The Rapids

US EPA's Trash Free Waters Monthly Update

May 2022

epa.gov/trash-free-waters

Introduction

Hello all,

I hope everyone had a nice Earth Day! The Duke University Nicholas Institute for Environmental Policy Solutions and the Nicholas School of the Environment compiled a study which was recently published in *Environmental Science and Policy*: "**The evolving global plastics policy landscape: An inventory and effectiveness review**." This research aimed to expand evidence-based policy-making to reduce plastic pollution by identifying, classifying, and evaluating the effectiveness of various government policy instruments from 2000-2019.

In addition, Upstream has just published a "**Climate, Plastics, and Reuse Toolkit**" and TOMRA's new "**EPR Unpacked: A Policy Framework for a Circular Economy**" white paper examines Extended Producer Responsibility schemes for packaging waste and serves as a detailed guide for policymakers by outlining how to achieve greater performance.

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 National Program Lead

EPA Announcements

EPA Announces $524 Million Investment to Improve Health of Waterways and Oceans
In celebration of Earth Week, EPA announced a $542 million investment to reduce pollution and plastic waste in our shared oceans. This significant investment is substantially funded by President Biden's Bipartisan Infrastructure Law. EPA's commitments include $350 million in improvements to recycling infrastructure and education, $132 million for the National Estuary Program in infrastructure improvements to reduce pollutant loadings into freshwater ecosystems and the ocean, and an additional $60 million to support Mississippi River states, Ohio and Indiana as they reduce nutrients in our waterways to shrink the size of the dead zone in the Gulf of Mexico.

Trash Trap Installation in Toledo
In mid-April, the mayor of the City of Toledo, Ohio announced the installation of two Brute Bin trash traps in the Ottawa River as part of the approximately $414,000 awarded to the city through the 2020 Great Lakes Restoration Initiative (GLRI) Trash Free Waters Grant Program. The goal of this project is to remove thousands of pounds of trash from entering Lake Erie by installing **7 trash capture devices** within 5 miles of the lake.

Release of the TFW Program Factsheet
A factsheet highlighting EPA Trash Free Waters Program accomplishments is now available online. Since the program's creation in 2013, TFW has provided technical and/or financial assistance to over 80 projects in more than half of the U.S. states and territories. The TFW Program has also published over 20 technical reports, tools, and resources to help on-the-ground stakeholders address aquatic trash pollution in their communities.

Funding Opportunities

EPA Region 8 (Mountains and Plains) Sustainable Materials Management Grant
EPA Region 8 is requesting applications that address the national and regional priority of decreasing the environmental impact of materials with a focus on reducing greenhouse gas emissions. This funding opportunity is designed to both decrease materials generated (source reduction) and increase the diversion of materials through reuse, recycling, and other strategies. Applications must directly benefit at least one of the EPA Region 8 States (Colorado, North Dakota, Montana, South Dakota, Utah and Wyoming) or one of the 28 tribal nations in the Region. Estimated total funding will be $40,000 with 1-2 awards made. There is no required cost sharing or matching. **The deadline for submissions is May 15.**

National Estuary Program Coastal Watersheds Grant Program 2022
The National Estuary Program (NEP) Coastal Watersheds Grant (CWG) Program is a nationally competitive grants program designed to support projects that address urgent and challenging issues threatening the well-being of coastal and estuarine areas within 28 determined estuaries of national significance. Grant proposals should address the following urgent and challenging issues: Loss of key habitats; Recurring harmful algae blooms; Unusual or unexplained marine mammal mortalities; Proliferation or invasion of species; Flooding and coastal erosion; Impacts of nutrients and warmer water temperatures on aquatic life and coastal ecosystems; and Contaminants of emerging concern found in coastal and estuarine waters such as pharmaceuticals, personal care products, and microplastics. **Letters of Intent are due on May 27.**

West Virginia Litter Control Grant
The West Virginia Department of Environmental Protection's Litter Control Grant is a matching fund that assists municipalities and county government agencies in West Virginia with community cleanup and litter enforcement projects. Funding is provided for this grant through litter fines imposed on those who violate state litter laws. The maximum amount of funding for a grant is $5,000. **The deadline for submissions is May 31.**

BlueTech Lab for Waste Innovation Challenge
The Inter-American Development Bank (IDB), through its innovation laboratory, IDB Lab, and in partnership with the Global Environment Facility (GEF) seeks to support innovative solutions that contribute to the sound management of hazardous Chemicals and Waste (C&W) to protect human health and the environment, and address climate vulnerability in the Caribbean region. Proposed solutions must

lead to the reduction, disposal/destruction, phase out, elimination and avoidance of chemicals of global concern, avoidance of emissions of Persistent Organic Pollutants (POPs) to air from point and non-point sources, or the reduction of marine litter. **The deadline for submissions is May 31.**

Clif Family Foundation Operational Support Grant
Clif Family Foundation grants support daily operating costs. Projects should address two or more funding priorities: Strengthen our food system, Enhance equitable community health outcomes, and Safeguard our environment and natural resources. Projects should also demonstrate strong community ties and operate within viable and clearly defined plans for positive change. **The deadline for submissions is June 1.**

Massachusetts Sustainable Materials Recovery Program (SMRP) Municipal Grant and **Recycling Dividends Program Funds**
MassDEP Sustainable Materials Recovery Program (SMRP) Municipal Grant funding may be used to improve local recycling, composting, reuse, and household hazardous waste diversion programs. Cities, towns, and regional authorities in the state of Massachusetts are eligible to apply. The Recycling Dividends Program provides payments to qualifying municipalities that have implemented specific waste reduction, reuse, and recycling programs and policies. **The application period for both opportunities is open until mid-June.**

EPA Environmental Finance Center Grant Program (EPA-I-OW-OWM-22-01)
EPA encourages non-profit organizations, universities, and other eligible entities to apply to receive funding as a designated EFC in an EPA Region or as a national EFC for EPA Headquarters. A major priority for this program over the next five years is to provide technical support to disadvantaged communities across the country. Selected technical assistance providers will help communities develop and submit project proposals, including State Revolving Fund (SRF) applications for Bipartisan Infrastructure Law funding. Additionally, the EFCs will support a range of projects focused on solid waste, clean air, toxic substances, drinking water, wastewater, and stormwater. $68 million in federal funding is available through this program. **The deadline for submissions is June 17.**

Energize The Environment Grant Program
Quadratec is proud to offer a $3,500 environmental grant to an individual or group currently pursuing a program or initiative designed to benefit our environment. Some examples of this would be trail building or restoration projects, park beautification events, litter prevention initiatives, community environmental educational projects, and youth educational engagement events. Interested individuals or groups should submit a 1000-1600 word essay to grants@quadratec.com that paints a picture of who you or your organization are, what drives and inspires you or your organization, what you or the organization are looking to accomplish, and how you plan to apply our grant to your project. **The deadline for submissions is June 30.**

Other opportunities...

Bringing Reuse to City Scale Through Perpetual
Perpetual, a new initiative working to scale reusable foodware solutions, is seeking city partners. Perpetual partners with individual cities and brings together local communities, businesses, and other stakeholders to define reuse system requirements, solicit proposals from reuse solution providers, and support the implementation of reuse solutions at immersive scale, beginning with open-loop foodware in three smaller cities (50,000-100,000 people). For more information and to get in touch, please email Dagny Tucker at dagny@perpetualuse.org.

Upcoming Events

WasteExpo
May 9-12th, Las Vegas, NV
Whether you are from the private sector; a small, medium, or large public sector waste management company; organics management; or food waste management company; or a manufacturer or supplier from the U.S. or abroad, count on WasteExpo to bring the entire industry together under one roof. 2022 conference tracks include: Operations, Fleet & Safety, Recycling & Landfill, Business Insights & Policy, and Tech & Innovation.

Texas Partners in Litter Prevention Trash Summit 2022
May 11th (9-11AM ET), virtual
The Partners in Litter Prevention will bring Texas stakeholders together for another annual summit via Zoom to discuss trash prevention and research. An in-person field day may be offered the day after the summit to train attendees on different trash survey methods and the Texas Litter Database.

All Source Reduction Is Local: How Municipal Governments Can Change the Reuse and Repair Landscape
May 11th (1PM ET), virtual
Recycling isn't the only step we can take toward sustainable materials management – but how can municipal governments meaningfully incorporate reuse and repair strategies into their operations? In this webinar, issue experts will share practical working definitions of reuse and repair, as well as policy and program changes that local and regional solid waste agencies can implement to encourage source reduction in their daily operations and among their residents. Examples of municipal programs across the country – and the challenges they face as well as the successes they've achieved – will be discussed. The webinar will also provide a review of several pending Congressional bills focused on reuse and repair and their prospects for passage.

Circular Economy in Healthcare – From Theory to Practice
May 17th (8AM ET), virtual
The Covid-19 pandemic resulted in an explosion of single-use PPE and other waste. In healthcare settings, procurement of PPE (masks, aprons, gowns, etc.) and medical devices/instruments have increasingly turned away from reusable options in favor of disposable solutions. This WasteWise webinar will discuss the reasons behind this and the strategies required to reverse this trend. We will hear from two companies (Revolution-ZERO and Vanguard Medical Devices) actively working with the NHS and the wider healthcare sector to trial and integrate reusable systems into clinical settings.

Applying Behavioral Insights to Improve Marine Conservation
May 17th (1PM ET), virtual
Rare and its Center for Behavior & the Environment (BE.Center) applies behavioral science to help tackle some of the world's most pressing environmental issues. This webinar will explore behavior-centered design, how it can be applied to marine conservation programs, and examples of successful cases from around the world – with challenge areas ranging from marine pollution to small-scale fishery management. Presenters will share actionable resources, tools, and other practical guides to apply behavioral insights in marine conservation programs.

Circularity 22
May 17-19th, Atlanta, GA
As the leading convening of professionals building the circular economy, Circularity 22 offers thought-provoking keynotes, informative breakouts, a solutions-oriented expo, and engaging networking

opportunities. The goal of this conference is to encourage moving beyond individual action to catalyze systems change and accelerate the circular economy. Tracks include next-gen products and packaging, bio-based solutions, policy and infrastructure, and more.

Innovating Our Way Out of the Global Waste Crisis
May 23rd (11:30AM ET), virtual
This WasteWise webinar will consider international best practices in system design, packaging innovation, policy reform, consumer responsibility and technology breakthroughs to suggest how we can ensure we curb global waste production, how we can recycle more, how we can protect our communities and the environment and how we must tackle overconsumption before it's too late. This webinar will feature a panel of experts from across the value chain and a wide range of insights and experiences.

Re|Focus Sustainability & Recycling Summit
May 23-25th, Cincinnati, OH
Hosted by the Plastics Industry Association, the Refocus Sustainability and Recycling Summit addresses the real-world challenges you face as your company pushes recycled content and sustainable manufacturing from goals and promises to action.

Save the dates for future months...

River Rally
June 4-7th ,Washington, D.C.
Hosted annually by River Network, River Rally provides an inspiring and energy-infused touchpoint for non-profit groups from across the U.S. and beyond, as well as for agency and foundation representatives, industry innovators, philanthropists, academics, students, and community leaders. We bring thought leaders and practitioners together to accelerate progress towards an equitable and sustainable water future. Program highlights include the 10th Annual Urban Waters Learning Forum and a number of sessions on litter management, citizen science, partnerships, and stormwater.

Chesapeake Bay Awareness Week
June 4-12th, various locations around the Bay and virtual
Chesapeake Bay Awareness Week is a time to celebrate the cultures, history and natural beauty of the nation's largest estuary. During the week, there are a wide variety of online and in-person events, volunteer opportunities and social media conversations for everyone to take part in to celebrate the Chesapeake Bay.

Capitol Hill Ocean Week
June 7-9th ,Washington, D.C. and virtual
Capitol Hill Ocean Week (CHOW), hosted by the National Marine Sanctuary Foundation, is a multi-day conference that 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. CHOW 2022 is open to the public and free to attendees. This year's conference will focus on climate change impacts to our ocean, coasts, and Great Lakes, and the communities that rely on them.

Plastic Waste Free World North America Conference and Expo
June 8-9th, Atlanta, GA
The Plastic Waste Free World Conference & Expo is an international conference and exhibition for companies looking for new technologies, materials, and solutions to help realize their plastic waste targets and source the latest innovations driving the new circular economy. The event attracts major

manufacturers, brand owners, retailers, materials experts, circular economy experts, government organizations, NGOs, the recycling industry, and the plastics sector to engage in discussions that will help reduce waste plastic in the environment. Conference tracks include: 1) Eliminating Waste Plastics, 2) Retail and Consumer Goods Packaging, and 3) Fashion and Textiles.

Earth Optimism × Folklife

June 22nd - 26th and June 30th - July 4th, Washington, D.C.

Earth Optimism × Folklife: Inspiring Conservation Communities invites visitors to explore the possibilities and solutions that address some of our planet's most significant challenges through new ways of living, learning, and working toward a shared sustainable future. Earth Optimism is a Smithsonian movement that focuses on changing the narrative from doom-and-gloom to hope, inspiring action and mobilizing a global community. One of the themes is "Coastal Connections."

UN Ocean Conference 2022

June 27th - July 1st, Lisbon, Portugal

The United Nations Ocean Conference, co-hosted by the Governments of Kenya and Portugal, will mobilize action around science-based innovative solutions aimed at starting a new chapter of global ocean action. Solutions for a sustainably managed ocean involve green technology and innovative uses of marine resources. Topics also include addressing the threats to health, ecology, economy and governance of the ocean - acidification, marine litter and pollution, illegal, unreported and unregulated fishing, and the loss of habitats and biodiversity.

National Working Waterfront Network Conference

July 19th - 21st, Boston, MA

The National Working Waterfront Network's Conference is the only national event that brings together people from across North America to connect with one another and showcase initiatives that protect and promote working waterfronts. The purpose of this conference is to unite stakeholders and initiate innovative, successful, and timely solutions to waterfront and waterway issues. Working waterfronts include waterfront lands, waterfront infrastructure, and waterways that are used for water-dependent activities, such as ports, marinas, small recreational boat harbors, and fishing docks.

International Conference on Plastic Recycling and Waste Management

July 21st - 22nd, Rome, Italy

The International Conference on Plastic Recycling and Waste Management aims to bring together leading academic scientists, researchers and research scholars to exchange and share their experiences and research results on all aspects of Plastic Recycling and Waste Management. It also provides a premier interdisciplinary platform for researchers, practitioners, and educators to present and discuss the most recent innovations, trends, and concerns as well as practical challenges encountered and solutions adopted in the fields of Plastic Recycling and Waste Management.

24th Biennial Conference on the Biology of Marine Mammals

August 1st - 5th, West Palm Beach, FL and virtual

The Society for Marine Mammalogy (SMM) holds its conference every two years to promote science, collaboration, and improve the quality of research on marine mammals around the globe. SMM2022 is a hybrid conference under the theme, "A Sea Change: Transforming Science into Stewardship." The conference will highlight the value of diversity in all forms in marine mammal science, from our multidisciplinary approaches to the improvement of diversity in our field.

NAWM Annual State/Tribal/Federal Coordination Meeting

August 15-19th, Shepherdstown, WV

The National Association of Wetland Managers (NAWM) is hosting their annual coordination meeting focusing on "Protecting Waters in a Time of Rapid Change." The purpose of this annual meeting is to support state and tribal wetland program managers and other wetland professionals as they respond to challenges in the coming year. Focus areas for this year's meeting include: Engaging Under-resourced Communities in Wetland Protections, Continuity and Mentorship for Staffing Changes, Finding Funding for Climate Resiliency, Recent Regulatory Changes and Updates, Advances in Tools and Technology, and Effective Outreach and Communications.

World Water Week

August 23rd - September 1st, Stockholm, Sweden and virtual

World Water Week is the leading annual event on global water issues, organized by Stockholm International Water Institute since 1991. Together with organizations from all sectors and all regions of the world, we find solutions to the world's greatest water-related challenges. Within the overall theme of "Seeing the unseen: The value of water", conference sessions will be grouped under three theme headings: the value of water for people and development, the financial and economic value of water, and the value of water for nature and climate change.

In case you missed it...

Plastic Credits and Its Applicability in Latin America

In 2018, approximately one-third of the waste generated in Latin America and the Caribbean, equivalent to 145,000 tons per day (including at least 17,000 tons of plastic waste), was sent to open dumps. The inadequate disposal is estimated to affect over 170 million people. Plastic credit is a novel concept that allows financial leverage for social projects that seek to reduce plastic pollution. This WasteWise webinar provided an understanding of the concept and gives insight into a few successful projects in the region.

Tackling Plastics in Small Island Developing States (SIDS)

Implementing Sustainable Low and Non-Chemical Development in Small Islands Developing States (ISLANDS) Programme hosted this webinar to share experiences in tackling plastics and discuss joining the New Plastics Economy Global Commitment. The webinar helped facilitate knowledge exchange by highlighting existing solutions to turning the tide on plastics in SIDS.

Plastics: Earth's Super Polluters

Watch Tackling the A-Z Impacts of Plastics and Beyond Plastics' national organizing director, Alexis Goldsmith, provide a briefing on a recent report detailing the major climate impacts from plastics' production, usage, and end of life. Next, BJ McManama from Indigenous Environmental Network explains the impacts of the petrochemical industry on the health and well-being of communities. Paulita Bennett-Martin from Oceana also provides an update on the Break Free From Plastic Pollution Act.

The Microplastics Breakdown

HUMAN EXPOSURE AND IMPACTS

Detection of microplastics in human lung tissue using μFTIR spectroscopy

Lauren C. Jenner, Jeanette M. Rotchell, Robert T. Bennett, Michael Cowen, Vasileios Tentzeris, Laura R. Sadofsky

This study analyzed 13 human lung tissue samples using μFTIR spectroscopy to detect and characterize any microplastics (MPs) present. MPs were identified in 9 of the 11 lung samples and MP levels were significantly higher than the controls. Of the MPs detected, 12 polymer types were identified with polypropylene (23%), polyethylene terephthalate (18%) and resin (15%). MPs with dimensions as small as 4 μm but also >2 mm were identified within all lung region samples, with the majority being fibrous and fragmented. Significantly higher levels of MPs were detected in the lower region compared with the upper and mid lung regions. The authors described this this study as the first to report MPs within human lung tissue samples using μFTIR spectroscopy; and the findings support human inhalation as a route of environmental exposure. The knowledge that MPs are present in human lung tissues can now direct future cytotoxicity research to investigate any health implications associated with MP inhalation.

Discovery and Quantification of Plastic Particle Pollution in Human Blood

Heather A. Leslie, Martin J. M. van Velzen, Sicco H. Brandsma, A. Dick Vethaak, Juan J. Garcia-Vallejo, Marja H. Lamoree

The goals of this study are described as developing a robust and sensitive sampling and analytical method with double shot pyrolysis - gas chromatography/mass spectrometry and applying it to measure plastic particles ≥700 nm in human whole blood from 22 healthy volunteers. The authors reported that four polymers applied in plastic were identified and quantified for the first time in blood. Polyethylene terephthalate, polyethylene and polymers of styrene were the most frequently occurring, followed by poly (methyl methacrylate). The authors described this study as a pioneering human biomonitoring study, which demonstrated that plastic particles are bioavailable for uptake into the human bloodstream. According to the study, this indicates that at least some of the plastic particles humans come in contact with can be bioavailable and that the rate of elimination or transfer to and deposition in organs is slower than the rate of absorption into the blood. Human risk assessment was described as requiring measured internal exposure data, which must be empirically collected. Without such measured exposure data, the study asserted, no absorption models can be validated and no statements about risk or no risk can be made. The authors pointed out that it remains to be determined whether plastic particles are present in the plasma or are carried by specific cell types (and to what extent such cells may be involved in translocating plastic particles across mucosa to the bloodstream).

Presence of Microplastics in Commercial Canned Tuna

Milene F. Diaz-Basantes, David Nacimba-Aguirre, Juan A. Conesa, Andres Fullana

This study's goal was to determine the presence of synthetic polymeric microparticles in samples of canned tuna. Four brands of tuna among the most common consumer brands marketed in Ecuador, canned both in water and oil were analyzed. A total of 32 cans were analyzed: 16 in water and 16 in oil. All of the samples were found to contain MPs with a significantly greater presence being observed in water-soaked tuna compared to oil-soaked tuna. Random samples of the liquid covering the tuna fish in the cans showed 6 MPs/mL in the case of water and 5 MPs/mL in the case of oil-containing samples. PET, polystyrene and nylon were the most frequently identified MPs present in the samples analyzed and the number of fragments, at more than 200 times higher than the number of fibers, was the most common shape of MPs found. Two possible sources of these MPs were suggested: microparticles ingested by the fish and inputs from the canning process. However, the authors suggested that the industrial process, which also includes contaminated inputs, diffuse more MPs than those present in tuna. Further, they observed that water as a soaking medium causes a greater dissemination of its polluting particles, favored by the temperature of the microbial inactivation process. The authors also pointed out that neither tap water nor ingredients such as vegetable oil are regulated in relation to the presence of MPs and suggested that more studies are necessary so that authorities establish regulations in this regard.

MICROPLASTICS IN SLUDGE AND IN RECYCLING FACILITIES

Mechanical Recycling of Plastic Waste as a Point Source of Microplastic Pollution

Go Suzuki, Natsuyo Uchida, Le Huu Tuyen, Kosuke Tanakaa, Hidenori Matsukam, Tatsuya Kunisued, Shin Takahashie, Pham Hung Viet, Hidetoshi Kuramochi, Masahiro Osako
This study examines the plastic inputs and effluent outputs of three mechanical recycling facilities (MRFs) in Vietnam dealing with electronic, bottle, and household plastic waste. Samples of small plastic flakes, effluent, and environmental water were collected from in and around the facilities in September 2019. Additionally, effluent samples were collected directly from the wastewater generated during wet-milling, washing, or water-quenching of extruded plastics; from the drainage side-ditches into which the effluents were discharged; and from downstream rivers and a marsh into which the drainage side-ditches flowed. Large quantities of MPs were found to have been generated and released to the aquatic environment during mechanical recycling without proper treatment. Although the facilities were not found to have released large amounts of effluent, the effluents, particularly those from the facilities milling the plastic waste, were found to have contained high concentrations of MPs. In addition, MPs of buoyant polymers with the potential for long-range environmental transport and of more dense polymers with the potential for accumulation in sediment were observed. The authors concluded that their findings suggested that MRFs without wastewater treatment may be major point sources of MP pollution. The results were compared with existing literature for MPs in wastewater treatment plant effluents and surface water. According to the authors, with mechanical recycling likely to increase as countries move to a circular plastics economy, greater MP emissions can be expected. As a result, the authors assert that there is an urgent need to fully understand not only the scale of MP generation and release from plastic mechanical recycling, but also the environmental risk posed by MPs in the aquatic environment.

Occurrence of Microplastics in Waste Sludge of Wastewater Treatment Plants: Comparison between Membrane Bioreactor (MBR) and Conventional Activated Sludge (CAS) Technologies
Gaetano Di Bella, Santo Fabio Corsino, Federica De Marines, Francesco Lopresti, Vincenzo La Carrubba, Michele Torregrossa, Gaspare Viviani
This study examines the presence of MPs in the sludge of three wastewater treatment plants (WWTPs). The selected WWTPs were all full-scale plants treating domestic wastewater, located in Sicily in the south of Italy. All of the WWTPs were served by combined sewer systems and were operated based on a conventional activated sludge (CAS) process, with or without primary clarification, and a membrane bioreactor process (MBR). The first WWTP (W1), was described as being configured according to a classical treatment scheme. The second WWTP (W2), was similar to W1, but did not include primary clarification in the water line or a centrifuge for the sludge dewatering process. The third WWTP (W3) implemented a MBR process. Sludge samples were collected from each of WWTPs between April and June 2021. MPs were found in all of the samples. Overall, the concentrations of MPs with sizes lower than 1 mm were significantly greater (98%) than that of size between 1–5 mm. The authors theorized that the lower abundance of larger size MPs in the waste sludge of all the three WWTPs could be attributed to the removal of these particles by the screening and grit removal processes. MPs mainly consisted of fragments in W1 and W2. The overall abundance of MPs in W3 was almost double the amount of the other plants, which both employed CAS. Fibers were found to be the predominant shape in W3 but it was also found to have a greater diversity in MPs composition, with the percentage of MP shapes more evenly distributed. The authors attributed this to the possibility that MBR can entrap all the particles within the sludge independent of their shapes. The authors found that their study confirmed that MPs from wastewater are transferred and concentrated in waste sludge.

MICROPLASTICS IN THE AIR

Plastic in the Air?! - Spider Webs as Spatial and Temporal Mirror for Microplastics including Tire Wear Particles in Urban Air
Isabel Goßmann, Rebecca Süßmuth, Barbara M.Scholz-Böttcher
This study included the observation that spider webs have been suggested as a cheap and easily accessible biomonitor particularly for inorganic contaminates. The authors explored the use of spiderwebs in

Odenburg, a mid-sized German city, to gain insights in the spatial and temporal trends of MP in urban air. Spiderwebs were collected from the top corners of semi-covered bus stops where the authors observed that there were little to no leaves and sand present. Samples were then processed and the number of MPs were measured using pyrolysis-gas chromatography-mass spectrometry for specific, polymer related indicator compounds. All samples were found to contain tire wear particles (TWP) and other MPs. The dominant polymer was C-PET, which the authors asserted were most likely derived from textile fibers. Bus related textiles (seat cushion abrasion), public passenger's clothing, and laundry dryer discharge-air from housings in vicinity to the bus stop are the most plausible origins of these fibers. The TWP content was found to be highly variable and ranged from 5% to almost 80% of the total quantified plastic mass load. Within TWP, car tire treads were found to be always predominant while the levels of truck tire treads varied between sampling points. Correlations were found between the TWP levels and the traffic conditions of the respective sampling locations: higher levels of TWP were found in samples collected near to the arterial road where there was enhanced braking and acceleration processes due to high traffic volumes and traffic lights. In the residential area where speeds ranged from 30 to 50 km per hour and there was an absence of traffic lights and low traffic volume, there was reduced tire abrasion and decreasing TWPs shares.

Thousands of Tons of Air Pollution Could be Cut by Changing How We Dry Clothes

April 7, 2022, University of Northumbria, The Science Blog

This post summarized a study conducted by researchers from Northumbria University in partnership with scientists at Procter & Gamble, published in the scientific journal *PLOS ONE*. The main finding was the use of fabric conditioners and dryer sheets, especially in combination, could significantly reduce microfiber release from tumble dryers. The study also reported that lint filters with smaller pores would trap larger masses, which resulted in far fewer microfibers being released into the air, and that lint filters were better at capturing polyester fibers than cotton fibers. Consequently, most microfibers released into the air by dryers were likely thought to be cotton. The post observed that, while extensive research has been carried out into the quantities of microfibers released down the drain by washing machines, far less is understood about the release from tumble dryers. Notably, recent analyses have found that washing laundry could release as much as a million tons of microfibers annually worldwide, which poses potential risks to aquatic ecosystems.

MICROPLASTICS IN RIVER SYSTEMS

Dams As Potential Sinks of Microplastics in River Systems

Joanne Ogunah University of Embu, presented at the Egerton University's 14th Biennial International Research Conference held from March 23rd -25th, 2022.

This study measured the abundance of MPs in surface waters and sediments in four dams in Kenya that serve as reservoirs for Kathita Stream, a tributary to River Rupingazi. Samples were collected from trawling off the surface waters and from sediments in four sites for each dam. MPs were identified in all the dams, with levels ranging from 0.12 ± 0.09 to 0.34 ± 0.12 items/m^2 of MPs in surface waters. The level of MPs was found to be significantly higher in the surface waters and sediments within all the dams as compared to sediments from above the dams. Fibers were the most abundant MPs shape in the dams' surface waters and in the sediments. According to the author, the study results demonstrated that sediments in dams are potential sinks for MPs for river systems in the long run, which highlights the importance of including such reservoirs when monitoring MPs in riverine systems.

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