

OUTREACH MATERIALS FOR A GENERAL AUDIENCE



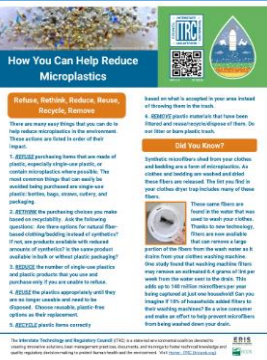

For the purposes of this microplastics toolkit, we have defined a general audience as adults with a non-science background, as well as K-12 teachers and educators. However, because of their general nature, the materials in this section can be used with almost any audience.

Information provided to general audiences needs to be introductory and use plain language. Text that describes the big picture generally works well. More detailed information can be incorporated by inserting references and links to additional resources.

Types of Materials for a General Audience

Fact Sheets

The goal of a fact sheet is to introduce a topic. Sometimes fact sheets may inspire readers to seek additional information and to do their own research. Many fact sheets have links to additional resources for readers to obtain more information. The fact sheets provided below can be used either in their single-sided, one-page format or mixed and matched to create double-sided two-page fact sheets. Additionally there is a [list of curricula and resources for K-12 educators](#). Please see the [index](#) for the full list of outreach materials created for all audiences.

 <p>Microplastics: The Basics You Need to Know</p> <p>What are Microplastics?</p> <p>Microplastics are plastic particles that are greater than 1 micrometer (µm) and less than 5 mm. Microplastics come from a variety of uses and go to the diameter of a strand. This definition includes nanoparticles, which range from 1 nm to 100 nm.</p> <p>Why are Microplastics a Problem?</p> <p>Microplastics have the potential to harm humans and the environment. Microplastics have been found in food, water, air, and even in our bodies. They can also harm wildlife and marine life.</p> <p>How Do Microplastics Get into the Environment?</p> <p>Microplastics can enter the environment from many sources, including:</p> <ul style="list-style-type: none"> Consumer products, such as toothbrushes, face wash, and shampoo. Microplastic-containing consumer products, such as tires, paint, and plastic mulch. Microplastic-containing consumer products, such as tires, paint, and plastic mulch. 	 <p>Sources of Microplastics</p> <p>Breakdown of Larger Plastics</p> <p>Plastics are broken down into smaller pieces through weathering, mechanical wear, and fragmentation. These smaller pieces are then broken down into even smaller pieces, which are then broken down into even smaller pieces.</p> <p>Wastewater Treatment Plant Discharges</p> <p>Wastewater treatment plants (WWTPs) are designed to remove pollutants from wastewater. However, they are not designed to remove microplastics. As a result, microplastics can be discharged into the environment.</p> <p>Plastic Manufacturing</p> <p>Plastic manufacturing is a major source of microplastics. Microplastics are released during the production process, including from machinery, dust, and scrap.</p> <p>Consumer Products</p> <p>Many consumer products contain microplastics. These include:</p> <ul style="list-style-type: none"> Personal care products, such as toothpaste, face wash, and shampoo. Household products, such as cleaning products and floor wax. Automotive products, such as tires and brake pads. <p>Paint and Household Products</p> <p>Paints and other household products can contain microplastics. These include:</p> <ul style="list-style-type: none"> Paints, which contain microplastic pigments. Household products, such as floor wax and car wax. 	 <p>How You Can Help Reduce Microplastics</p> <p>Reduce, Reuse, Recycle, Repair, Reuse, Recycle, Reuse</p> <p>There are many ways you can help reduce microplastics in the environment. These include:</p> <ol style="list-style-type: none"> 1. Reduce: Buy products with less plastic. Avoid single-use plastics. 2. Reuse: Use reusable water bottles and coffee cups. 3. Recycle: Recycle plastic bottles and containers. 4. Repair: Repair items instead of throwing them away. 5. Reuse, Recycle, Reuse: Reuse, recycle, and reuse again. <p>Do You Know?</p> <p>Microplastics are found in many places, including in the air, water, and soil. They can also be found in our bodies.</p>	 <p>Microplastic Resources for Educators</p> <p>What are Microplastics?</p> <p>Microplastics are plastic particles that are greater than 1 micrometer (µm) and less than 5 mm. Microplastics come from a variety of uses and go to the diameter of a strand. This definition includes nanoparticles, which range from 1 nm to 100 nm.</p> <p>Let's Learn Together!</p> <p>The science surrounding microplastics is new and rapidly evolving. As a result, there are still many questions about microplastics. Addressing these questions requires collaboration between the scientific community, academic institutions, and the general public.</p> <p>Why Do We Care About Microplastics?</p> <p>Microplastics are found in many places, including in the air, water, and soil. They can also be found in our bodies. This is a concern because microplastics can harm humans and the environment.</p> <p>How Can We Help?</p> <p>There are many ways we can help reduce microplastics in the environment. These include:</p> <ul style="list-style-type: none"> 1. Reducing the use of single-use plastics. 2. Reusing items instead of throwing them away. 3. Recycling plastic bottles and containers.
<p>Microplastics: The Basics You Need to Know Fact Sheet</p>	<p>Sources of Microplastics Fact Sheet</p>	<p>How You Can Help Reduce Microplastics Fact Sheet</p>	<p>Microplastics Resources for Educators Fact Sheet</p>

<p>Sources of Microplastics Graphic</p>	<p>Microplastics Are Everywhere Graphic</p>	<p>Today's Plastics Are Tomorrow's Microplastics Graphic</p>	<p>Tired of Plastics Graphic</p>
<p>Help Keep Microplastics Out of Your Body Graphic</p>	<p>Microplastics are in Creatures Great and Small Terrestrial Graphic</p>	<p>Microplastics are in Creatures Great and Small Aquatic Graphic</p>	<p>Microplastics are in Creatures Great and Small Avian Graphic</p>
<p>Microplastics are in Creatures Great and Small (and Deep) Graphic</p>			

Social Media Materials

Social media posts are designed to be succinct and grab people's attention. Asking a question, including photos or graphics, or providing facts/figures can be effective for reeling in interest. See the "[Tips for Using Social Media](#)" for more information.

Example Key Messages with Associated Social Media Posts

Ideally, social media posts ([Figure 3](#)) should be tied to the key messages you would like to communicate to your audience. Key messages can be used to succinctly communicate the concepts to a target

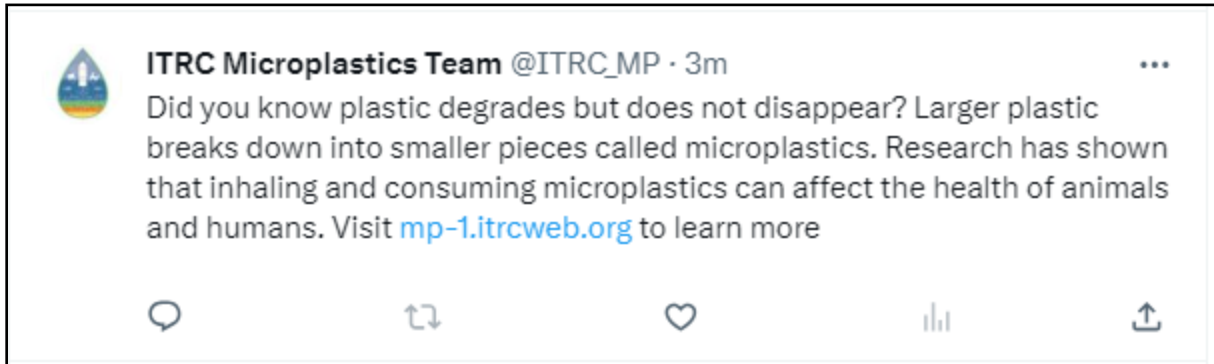


Figure 3. Example of an X (Twitter) post.

Source: ITRC Microplastics Team

audience using a mapped message process. This process is described in more depth in [Section 4.5](#) of [ITRC's Risk Communication Toolkit](#). In general, the goal is to create a mapped message that provides three components of the key message in 27 words or less and begins with posing a question. An example of the process using the message "Microplastics are everywhere" and three related facts is shown in [Table 1](#).

Table 1. Message map for "Microplastics are Everywhere"

Audience: General	Question/Concern/Issue: Microplastics are Everywhere	
Key Message/Fact 1: In the environment.	Key Message/Fact 2: In things we ingest.	Key Message/Fact 3: In your body.
Key Words/Supporting Fact 1.1: Found on mountain peaks.	Key Words/Supporting Fact 2.1: Found in fish tissue.	Key Words/Supporting Fact 3.1: Found in blood.

Key Words/Supporting Fact 1.2: Found in the deep sea.	Key Words/Supporting Fact 2.2: Found in salt.	Key Words/Supporting Fact 3.2: Found in lungs.
Key Words/Supporting Fact 1.3: Found in the air.	Key Words/Supporting Fact 2.3: Found in bottled water.	Key Words/Supporting Fact 3.3: Found in meconium (baby's first poop).

A key message that can be created from this message map is:

"Microplastics are everywhere, from mountain peaks to ocean depths, and even in the human body due to their presence in the food and water we ingest." (26 words)

[Table 2](#) lists several key messages related to microplastics and an associated social media post.

Table 2. Key messages and associated social media posts

*If using a URL, please note that an additional 23 characters will be included in your total character count for X (Twitter).

Key Message	Example Social Media Post	Character Count
Microplastics are everywhere	Microplastics—tiny plastic particles—are everywhere. Plastics break down into tiny particles called #microplastics. Microplastics are found in air, drinking water, surface waters, and food that humans consume. Microplastics can move through the food chain and carry chemical additives. https://mp-1.itrcweb.org/introduction/	290 characters + 23 for URL = 313
Today's plastics are tomorrow's microplastics	Microplastics have accumulated on the planet since the 1950s. Industrial products and breakdown of larger plastics have led to smaller pieces getting into surface water, air, soil, organisms, and people's food. Explore routes of exposure – https://mp-1.itrcweb.org/human-health-and-ecological-effects/	240 characters + 23 for URL = 279
Microplastics are found in creatures great and small	After being thrown away, plastic products break down into smaller pieces called #microplastics. They get into the food chain and fish, wildlife, and eventually humans eat them. By buying less plastic you can prevent it from getting into the environment. https://mp-1.itrcweb.org/environmental-distribution-fate-and-transport/	254 characters + 23 for URL = 282

<p>Regulating microplastics is complex</p>	<p>Regulating #microplastics is complex. This is a global issue that cannot be tackled by a single country. Plastics have many beneficial uses and cannot be eliminated entirely. Follow the #UNPlasticsTreaty for ongoing global actions. https://www.unep.org/inc-plastic-pollution</p>	<p>232 characters + 23 for URL = 255</p>
<p>I can do something to reduce plastics in the environment</p>	<p>Remember the 6 Rs of #microplastic reduction – 1. REFUSE single-use plastics, 2. RETHINK clothing, 3. REDUCE use of single-use plastics, 4. REUSE plastics as you can, 5. RECYCLE what is left, and 6. REMOVE plastic litter. Learn why to change habits at https://mp-1.itrcweb.org/introduction/.</p>	<p>254 characters + 23 for URL = 277</p>
<p>Society can do some things to reduce microplastics in the environment</p>	<p>Tires hit the road, so do microplastics! Tires degrade into #tirewearparticles due to friction over time. Maintain the correct tire pressure, avoid sharp braking or acceleration, and reduce vehicle load to minimize the amount of #microplastics released into the environment. https://mp-1.itrcweb.org/appendix-a/#a_5</p>	<p>274 characters + 23 for URL = 295</p>

Images for Use in Social Media

Social media posts are generally more eye-catching and effective when they are accompanied by an image. To help ensure that they are as attention-grabbing as possible, your images should be sized and shaped appropriately for the platform. Keep in mind that each social media platform has slightly different recommendations for image size and aspect ratio (Figure 4).




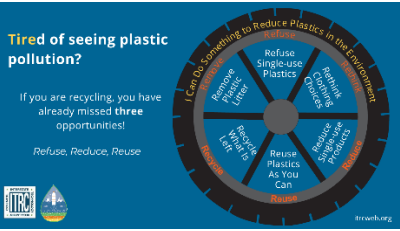


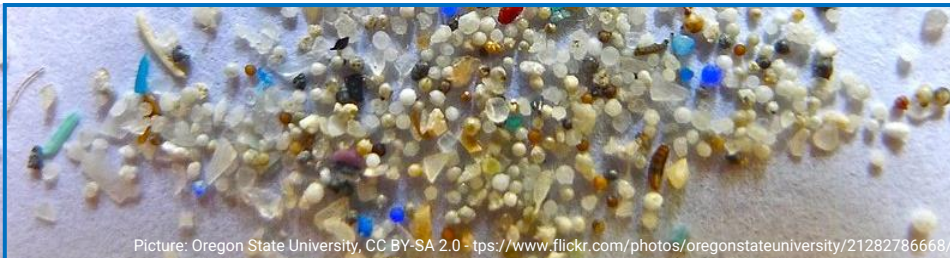
Figure 4. An example of an X (Twitter) post using a microplastics graphic.

Source: ITRC Microplastics Team

Many of the images in this toolkit can be used in social media posts. As an example, [Table 3](#) presents one image that has been resized and optimized for different social media platforms.

Table 3. Examples of graphics formatted for different social media platforms.

 <p>The graphic features a blue background with the ITRC logo in the top left. The main text reads: "Tired of seeing plastic pollution? If you are recycling, you have already missed three opportunities! Refuse, Reduce, Reuse". On the right is a circular infographic with segments for Refuse, Reduce, and Reuse, each with specific actions like "Refuse Single-use Plastics", "Recycle Plastic Litter", and "Reuse Plastics As You Can". The ITRC logo and website URL "itrweb.org" are in the bottom right.</p>	<p>LinkedIn header</p> <p>Image formatted for use as a header on a LinkedIn page.</p> <p>Size: 1584 x 396 pixels</p> <p>Aspect ratio: 4:1</p>
 <p>The graphic is a square with a blue background. It includes the ITRC logo and the text: "Tired of seeing plastic pollution? If you are recycling, you have already missed three opportunities! Refuse, Reduce, Reuse". The circular infographic is centered, showing the same Refuse, Reduce, and Reuse categories with their respective actions.</p>	<p>Facebook Post</p> <p>Image optimized for use in a Facebook post.</p> <p>Size: 1200 x 630 pixels</p> <p>Aspect ratio: 1.91:1</p>
 <p>The graphic is a square with a blue background. It includes the ITRC logo and the text: "Tired of seeing plastic pollution? If you are recycling, you have already missed three opportunities! Refuse, Reduce, Reuse". The circular infographic is centered, showing the same Refuse, Reduce, and Reuse categories with their respective actions.</p>	<p>Instagram Post</p> <p>Image optimized for use in an Instagram post.</p> <p>Size: 1080 x 1080 pixels</p> <p>Aspect ratio: 1:1</p>
 <p>The graphic is a square with a blue background. It includes the ITRC logo and the text: "Tired of seeing plastic pollution? If you are recycling, you have already missed three opportunities! Refuse, Reduce, Reuse". The circular infographic is centered, showing the same Refuse, Reduce, and Reuse categories with their respective actions.</p>	<p>X (Twitter) Post</p> <p>Image optimized for use in an X (Twitter) post.</p> <p>Size: 800 x 418 pixels</p> <p>Aspect ratio: 1.91:1</p>



Picture: Oregon State University, CC BY-SA 2.0 - [tps://www.flickr.com/photos/oregonstateuniversity/21282786668/](https://www.flickr.com/photos/oregonstateuniversity/21282786668/)



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Microplastics: *The Basics* You Need to Know

What Are Microplastics?

Microplastics are plastic particles that are greater than 1 nanometer (nm) and less than 5 millimeters (smaller than a strand of DNA and up to the diameter of a straw). This definition includes nanoplastics, which range from 1 nm to 1,000 nm.

What Are Sources of Microplastics?

Microplastics may be intentionally added to consumer products (like body wash/cosmetics, toothpaste, etc.), released during product use and care (synthetic clothes, tires, paint, etc.), released during plastic manufacturing, and may result from the breakdown of larger plastics into smaller pieces.

How Do Microplastics Get into the Environment?

Microplastics can enter the environment when:

- Consumer products, such as tires, cigarette butts, paint, or any synthetic clothing, break down.
- Larger plastic materials are improperly disposed and break down into smaller pieces.
- Microplastic-containing sewage sludge (biosolids) from wastewater treatment plants is applied to agricultural fields as fertilizer.
- Improperly stored plastic materials from industrial processes get into the air and

wastewater discharges or are spilled into surface water bodies.

- Rain and stormwater collect microplastics from the ground and carry them into water bodies.
- Plastic pollution in the ocean breaks down.

Why Should You Care?

Microplastics can be ingested and inhaled. They can carry pollutants and harmful chemicals that can lead to potential adverse effects in animals, plants, and humans. Microplastics have been detected in several human tissues, including lungs, placenta, blood, and breast milk, although the health effects remain uncertain.

What Can You Do?

- Purchase nonplastic alternatives.
- Replace single-use products—water bottles, bags, straws, etc., with reusable versions.
- Buy sustainable, synthetic-free clothing such as cotton, linen, etc.
- Check for ingredients such as polyethylene and polypropylene in personal care products.
- Recycle or dispose of plastics correctly.
- Spread the word and support initiatives about the importance of reducing plastics.



Picture: Oregon State University, CC BY-SA 2.0 - [tps://www.flickr.com/photos/oregonstateuniversity/21282786668/](https://www.flickr.com/photos/oregonstateuniversity/21282786668/)



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Sources of Microplastics

Breakdown of Larger Plastics

Plastics in bottles and bags, cigarette butts, packaging materials, human-made fibers in textiles, larger pieces of consumer products, balloons, plastic utensils, and similar materials can be improperly disposed and break down in the environment to microplastics.

Plastic Manufacturing

Air and wastewater emissions from factories release plastic to the environment. Spillage and poor handling of raw materials used in plastic production provide sources of microplastics.

Consumer Products

Microplastics are intentionally added to many everyday consumer products, such as cosmetics, paints, toothpastes, cleansers, detergents (pods), and textiles. Washing synthetic clothes and using and rinsing off personal care products sends microplastics to wastewater treatment plants (WWTPs).

Paint and Household Products

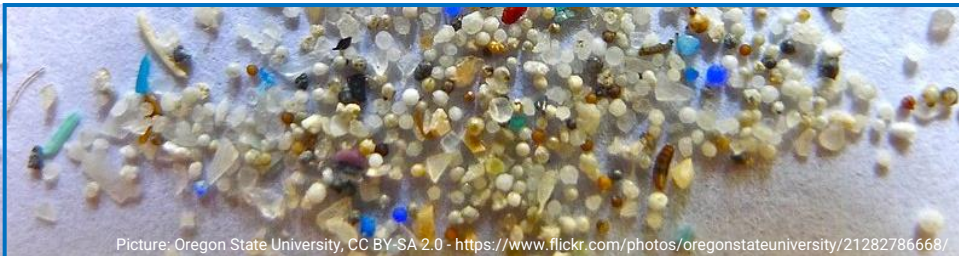
Paint flaking off buildings contributes to microplastics in stormwater. Abrasives, such as sandpaper, commonly have microplastics as a component and are released during construction and maintenance activities.

Wastewater Treatment Plant Discharges

Household waste and industrial sewage can be a source of microplastics to WWTPs. Microplastics can spread when WWTPs release treated water into surface water and groundwater. As part of the treatment process, WWTPs generate nutrient-rich biosolids (sewage sludge), which can contain microplastics. The biosolids can be placed on cropland as fertilizer or in landfills. This can result in microplastics being taken up by crops, sinking into groundwater, and running off into streams after heavy rain or too much irrigation. Sludge disposed in landfills can lead to microplastics leaking into groundwater.

Tire and Road Wear

Tires, and in many instances, road materials and paint markings, contain plastics. Regular use and abrasion releases tire and road particles into the air and roadside soils. Ground-up tires are used for cushioning in some synthetic turf fields, which are made of plastic. Use of those fields, combined with wind and stormwater runoff, allows plastic and microplastics to move through the environment.



Picture: Oregon State University, CC BY-SA 2.0 - <https://www.flickr.com/photos/oregonstateuniversity/21282786668/>

How You Can Help Reduce Microplastics



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Refuse, Rethink, Reduce, Reuse, Recycle, Remove

There are many easy things that you can do to help reduce microplastics in the environment. These actions are listed in order of their impact.

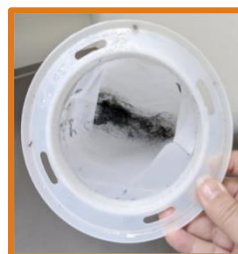
1. **REFUSE**, where possible, to purchase items that are made of plastic, especially single-use plastic, or contain microplastics. The most common things that can easily not be purchased are single-use plastic: bottles, bags, straws, cutlery, and packaging.
2. **RETHINK** the purchasing choices you make based on recyclability. Ask the following questions: Are there options for natural fiber-based clothing/bedding instead of synthetics? If not, are products available with reduced amounts of synthetics? Is the same product available in bulk or without plastic packaging?
3. **REDUCE** the number of single-use plastics and plastic products that you use, and purchase only if you are unable to refuse.
4. **REUSE** the plastics appropriately until they are no longer useable and need to be disposed. Choose reusable, plastic-free options as their replacement.
5. **RECYCLE** plastic items correctly

based on what is accepted in your area instead of throwing them in the trash.

6. **REMOVE** plastic materials that have been littered and reuse/recycle/dispose of them. Do not litter or burn plastic trash.

Did You Know?

Synthetic microfibers shed from your clothes and bedding are a form of microplastics. As clothes and bedding are washed and dried, these fibers are released. The lint you find in your clothes dryer trap includes many of these fibers.



These same fibers are found in the water that was used to wash your clothes. Thanks to new technology, filters are now available that can remove a large portion of the fibers from the wash water as it drains from your clothes washing machine. One study found that washing machine filters may remove an estimated 6.4 grams of lint per week from the water sent to the drain. This adds up to 140 million microfibers per year being captured at just one household! Can you imagine if 10% of households added filters to their washing machines? Be a wise consumer and make an effort to help prevent microfibers from being washed down your drain.



Picture: Oregon State University, CC BY-SA 2.0 - <https://www.flickr.com/photos/oregonstateuniversity/2128278666/>

Microplastic Resources for Educators



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What Are Microplastics?

Microplastics are plastic particles that are greater than 1 nanometer (nm) and less than 5 millimeters (smaller than a strand of DNA and up to the diameter of a straw). This definition includes nanoplastics, which range from 1 nm to 1,000 nm.

Why Do We Care about Microplastics?

Effects on human health are not well understood. Scientists are researching microplastics and their effects on the environment and human health. Microplastics have been found in the air we breathe, the water we drink, and the food we eat. They pose a potential risk to humans and wildlife through exposure to the chemicals in plastic and through physical effects. Learn more at https://mp-1.itrcweb.org/human-health-and-ecological-effects/#4_5.

How Are Humans Exposed?

Humans may consume microplastics from many different sources—in products such as toothpaste that contain microbeads; in drinks stored in plastic bottles; in food that is packaged, stored, and microwaved in plastic; and in water from community water supplies or private wells.

Let's Learn Together!

The science surrounding microplastics is new and rapidly evolving. As a result, we are all working to better understand microplastics—even scientists and regulators. Addressing microplastics requires collaboration between the scientific community, decision makers, and the general public. Learn more at <https://mp-1.itrcweb.org>.

Ideas for K-12 Student Curricula

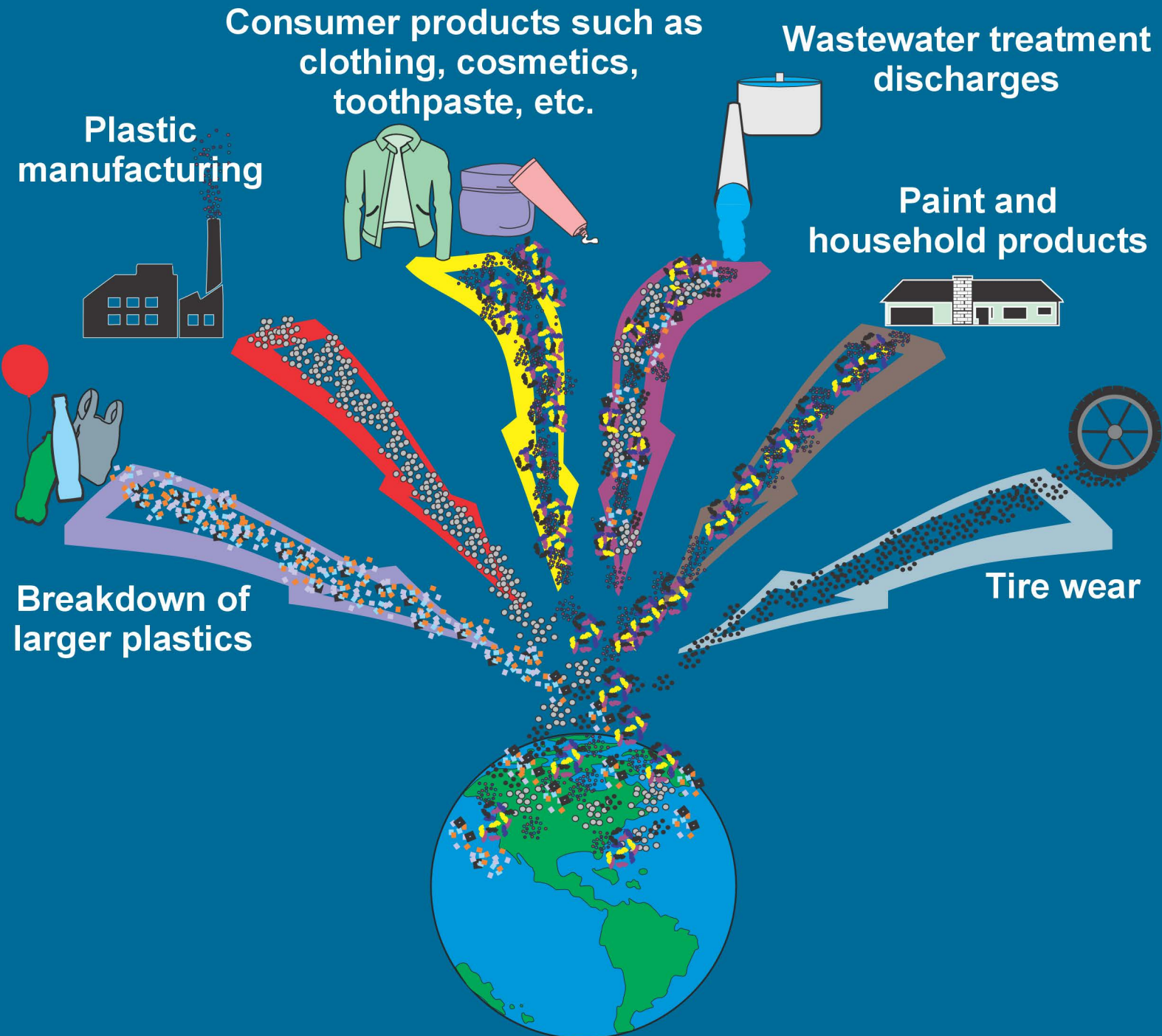
ITRC has compiled a list of curricula, lesson plans, activities, videos, coloring books, and handouts that teachers can use to educate their students about plastics and microplastics. The list can be found at <https://mp-toolkit.itrcweb.org/wp-content/uploads/2024/05/23-K12-Resources-for-Educators.xlsx>.

Here are a few tips for looking for additional sources or for creating your own activity:

1. Use reputable resources such as a college/university or government website. Typically, their educational materials are free and not copyrighted.
2. Use age-appropriate language and examples.
3. Try to incorporate graphics and hands-on activities.



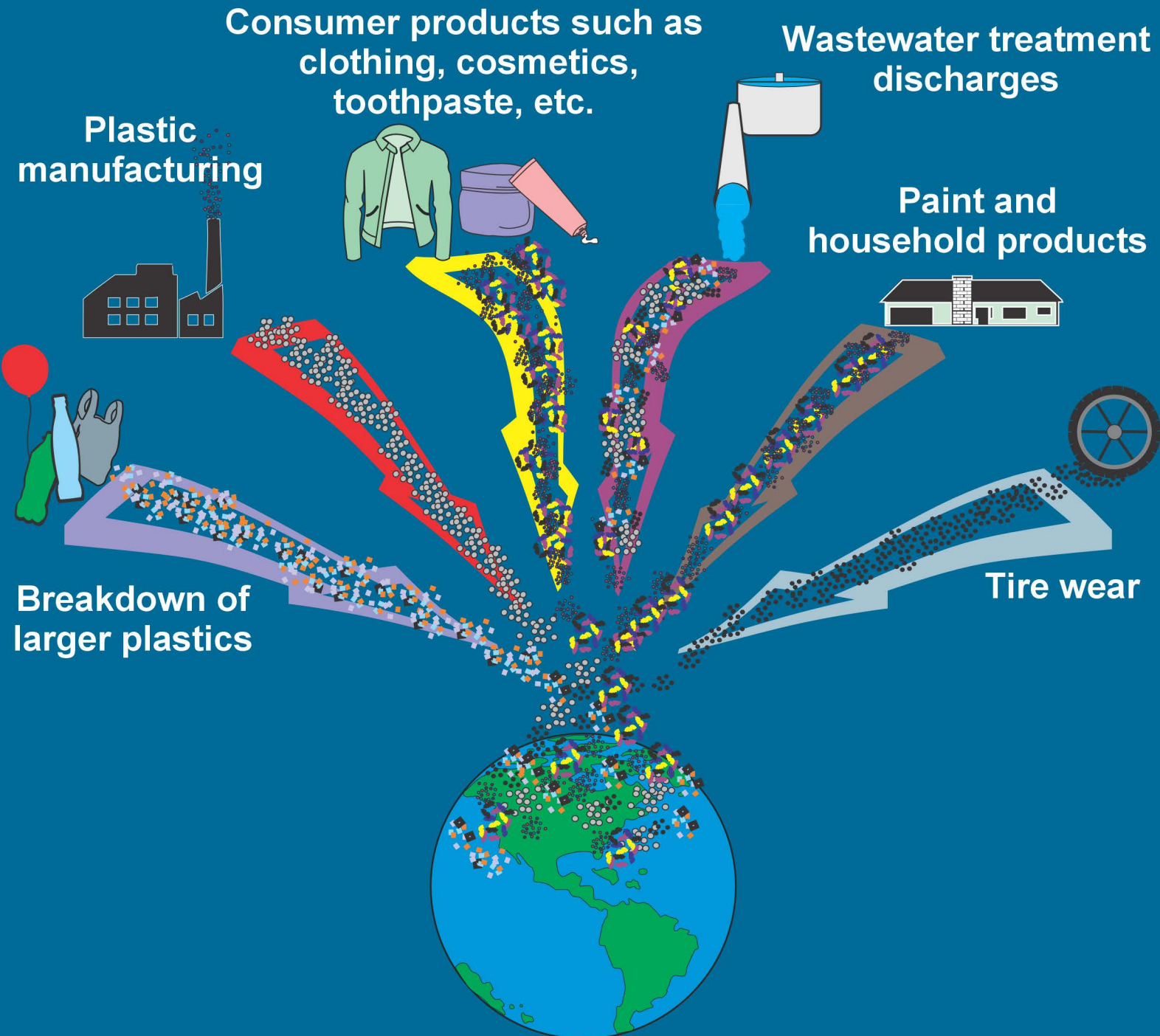
Sources of Microplastics in the Environment



Additional sources of microplastics include artificial turf, playground mats, cigarette butts, burning plastic trash, and more.



Sources of Microplastics in the Environment



Additional sources of microplastics include artificial turf, playground mats, cigarette butts, burning plastic trash, and more.

Microplastics

can be smaller than a strand of DNA, or as large as the diameter of a straw

Microplastics

come from the breakdown of larger plastic and from industrial sources

Microplastics

come from tires, paint, cigarette butts, cosmetics, and clothing

Microplastics

are

Microplastics

are found in lakes, oceans, streams, soil, air, and groundwater

Microplastics

are found in the water we drink, the air we breathe, and the food we eat

Microplastics

are in creatures, great and small, even newborn babies

Everywhere

Microplastics

carry pollutants into the human or animal body

Microplastics

adversely affect animal health and may also affect human health

Microplastics

refuse, rethink, reduce, reuse, recycle and remove them

Prevention





itrcweb.org

Today's plastics ARE TOMORROW'S MICROPLASTICS

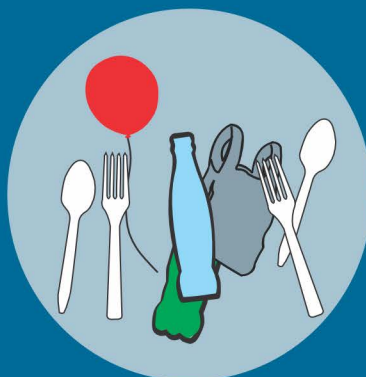


While a plastic item may only be useful to us for minutes, its breakdown in the environment has impacts that may last decades or longer.



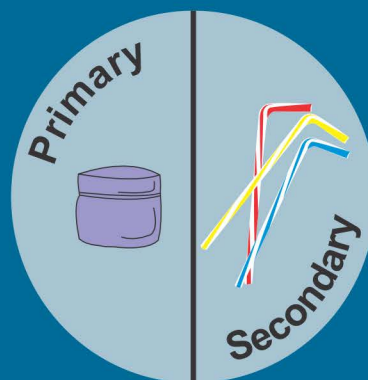
What's happening?

Plastic degrades, but never disappears. Larger plastics break down into microplastics, which are smaller than 5 mm.



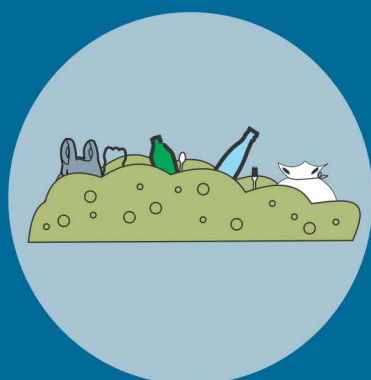
Since when?

Plastics have been accumulating in the environment since production began in the early 20th century.



Categories

Microplastics are divided into primary, such as purposefully added beads in facial scrubs, and secondary, which come from breakdown of larger plastics.



How?

A large portion of microplastics in the environment come from the use and degradation of larger plastics left in the environment or disposed of in landfills.



Next decade

Pew Charitable Trusts estimated a 40% growth in plastics production over the next decade. This will lead to a growth of microplastics in the environment. Use the QR code above to find out how to reduce your plastics use.



Tired of seeing plastic pollution?



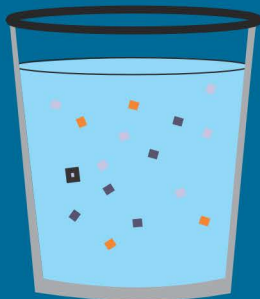
If you are recycling, you have already missed three opportunities!
Refuse, Reduce, Reuse



Help Keep Microplastics Out of Your Body



Have an option on which water to choose?



Water in plastic bottles contains more microplastic than tapwater.

Go with Tap!
Filter if you can.



Microplastics are in Creatures *GREAT* and



small



Learn more at
<https://mp.1.itrcweb.org/>



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Microplastics are in Creatures *GREAT* and *small*



MP-1-11 07/2024

Learn more at https://mp_1.itrcweb.org/



Microplastics are in Creatures

GREAT

and
SMALL

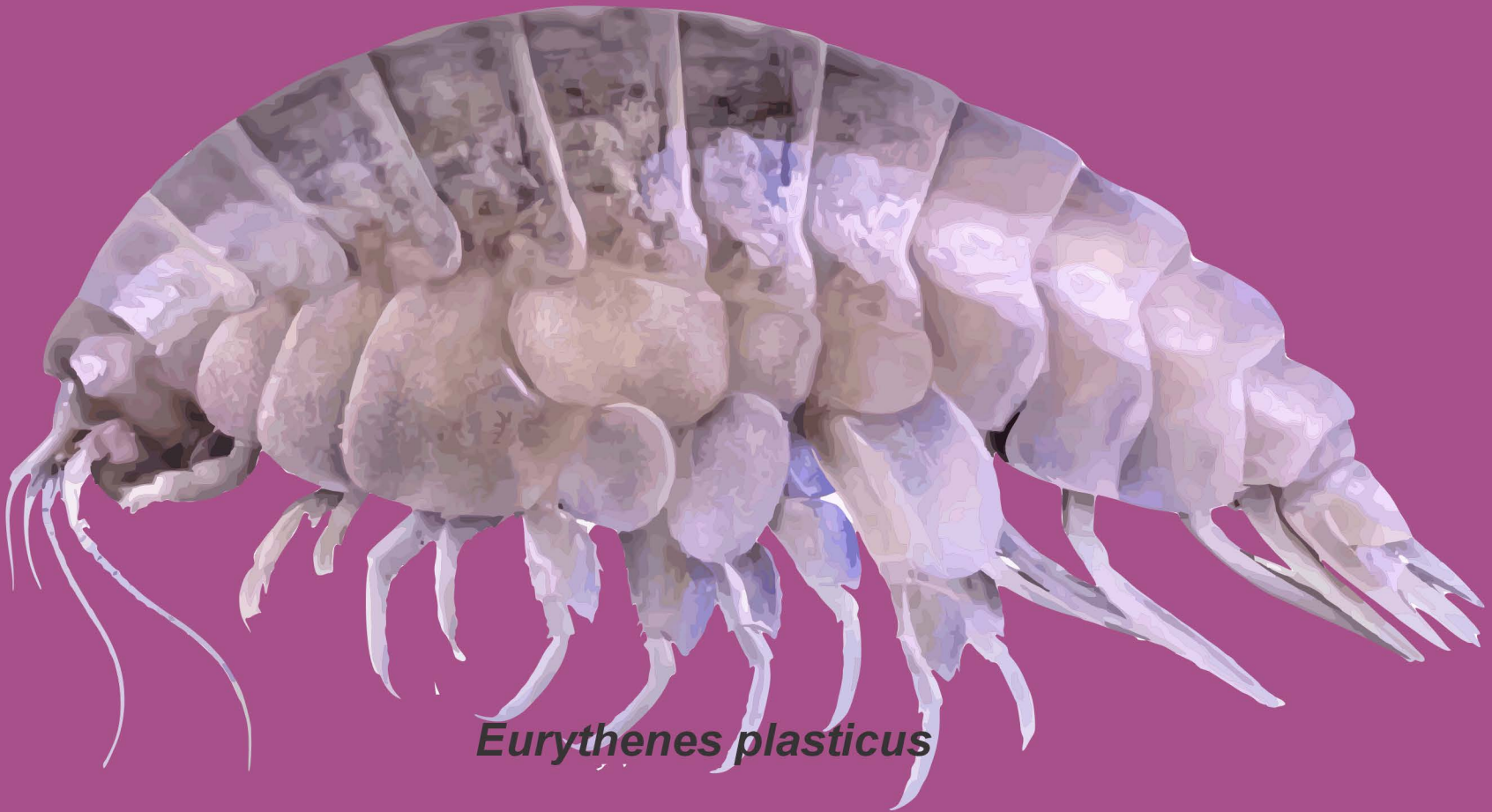


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Learn more at https://mp_1.itrcweb.org/



Microplastics are in Creatures *GREAT* and *small* (and deep)



Eurythenes plasticus

Mariana Trench - 7000 meters



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Learn more at <https://mp.1.itrcweb.org/>



LinkedIn Header

Tired of seeing plastic pollution?

If you are recycling, you have already missed three opportunities!

Refuse, Reduce, Reuse

itrweb.org

Facebook Post

Tired of seeing plastic pollution?

If you are recycling, you have already missed three opportunities!

Refuse, Reduce, Reuse

itrweb.org

Instagram Post

Tired of seeing plastic pollution?

I Can Do Something to Reduce Plastics in the Environment

Remove
Remove Plastic Litter

Refuse
Refuse Single-use Plastics

Rethink
Rethink Clothing Choices

Reduce
Reduce Single-use Products

Reuse
Reuse Plastics As You Can

Recycle
Recycle What Is Left

If you are recycling, you have already missed three opportunities!

Refuse, Reduce, Reuse

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X (Twitter) Post

Tired of seeing plastic pollution?

If you are recycling, you have already missed **three** opportunities!

Refuse, Reduce, Reuse

I Can Do Something to Reduce Plastics in the Environment

Remove Remove Plastic Litter

Refuse Refuse Single-use Plastics

Rethink Rethink Clothing Choices

Reduce Reduce Single-use Products

Reuse Reuse Plastics As You Can

Recycle Recycle What Is Left

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