Innovations in Takeout & Delivery"
In UPSTREAM's upcoming livestream, three special guests - Keiko Niccolini from r.Cup/r.Ware, Lauren Sweeney from DeliverZero, and Paul Liotsakis from Sparkl - will discuss the various reusable foodservice systems they have developed. Join this lively discussion to learn more about these speakers and their innovative solutions for the hardest-to-hack challenges around single-use packaging. Register for the event **here.**

May 12th (12PM EDT): The Plastic Invasion on Reproductive Health
In honor of Women's Health Month in May, Beyond Plastics will host a conversation on the effects of plastic on human health and reproduction. The webinar will feature leading environmental and reproductive epidemiologist Dr. Shanna H. Swan, award-winning writer Stacey Colino; and Director/Head of Obstetrics and Gynecology at the Fatebenefratelli Hospital, Isola Tiberina in Rome, Dr. Antonio Ragusa. Register for the event **here.**

May 13th (12:30PM EDT): New Tools to Help Communities Prevent Marine Litter in North America
Since 2017, the Commission for Environmental Cooperation (CEC) has been facilitating collaboration and developing tools to address land-based marine litter in North America. In this webinar, speakers will present new tools developed by the CEC to help communities, cities, and organizations in North America take action locally and raise public awareness on the journey of litter to the ocean. This webinar will be delivered in English, with simultaneous interpretation to French and Spanish. Registration will open **here** on May 6.

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.**

Save the dates for future months…

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.**

July 28th (3PM EDT): Salvaging Solutions - Oil and Hazmat Issue
Join for the fifth webinar in the NOAA Marine Debris Program's series, Salvaging Solutions to Abandoned and Derelict Vessels Webinar: Oil and Hazmat Issues. Presenters TBD. Join the webinar via Adobe Connect **here.**

August 19th (2:30PM EDT): California Coastal Cleanup Day – History, Data, Action, and Community Engagement
This webinar, the seventh in the California Trash Monitoring Webinar Series, will feature presenter Eben Schwartz, Marine Debris Program Coordinator at the California Coastal Commission. This presentation will discuss how cleanups can offer a way for volunteers to

respond to the threat of trash in our environment. View how to participate in the webinar **here.**

August 25th (3PM EDT): Salvaging Solutions - Coordination Success Stories and Lessons Learned
Join for the fourth webinar in the NOAA Marine Debris Program's series, Salvaging Solutions to Abandoned and Derelict Vessels Webinar: Coordination Success Stories and Lessons Learned. Presenters TBD. Join the webinar via Adobe Connect **here.**

Recent Legislation

RECOVER Act
The RECOVER Act was reintroduced on April 5th by Representative Tony Cardenas and Larry Bucshon. The bill outlines a federal grant program to support local governments that could benefit from improved recycling infrastructure and waste education programs. The official bill text is not yet available.

Plastic Waste Reduction and Recycling Act
The Plastic Waste Reduction and Recycling Act was reintroduced on April 22nd and emphasize plastic waste reduction as well as the significance of the U.S. plastics recycling market through a series of grant programs, the establishment of an interagency committee, and more. The updated official bill text is not yet available, but a draft copy can be read **here.**

The Microplastics Breakdown

MICROPLASTICS AND SEWAGE SLUDGE

Transport and Accumulation of Microplastics through Wastewater Treatment Sludge Processes
Somayye Sadat, Alavian Petroodya, Seyed Hossein Hashemia, Cornelis A.M.van Gestelb
The authors conducted a study on the presence of microplastics in sludge produced by the Sari wastewater treatment plant (WWTP) in northern Iran. Samples of sludge were taken from the primary settling tank, clarifier, after sludge thickener and after aerobic digester, and after dewatering. Three samples from each of these processes were taken and microplastics larger than 37 μm were extracted via a three-step process that included sludge purification, density separation, and filtration. The authors found that each contained 214, 206, 200, 238, and 129 microplastics/g dry weight, respectively, which they found was equivalent to 280, 362, 599, 601, and 276 million microplastics/day, respectively, of which more than 85% were fibers. The numbers of microplastics in the sludge from the output of the sludge thickener and the aerobic digester did not significantly differ. Polyester and polyethylene were found to be the predominant types of microplastic fibers and particles, respectively. After analyzing the results in light of the processes occurring at each step, the authors concluded that the dewatering process along with the aerobic digestion process plays a significant role in reducing the numbers of MPs in the final sludge. One of their main recommendations was the preparation of protocols for the proper disposal of the final sludge in order to prevent the release of MPs into the environment. Read the full abstract **here.**

MICROPLASTICS SOURCES, FATE AND TRANSPORT

Quantification of Selected Microplastics in Australian Urban Road Dust
Stacey O'Brien, Elvis Dartey Okoffo, Cassandra Rauert, Jake W.O'Brien, Francisca Ribeiro, Stephen D. Burrows, TaniaToapanta, Xianyu Wang, Kevin V. Thomas
This study analyzed the road dust along an urban to rural transect within South-East Queensland, Australia. The authors found polypropylene, polystyrene, polyethylene terephthalate, polyvinyl chloride, poly (methyl methacrylate), and polyethylene microplastics (MPs) in concentrations ranging from ~0.5 mg/g (rural site) to 6 mg/g (Brisbane city). Smaller microplastics, i.e., MPs in the < 250 µm size range were most prevalent in the samples. The authors also found a significant correlation between the increasing volume of vehicles and increased microplastic concentrations. The highest concentration of microplastics was found in residential areas. They suggested that additional research is needed in the areas of quantification, source attribution, and transportation mechanisms to better understand the fluxes and pathways of the environmental plastics cycle associated with road dust. Furthermore, they pointed out that a detailed mass-based quantification of microplastics in road dust could facilitate exposure calculations and understanding human health outcomes for the main MP exposure pathways: respiratory, ingestion, and dermal. Read the full abstract **here.**

Quantification and Analysis of Microplastics in Farmland Soils: Characterization, Sources, and Pathways
Hoda Fakour, Shang-Lien Lo, Nathan Thadeo Yoashi, Angelbetter Marselian Massao , Nelson Naboth Lema, Fezile Bethusile Mkhontfo, Patrick Chris Jomalema, Nasra Shabani Jumanne , Bright Hubert Mbuya, James Travor Mtweve, and Moslem Imani
This study investigated and analyzed the abundance and characteristics of microplastics (MPs) in soil samples from farms in Tainan, Taiwan. MPs were found in all soil samples in different depths ranging from 12–117 items per m^2 and MP abundance in farms near the suburban roads was found to be approximately three times more than in enclosed farms separated from roads. The main forms of particles that were discovered were fragments and fibers; low-density polyethylene was the most prevalent polymer. The authors identified historical land use, extensive application of plastic mulch, and utilization of fruit protection foams as the main sources of MPs in farmlands. They pointed out that many urban resident farmers cultivate their food on land near the road, these farms situated are more likely to experience different environmental contamination. Despite this, the authors noted, the prevalence of MPs in soil and the terrestrial environment is expected to continue to grow in the immediate future. Improving the biodegradability of polymers used in the production of plastic mulch and synthetic textiles, they stated, could assist in the reduction of MPs in the environment. They also highlighted the importance of raising awareness among farmers as a mechanism to slowing down the MP waste generation and encouraging the utility of more natural fibers and environmentally friendly products in agriculture practices. Read the full abstract **here.**

Microplastics generated from a biodegradable plastic in freshwater and seawater
Xin-Feng Wei, Martin Bohlén, Catrin, Lindblad, Mikael Hedenqvist, AronHakonen
This article explored the potential formation of microplastics from biodegradable poly (butylene adipate-co-terephthalate) (PBAT) in different aquatic environments at room temperature. PBAT, which the authors described as having similar mechanical properties as low-density polyethylene (LDPE), and as a result, has been regarded as a promising

biodegradable alternative to LDPE, especially in disposable products such as mulch films and plastic shopping bags. Consequently, the conventional non-biodegradable LDPE was selected as a comparison to PBAT in this study. The plastics were subject to UV pretreatment to mimic the aging of the plastic products in sunlight before they end up in an aquatic environment. The biodegradation condition of the plastic in the aquatic medium was simulated in cell culture flasks with ventilated caps. The plastics were exposed to four different aquatic media: Milli-Q water, artificial seawater, artificial seawater with sediment on the bottom, and real seawater with sediment. The overall microplastic formation was found to be faster in a seawater environment than in Milli-Q water. The results also indicated that PBAT generated more microplastics than the conventional non-biodegradable polymer, LDPE. Read the full abstract **here.**

Generation of microplastics from the opening and closing of disposable plastic water bottles

Tvisha Singh

This study quantified microplastic (MP) particle generation from the cap and bottle interaction. Thirty-one bottles of the same brand of water from two cases that were purchased at the same time were analyzed for microparticles in this study. The bottle caps were opened and closed 1, 5, 10, and 15 times before analyzing the number of particles generated per open-close cycle. The levels of MPs in the water were found to increase as the bottle cap was opened and closed repeatedly. The rate of generation of particles with bottle opening and closing cycles was found to account for the total particle density in the water. The author concluded that the results demonstrated that the abrasion between the bottle cap and bottleneck is the dominant mechanism for the generation of microplastic contamination detected in bottled water. A large spread was observed between the maximum and minimum levels of microplastic contamination, regardless of the number of times the cap is opened and closed. The author attributed this result to the possibility that mechanical tolerances in the manufacturing of bottles and caps might play an important role in a microplastic generation. The author concluded that it was reasonable to assume that the size variation between the sealing collar on the bottle cap and the inner diameter of the bottleneck would have a significant impact on abrasion when the bottle cap is opened and closed. Additionally, he also observed that the eventual smoothening of the surfaces that are in contact during cap motion or the yielding of the collar feature would reduce the abrasion force as the number of cap open-close cycles increase. This would serve to reduce the rate of production of MPs after many open-close cycles. Read the full abstract **here.**

EFFECTS OF MICROPLASTICS

The Effects of Microplastics on Sea Urchin Larval Survivorship and Development

Natalie Macy, Margaret Smith

The authors of this study explored the effects of polystyrene microplastics on larval survivorship and body-size development in Lytechinus variegatus (the green sea urchin) and Arbacia punctulata (the Atlantic purple sea urchin**).** L. variegatus and A. punctulata larvae at a concentration of 5 larvae per ml were subjected to three different conditions that varied in microplastic concentration but were consistent in total particle concentration. The treatments were: 1) 300 algae/ml; 2) 150 algae and 150 5µm polystyrene beads/ml; 3) 300 5µm polystyrene beads/ml. Fewer larvae of both species were found to have survived when subjected to the polystyrene beads. However, limited effects on development were observed. The authors noted the need for replication of the results of this study but concluded

that microplastics have an effect on sea urchin larval survivorship. Read the full abstract **here.**

A Critical Review on the Impacts of Nanoplastics and Microplastics on Aquatic and Terrestrial Photosynthetic Organisms
Camille Larue, Géraldine Sarret, Hiram Castillo-Michel, Ana Elena Pradas del Real
This article reviewed research on the fate and impacts of microplastics and nanoplastics in interaction with photosynthetic organisms in terrestrial and in aquatic systems. The authors identified a consensus that plastic characteristics have a crucial role in their toxicity toward these organisms. They found that plastic leachates (containing additives) are a major source of toxicity, and some harmful compounds such as phthalate esters are shown to accumulate in plants and pose a risk for the consumers. Trophic transfer was identified as a concern since it had been proven (both in the lab and in the field) that plastic particles can adhere to aquatic organism surface and thus be transferred to the upper trophic level. Ninety percent of the studies they reviewed that investigated the impact of nanoplastics on phytoplankton suggested that they have toxic effects. Furthermore, they found that bigger particles were found to have almost no impact, and, in some cases, an enhanced algal growth was reported. Based on these findings, the authors suggested that a threshold size for plastic ecological risk assessment should be established and that particles above 100 µm should be identified as low risk for microalgae. Read the full abstract **here.**

Microplastics in the Aquatic Environment: Occurrence, Persistence, Analysis, and Human Exposure
Maria Ricciardi, Concetta Pironti, Oriana Motta, Ylenia Miele, Antonio Proto and Luigi Montano
This article is a literature review focused on the existing scientific literature focused on the occurrence and accumulation of microplastics (MP) in rivers, lakes, wastewater, and seafood. The authors also examined the analytical methods used to assess their concentration, their fate and transport to humans, and identified some critically needed research areas. Studies on the occurrence and the distribution of microplastics in aquatic environments were observed to be mainly focused on the more industrialized areas, such as South-East Asia, China, Europe and North America, while Africa, South America and North Asia were poorly investigated. The authors found that all of the literature that they reviewed indicated that the aquatic environment is highly contaminated by MPs, but a full comparison among the various studies was difficult and often impossible due to the lack of a standardized procedure for water sampling, particle counting, and polymer matrix individuations. They suggested that future research efforts should provide a deeper investigation of the transport and accumulation of MP in humans, and the consequent effects on human health. 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!
