

Plastic Pollution Primer and Action Toolkit

END PLASTIC POLLUTION
EARTH DAY 2018

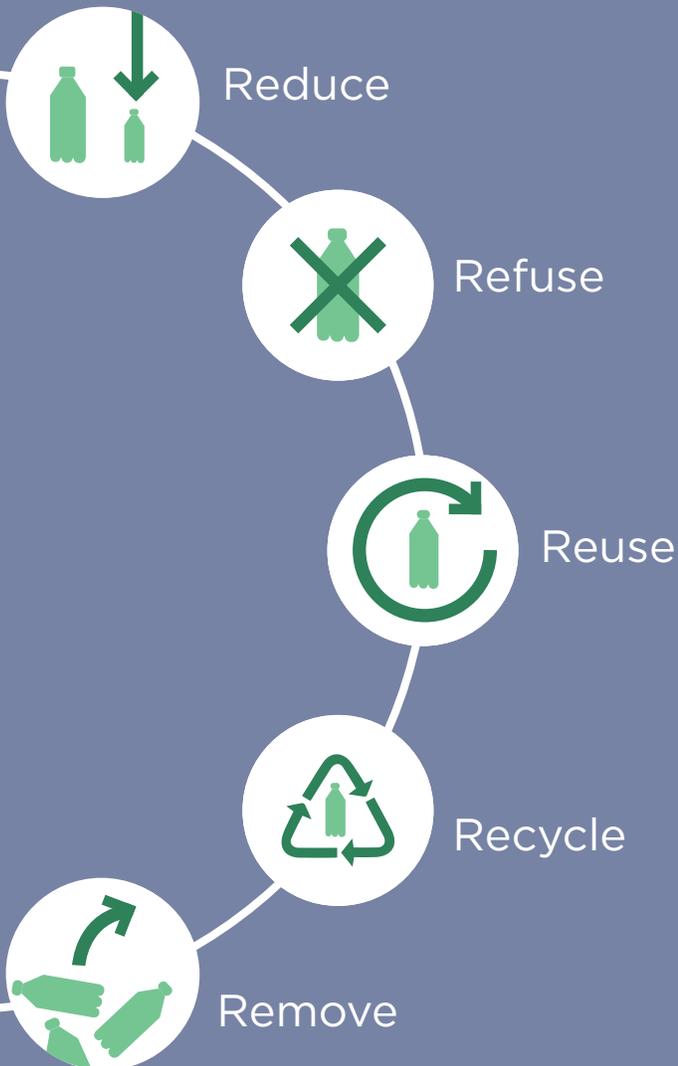


TABLE OF CONTENTS

Introduction	3
The Harmful Side of Plastics	4
Plastic Pollution in the Ocean	9
Microplastics	17
Plastic Pollution and Our Health	21
Plastic Pollution Footprint Calculator	23
Reduce	26
Refuse	30
Reuse	34
Recycle	38
Remove	44
Personal Plastic Reduction Plan	48

Produced by Earth Day Network for the End Plastic Pollution Campaign, 2018

Copyright © 2018 by Earth Day Network all rights reserved. This toolkit was last updated March 7th, 2018.

For more information, email plastic@earthday.org

Designed and prepared by Valeria Merino and David Ayer. Additional writing and support from Chris LeChevet, Rachel Larrivee, Madeleine Ergastolo, and Laura Robledo

Additional resources were created by many others working to fight against plastic pollution. They are given credit and websites referenced when their work was incorporated into this toolkit, though we did not follow strict citation guidelines.

This Toolkit can be copied and disseminated for free as long as the format is not changed, and Earth Day Network is cited or given credit.



Introduction

Plastic pollution is one of the most important environmental problems that we face today. It impacts the environment and our health and wellbeing. We have all contributed to this problem – mostly unknowingly – and we must work to reduce and ultimately to **End Plastic Pollution**.

Earth Day Network is committed to proactively be part of the solution and has created this Plastic Pollution Primer and Action Toolkit to support anyone who wants to contribute too. Our experience of almost 50 years has taught us that people care about their communities and will act to resolve problems when they have access to relevant information and tools to help them.

Through the use of this toolkit you will be able to assess your current consumption of plastics and determine how you as an individual can lower your own plastic pollution impact. This is what we call your plastic pollution footprint. We have included a very simple to use plastic pollution footprint calculator and tracker that will allow you to monitor your progress as you reduce your plastic consumption and help to rid the world of this problem.

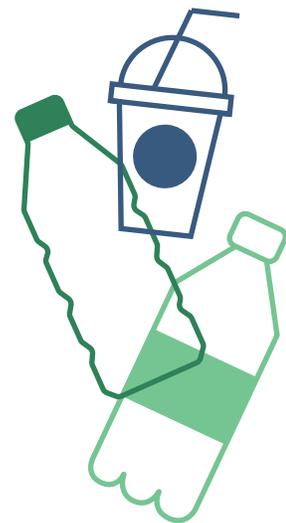
It is important to note that the best behavior when it comes to disposing of plastics varies drastically by location. We have done our best to include advice and recommendations that are applicable across many different contexts and locations, but not all will necessarily be useful to you.

This document is just the initial step to learning about this problem, what you can do and what resources are available to you and your community. The more you talk to others and learn about how your community and city are managing their consumption and disposal of plastics, the better prepared you will be to develop a **Personal Plastic Reduction Plan**.

WHAT DO YOU KNOW ABOUT PLASTIC POLLUTION?

If you have recently walked down city streets, in the country side, or even along a beach on a remote island, you might notice something in common: plastics. Plastics are some of the most commonly littered items in the world and they are drowning our planet.

Is this a real problem, you might ask? Plastics have come to clutter almost every landscape, but they are so useful and have made our lives much easier. We can carry our purchases from the store, stay dry in the rain, store things easily and securely, and preserve perishable food. Plastics are present in furniture, construction materials, cars, appliances, electronics and countless other things. Plastics are everywhere, even in our homes. Just look closely in your refrigerator!



The Harmful Side of Plastics

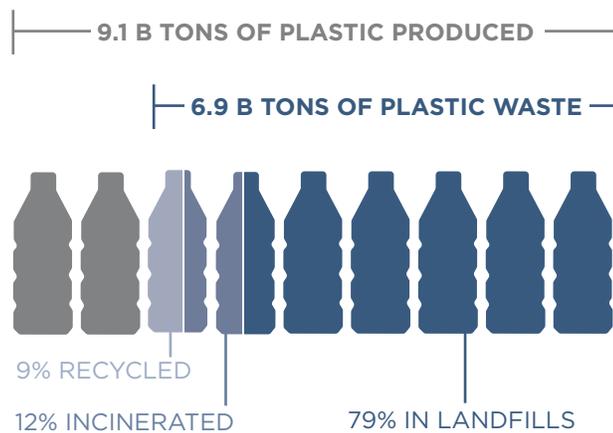
PLASTIC POLLUTION

The invention of plastic in 1907 was considered a breakthrough. Plastic products soon became omnipresent in our daily lives. For many years, we only perceived the benefits of plastic and knew little of the damaging consequences for human health, natural ecosystems and the climate. Plastics are a problem mostly due to their un-biodegradable nature, the materials used for plastic production (hydrocarbon molecules—derived from the refining of oil and natural gas), and the challenges behind properly discarding them.

PLASTIC PRODUCTION

ACCORDING TO AN ARTICLE BY THE BBC:

- 8.3 billion metric tons (9.1 billion US tons) of virgin (non-recycled) plastic has been produced to date.
- Generating 6.3 billion metric tons (6.9 billion US tons) of plastic waste.
- 9% of that waste has been recycled.
- 12% has been incinerated.
- The remaining 79% (5.5 billion US tons) of plastic waste has accumulated in landfills and the natural environment.
- 12 billion metric tons (13.2 billion US tons) will enter landfills or the environment by 2050 if current production and waste management trends continue.



[According to the New York Times](#), the main cause for the increase in plastic production is the rise of plastic packaging. In 2015 packaging accounted for 42% of non-fiber plastic produced. That year, packaging also made up 54% of plastics thrown away.



PLASTICS AND YOUR OWN HEALTH

After decades of producing trillions of oil-based plastic items, the negative consequences are startling. Plastic pollution is now recognized as a hazard to public health and the human body. Chemicals leached from some plastics used in food/beverage storage are harmful to human health. Correlations have been shown between levels of some of these chemicals, and an increased risk of problems such as chromosomal and reproductive system abnormalities, impaired brain and neurological functions, cancer, cardiovascular system damage, adult-onset diabetes, early puberty, [obesity](#) and resistance to chemotherapy.

Many plastics contain phthalates (DEHP) and the chemical BPA. If food or drink is stored in these plastics, they can be contaminated with these chemicals. If food is heated inside these containers in the microwave or if the plastic is ingested as in the case of a small child, these chemicals make their way into our food and into our bodies. Both chemicals are potentially harmful to human hormones, reproductive systems, and early childhood development.

PLASTIC AND CLIMATE

You may have thought that the only problem caused by plastic pollution is the negative effect that litter has on the environment. That is not the whole story. Plastic is a petroleum product. It is created from petroleum just like refined gasoline. [The EPA estimates](#) that production of plastic products account for an estimated 8% of global oil production. The drilling of oil and processing into plastic releases harmful gas emissions into the environment including carbon monoxide, hydrogen sulfide, ozone, benzene, and methane (a greenhouse gas that causes a greater warming effect than carbon dioxide) [according to the Plastic Pollution Coalition](#). [The EPA estimated](#) that five ounces of carbon dioxide are emitted for every ounce of Polyethylene Terephthalate produced (also known as PET is the plastic most commonly used to make water bottles).

It is important to remember the connection between plastics and climate change. Climate change is one of the most pressing issues we face as a planet today. If other reasons to consume less plastic weren't already enough to convince you to act, the fact that consuming plastic products exacerbates climate change should be an important reason to take personal responsibility and make a commitment to help ***End Plastic Pollution***.



ADDITIONAL RESOURCES

ARTICLES/BLOGS/READINGS

The Immense, Eternal Footprint Humanity Leaves on Earth: Plastics - *New York Times*

<http://nyti.ms/2vDfVJ1>

Most of the plastic that has been made is no longer in use — about 6.3 billion metric tons of plastic have been thrown away since 1950. About 12 percent of that has been incinerated, which is the only way to permanently dispose of plastic; 9 percent has been recycled, which only delays final disposal; and 60 percent — about 4.9 billion metric tons — is in landfills or scattered in the environment.

Plastic is Everywhere and Recycling Isn't the End of It - *Christopher Joyce*

<http://n.pr/2FjZgm8>

University of California, Santa Barbara ecologist, Roland Geyer, explains that plastic is extremely versatile, and is therefore found in common household objects and in everyday use items. He calculated that there has been about 8.3 billion tons of plastic created since it was invented a few decades ago.

A Wonder Material You Can't Get Rid Of - *Caitlin Johnson*

<http://cbsn.ws/2l1BQjR>

This article explains that plastic bags are very frequently used by consumers, but can be a material that is difficult to recycle. Most people are unbothered by plastics littering the environment and therefore have a false idea about the difficulties of getting rid of plastics due to their long-lasting nature.

Toward a Global Treaty on Plastic Waste - *Nils Simon and Lili Fuhr*

<http://bit.ly/2oJsws2>

According to these authors, plastic is a large part of the economy, though it is extremely harmful to the environment. This problem can be especially toxic to wildlife that is susceptible to consuming large quantities of plastic such as fish and marine birds. Plastic can also create toxic agents, which could cause public health problems.

VIDEOS

What Really Happens to the Plastic you Throw Away - *Emma Bryce*

https://youtu.be/_6xINyWPpB8

This video depicts that when plastic is thrown into a landfill and rainwater infiltrates the material, this can make the toxic chemical leachate. Another fate of plastics is ending up in one of five plastic patches that collect in certain parts of the world's oceans.

Plastic Pollution in the Ocean.

<https://youtu.be/aFUHLtaTazQ>

According to this video, we use plastic because it is durable and cheap to make. Only 10% of the plastic that is made gets recycled, and more than 70% of the plastic goes into natural ecosystems.



STORYTELLING

Spotlight TEDx Talk: Why I Live a Zero Waste Life

<http://bit.ly/2F6nktw>

Lauren Singer tells her personal story about why she decided to live a plastic free life, and eventually a zero waste life. She includes several tips on how the use of plastic can be eradicated.

An Artist Whose Mentors are Scientists - *Dianna Cohen*

<http://theatln.tc/2giBcW5>

Dianna Cohen is an artist who realized the danger of plastics in the ocean, in particular with the Great Pacific Garbage Patch. She helped start the Plastic Pollution Coalition in order to help end the use of single use plastics.

OTHERS WORKING ON THIS:

Plastic Pollution Coalition

www.plasticpollutioncoalition.org

This organization strives to end the use of single use plastics. They educate the public on how toxic plastic can be and informs on what everyone can do to eradicate plastic pollution.

Plastic Oceans

www.plasticoceans.org

Plastic Oceans strives to educate audiences about plastics in the recent news. This nonprofit organization aims to start discussion on the negative impacts of plastic pollution and the effect that this has on the oceans.

The Plastic Disclosure Project

www.plasticdisclosure.org

The Plastic Disclosure Project was launched by Ocean Recovery Alliance as a way to bring about large-scale prevention of plastic waste. This is an investor and multi-stakeholder driven program to encourage companies and other institutions to measure their plastic footprint and develop plastic management strategies to create a world where plastic adds value to businesses without negatively impacting the environment. This can be done on a global basis, without needing to change legislation, create bans, or impose taxes. It can be rapidly successful if we all look at ourselves, and our operations, “in the mirror,” and measure what we use, and how we reuse it.

Video: Plastic: from waste to resource | <https://youtu.be/5poEAA3g36w>

The Zero Waste International Alliance

www.zwia.org

The Zero Waste International Alliance has been established to promote positive alternatives to landfill and incineration and to raise community awareness of the social and economic benefits to be gained when waste is regarded as a resource base upon which can be built both employment and business opportunity.



REPORTS

Production, Use, and Fate of All Plastics Ever Made - *Roland Geyer, et. al.*

<http://bit.ly/2tth3CB>

According to this article, millions of metric tons of plastic has been generated worldwide, and only about nine percent of this has been recycled. Almost 80% of plastic is now circling the environment.

Valuing Plastic - The Business Case for Measuring, Managing, and Disclosing Plastic Use in the Consumer Goods Industry

<http://bit.ly/1Twft9y>

“The objective of this report is to help companies manage the opportunities and risks associated with plastic use. It makes the business case for companies to improve their measurement, disclosure and management of plastic use in their designs, operations and supply chains.”

The New Plastics Economy: Rethinking the future of plastics & Catalysing action

<http://bit.ly/2oN5zEn>

“Cheap light and versatile, plastics are the dominant materials of our modern economy. Their production is expected to double over the next two decades. Yet 14% of all plastic packaging is collected for recycling after use and vast quantities of escape into the environment. If the current trend continues, there could be more plastic than fish (by weight) in the ocean by 2050.”



Plastic Pollution in the Ocean

Decades of poor waste management policies that saw and continue to see plastic waste being dumped directly into the ocean have led to an international pollution crisis that threatens each of the world's oceans. Did you know that around the globe there are five massive patches of marine plastic? These huge concentrations of plastic debris cover large swaths of the ocean; the one between California and Hawaii [is the size of the state of Texas](#). Sea creatures eat or get ensnared in plastic debris and can be killed or maimed. Plastic that is consumed by marine organisms, as well as the toxins they absorb from the water, accumulate up the food chain making seafood potentially dangerous for humans as well.

[Scientists predict](#) that if nothing changes in our plastic consumption habits, by 2050 there will be more plastic in the oceans than there are fish (by weight). We all need to work together to solve this problem and save the oceans for future generations. This is a problem that impacts all of us. Every human on Earth relies on the oceans to survive in some way or another. Use this toolkit to learn how to reduce your impact on plastic pollution in the ocean and help to remove the massive amounts of plastic waste already in the environment.



As shown in the graphic above, 275 million metric tons (MT) of plastic waste was generated in 192 coastal countries in 2010, with 4.8 to 12.7 million MT entering the ocean. Population size and the quality of waste management systems largely determine which countries contribute the greatest mass of uncaptured waste available to become plastic marine debris. Without waste management infrastructure improvements, the cumulative quantity of plastic waste available to enter the ocean from land is predicted to increase by an order of magnitude by 2025. (Jambeck et al. 2015).



TOP 20 COUNTRIES RANKED BY MASS OF MISMANAGED PLASTIC WASTE

Rank	Country	Waste Generation Rate [kg/ppd]	% of Waste that Is Plastic	% Mismanaged Waste	Plastic Waste [MMT/yr]	% Mismanaged Plastic Waste	Marine Debris [MMT/yr]
1	China	1.10	11	76	8.82	27.7	1.32–3.53
2	Indonesia	0.52	11	83	3.22	10.1	0.48–1.29
3	Philippines	0.5	15	83	1.88	5.9	0.28–0.75
4	Vietnam	0.79	13	88	1.83	5.8	0.28–0.73
5	Sri Lanka	5.1	7	84	1.59	5.0	0.24–0.64
6	Thailand	1.2	12	75	1.03	3.2	0.15–0.41
7	Egypt	1.37	13	69	0.97	3.0	0.15–0.39
8	Malaysia	1.52	13	57	0.94	2.9	0.14–0.37
9	Nigeria	0.79	13	83	0.85	2.7	0.13–0.34
10	Bangladesh	0.43	8	89	0.79	2.5	0.12–0.31
11	South Africa	2.0	12	56	0.63	2.0	0.09–0.25
12	India	0.34	3	87	0.60	1.9	0.09–0.24
13	Algeria	1.2	12	60	0.52	1.6	0.08–0.21
14	Turkey	1.77	12	18	0.49	1.5	0.07–0.19
15	Pakistan	0.79	13	88	0.48	1.5	0.07–0.19
16	Brazil	1.03	16	11	0.47	1.5	0.07–0.19
17	Burma	0.44	17	89	0.46	1.4	0.07–0.18
18*	Morocco	1.46	5	68	0.31	1.0	0.05–0.12
19	North Korea	0.6	9	90	0.30	1.0	0.05–0.12
20	United States	2.58	13	2	0.28	0.9	0.04–0.11

Table: (Jambeck, J. R., et al. “Plastic Waste Inputs from Land into the Ocean.” *Science*, vol. 347, no. 6223, 13 Feb. 2015, pp. 768–771., doi:10.1126/science.1260352). Waste estimates for 2010 for the top 20 countries ranked by mass of mismanaged plastic waste (in units of millions of metric tons per year). Interpretation of characters in the table: Mismanaged waste is the sum of inadequately managed waste plus 2% littering. Total mismanaged plastic waste is calculated for populations within 50 km of the coast in the 192 countries considered. ppd, person per day; MMT, million metric tons. If considered collectively, coastal European Union countries (23 total) would rank eighteenth on the list.



ADDITIONAL RESOURCES

ARTICLES/BLOGS/READINGS

A Wonder Material You Can't Get Rid Of - Caitlin Johnson

<http://cbsn.ws/2i1BQjR>

This article explains that plastic bags are very frequently used by consumers, but can be a material that is difficult to recycle. Most people are unbothered by plastics littering the environment and therefore have a false idea about the difficulties of getting rid of plastics due to their long-lasting nature.

Toward a Global Treaty on Plastic Waste - Nils Simon and Lili Fuhr

<http://bit.ly/2oJsws2>

According to these authors, plastic is a large part of the economy, though it is extremely harmful to the environment. This problem can be especially toxic to wildlife that is susceptible to having large amounts of plastic in their organisms. Plastic can also create toxic agents, which can cause public health issue.

Seven Charts that Explain the Plastic Pollution Problem

<http://bbc.in/2C0wimT>

This article explains that 8.3 billion metric tons of plastic have been created globally, and less than half of this plastic is recycled. Most of this plastic accumulates in gyres in the sea and can therefore affect sea life.

The Environmental Toll of Plastics

<http://bit.ly/2FRNzAl>

This article encompasses the idea that dangerous chemicals such as BPA are found in more than 90% of the human population. Harm in reproductive development has been traced back to BPA, a component that makes up many plastics. Small plastics can be taken up by organisms and these plastics can accumulate in the food web, and eventually intoxicate organisms who are in high levels of the food chain.

VIDEOS

Plastic Ocean - United Nations

https://youtu.be/ju_2NuK5O-E

This video explains the incredible impact that the millions of tons of plastic has had on the ocean, and its perpetual stay in the environment due to its durable nature. Plastic circulates around gyres and makes it easy for sea creatures to digest these toxic materials. Dr. Jennifer Lavers uncovers how plastic gets into organisms' systems and eventually leads to their death.

Why does Plastic Last 'Forever'?

<https://youtu.be/kEEC6Z2vigU>

This video explains that plastic is unable to be biodegraded because it is made up of man-made polymers. This means that it is resistant to oxidation, and to bacteria that are not able to break it down. Because this material is found commonly in the environment, many organisms mistake it for food and eat it, causing dangerous toxins to enter their system.



Dianna Cohen: Tough Truths about Plastic Pollution

<https://youtu.be/fddYApFEWfY>

Dianna Cohen explains that cleaning the plastic from the ocean is just a small portion of what needs to be done to solve this problem. Instead, we should focus on ending the creation of more plastic. She helped create the Plastic Pollution Coalition in order to help raise awareness about the negative impacts of plastic on the oceans and on human lives.

STORYTELLING

Spotlight TEDx Talk: Why I Live a Zero Waste Life

<http://bit.ly/2F6nktw>

Lauren Singer tells her personal story about why she decided to live a plastic free life, and eventually a zero waste life. She includes several tips on how the use of plastic can be eradicated.

Let's Break Free from Plastic

www.storyofstuff.org/blog/lets-break-free-from-plastic/

The quest of one man to contribute to End Plastic Pollution and his personal journey. Read the story about Stiv Wilson and Let's Break Free From Plastic.

Babies, Bottles, and Bisphenol A: The Story of a Scientist Mother - *Aimee Quitmeyer & Rebecca Roberts*

<http://bit.ly/2H1eNnT>

Rebecca Roberts is a mother and scientist that studies the negative effects of BPA on the public health. She is especially impacted because she had an 11-month-old child when she wrote this article.

OTHERS WORKING ON THIS

#breakfreefromplastic

www.breakfreefromplastic.org

#breakfreefromplastic is a global movement envisioning a future free from plastic pollution.

Watch their video: <https://youtu.be/E68qngOljSk>

CleanSeas

www.cleanseas.org

CleanSeas launched by UN Environment in February 2017, with the aim of engaging governments, the general public, civil society and the private sector in the fight against marine plastic litter. Over the next five years, we will address the root-cause of marine litter by targeting the production and consumption of non-recoverable and single-use plastic.

Rethink Plastic

www.rethinkplasticalliance.eu

Rethink Plastic is an alliance of leading European NGOs with one common aim: a future that is free from plastic pollution. We represent hundreds of thousands of active groups, supporters and citizens in every EU member state. We bring together policy and technical expertise from a variety of relevant fields and are part of the global break free from plastic movement, consisting of over 800 NGOs and millions of citizens worldwide.



Grassroots Recycling Network (GRRN)

www.grrn.org

GRRN is a leading voice calling for Zero Waste (ZW) in the United States by promoting the message that we must go “beyond recycling.”

REPORTS

Fueling Plastics - Fossils, Plastics, & Petrochemical Feedstocks

<http://bit.ly/2FPUEC9>

“The Center for International Environmental Law (CIEL) launched an ongoing investigative series, Fueling Plastics, examining the deep linkages between the fossil fuels and plastics industries and the products they produce, and exposing how the US shale gas boom fuels a massive buildout of plastics infrastructure in the United States and beyond. In the wake of Hurricane Harvey, and the release of air pollutants and toxic substances from petrochemical facilities across the Gulf region, these reports shed new light on the harmful impacts of fossil fuels at every stage of their lifecycle.”

WHAT A WASTE A Global Review of Solid Waste Management

<http://bit.ly/1Kd8444>

Solid waste management is the one thing just about every city government provides for its residents. While service levels, environmental impacts and costs vary dramatically, solid waste management is arguably the most important municipal service and serves as a prerequisite for other municipal action.



WHY IS PLASTIC SO HARMFUL TO MARINE LIFE?

Do you know why marine life is so disproportionately impacted by plastic pollution? It's because it can cause harm to them in so many different ways. Many marine organisms can't distinguish common plastic items from food. Animals who eat plastic often starve because they can't digest the plastic and it fills their stomachs, preventing them from eating real food. Birds and other larger animals often become trapped or ensnared in plastic bags, fishing line, and other debris. Sea turtles specifically are highly susceptible. They both mistake plastic bags for jellyfish, and frequently are trapped in plastic debris, restricting their growth and movement.

Plastic never fully degrades, over time it breaks into smaller and smaller pieces. Eventually it becomes small enough to enter the bloodstream of marine organisms. Since the organisms cannot ever digest or process the plastic, it remains present until the organism is eaten. This passes all the plastic on to its predator, which is usually fish. If that fish is caught, then the plastics will be passed on to whichever human consumes it.



According to a study by Plymouth University, one third of the fish caught in the UK had plastic inside. The effect of eating these plastic contaminated fish is for the most part unknown, but the risk was substantial enough to warrant a warning of increased risk to human health and safety by the European Food Safety Authority in 2016.

KEY FACTS

180x MORE **PLASTIC** THAN **BIOMASS** AT THE SURFACE OF THE GREAT PACIFIC GARBAGE PATCH

287x DURING **DAY** TIME
100x DURING **NIGHT** TIME

84% OF PLASTIC SAMPLES HAD AT LEAST ONE **CHEMICAL** POLLUTANT IN EXCESS

PLASTIC VS FOOD
RATIOS FOUND INSIDE THE STOMACH OF COMMON NORTH PACIFIC SUBTROPICAL GYRE SURFACE FEEDERS



SEA TURTLE¹



ALBATROSS²

¹Van Houtan, K. S.; Francke, D. L.; Alessi, S.; Jones, T. T.; Martin, S. L.; Kurplita, L.; King, C. S.; Baird, R. W., The developmental biogeography of hawksbill sea turtles in the North Pacific. *Ecol. Evol.* 2016, 6, (8),2378-2389.

²Young, L. C.; Vanderlip, C.; Duffly, D. C.; Afanasjev, V.; Shaffer, S. A., Bringing home the trash: do colony-based differences in foraging distribution lead to increased plastic ingestion in Laysan albatrosses *Plos One* 2009, 4, (10).

THE OCEAN CLEANUP



ADDITIONAL RESOURCES

ARTICLES/BLOGS/READINGS

These 5 Marine Animals are Dying because of Our Plastic Trash...Here's How we can Help

- Corrine Henn

<http://bit.ly/1WsKeOp>

These five marine animals are dying because of our plastic trash. And the article gives us instructions that we can do to make the situation better.

Plastics Found in Stomachs of Deepest Sea Creatures - Mathew Taylor

<http://bit.ly/2z3YHLO>

This article explores what is found in stomachs of the deepest sea creatures. "Very worrying finding" from nearly 11km deep confirms that synthetic fibres have contaminated the most remote places on Earth.

How Microplastics Make their Way Up the Ocean Food Chain into Fish

<http://bit.ly/2gDp5ys>

This article explains that as plastics break down and become microplastics, they can leach harmful chemicals to their environments. These eventually end up in small organisms and make their way up the food chain.

How Ocean Plastics Turn Into A Dangerous Meal

<http://bit.ly/2FPGVet>

Plastics within the Great Pacific Garbage Patch are loaded with pollutants at levels that may be high enough to harm organisms ingesting them. Polluted plastics could be a primary food source for organisms feeding in regions of the ocean with high plastic concentration.

VIDEOS

See How it Feels to be an Ocean Animal Stuck in a Plastic Bag - National Geographic

<https://youtu.be/yaDx-WJAsaE>

A study by the National Geographic shows what it is like to be trapped inside a huge plastic bag. Each year, more than a million marine creatures and other birds and animals die from plastic pollution in their habitats.

Plastic Trash in Oceans Enters Marine Food Chain

<https://youtu.be/GKAABayRuXs>

This video shows the growing volume of plastic garbage floating in the oceans, and explains how plastic trash enters marine food chain.

One Plastic Straw At A Time A Documentary For A Sea Of Change

www.strawsfilm.com

With colorful straw history animation and narration by Oscar winner Tim Robbins, STRAWS (30 minutes) leaves audiences with a clear understanding of the problems caused by plastic pollution and empowers individuals to be part of the solution.



TEDxGreatPacificGarbagePatch - *Chris Jordan | We Must Be The Change*

<https://youtu.be/L4mvxCrokCM>

In this TED Talk, artist Chris Jordan discusses the impact of mass consumption of plastics and the effects it has on the world around us. He gives examples of how much plastic we are surrounded by on a daily basis and inspires people to be the change. He does this through powerful photographs he took that show the often gruesome impact plastics have on wildlife and the environment.

Plastic Pollution, Our Oceans, Our Future...

<https://youtu.be/YGBpHYLNtRA>

This video teaches about the effect of plastic in Hawaii. Students discuss the problem with consumption of plastic by wildlife, and the effect this has on human health as well as the health of the environment.

STORYTELLING

Let's Break Free from Plastic

www.storyofstuff.org/blog/lets-break-free-from-plastic/

Stiv Wilson, a former journalist, organized a movement in 2017 and cooperated with different organizations from Europe, North America, and Asia to develop a global strategy to combat plastic pollution.

OTHERS WORKING ON THIS

Ocean Plastic Pollution

<https://blueocean.net/top-ocean-stories-2017-part-3-ocean-plastic-pollution/>

According to the Blue Ocean Network, millions of tons of plastic contaminate the ocean annually. Pieces of plastic circulate the ocean and make large floating islands of garbage. This organization proposes that it is vital that nations pledge to stop or reduce the use of plastics immediately.

The Ocean Clean Up Project

www.theoceancleanup.com

Boyan Slat has created a massive floating ocean filter system which is 100% self sustaining. The project is projected to remove 50% of the plastic in oceans by 2020, and will significantly decrease the potential for microplastics to continue to be created. It is currently placed in the Great Pacific Garbage Patch, and is actively fighting microplastic production and plastic existence in the ocean.

A video from Business Insider explaining the basics of the project: https://youtu.be/PFwHcr_FMw8

REPORTS

Plastic Oceans: A New Way in solving Our Plastic Pollution - *Dakota Floyd*

<http://bit.ly/2oFPu49>

Floyd explains that while natural habitats are being destroyed by plastics, plastic pollution also has a grave monetary effect that causes the loss of billions of dollars. The author focuses on "Sustainable Coastlines Hawaii," which is an organization that educates the public on the need to act sustainably.



Microplastics

When plastics break down due to exposure to water, sun or other elements they can break into tiny pieces -so tiny, most of them cannot be seen with the naked eye. These small plastic fragments are now everywhere. When you drink water, [eat fish or other seafood](#), or when you add [salt](#) to your meals, chances are you can also be ingesting tiny pieces of plastic. Those particles -called microplastics- are a contaminant which is now present in the oceans, water ways, the soil and even in the food that we eat. Once plastic enters the bloodstream of an organism it will never be processed out. The plastic, and the toxins it has absorbed will [bioaccumulate](#) as they travel up the food chain to a top predator, often a human.. The entire cycle and movement of microplastics in the environment is not yet known, but research is currently underway to investigate this issue further, as reported by NOAA.

Some microplastics start out as large plastic pieces, slowly eroded by water or exposure to the sun and the elements; others start off as microplastics specifically produced for certain uses. Some are microbeads, created for use in skin care products. They are very tiny pieces of manufactured polyethylene plastic that are added as exfoliants to health and beauty products, such as some cleansers, toothpaste, facewash, soap and shower cream, says the Royal Society of Chemistry of Great Britain. [Others originate from plastic-based fabrics](#) such as polyester and nylon that shed plastic fibers when washed. Several studies have shown synthetic fibers to make up the lion's share of microplastics [found in oceans, rivers and lakes](#), and clothes made from synthetics (polyester, acrylic, nylon, and so on) are widely implicated as the source of that pollution. In addition, some industrial processes can produce microplastics that can contribute to the problem when mishandled.

While there is some contention over their size, most agree that to be considered a microplastic a particle should be less than 5 mm in diameter and have been found to evade filtration systems at water treatment plants, allowing them to be discharged directly into rivers, lagoons and the oceans.

Governments are paying attention and passing legislation to limit or eliminate pollution related to microbeads and companies are working to replace them or phase them out from their products and processes. In 2015, the US passed the Microbead-Free Waters Act, banning plastic microbeads in cosmetics and personal care products. The law has the support of the Personal Care Products Council, an industry group. Similar legislation has been approved by other countries.



As you can see, microplastics come from a variety of sources, including from larger plastic debris that breaks down into smaller and smaller pieces. Such litter should be controlled by better systems to collect, process and dispose of waste. You also might find it interesting to know that an important source of plastic pollution in the ocean is [automobile tires](#).

Since, “[most plastic in the ocean is from beach plastics that break down and improper disposal of trash](#)” says Dr. Joel Baker, Science Director of the Center for Urban Waters, if we can make a few behavioral changes we can severely limit plastic pollution.

The good news concerning microplastics is that there are many things you can do about the problem.

WHAT CAN YOU DO?

- Prevent the creation of microplastics by being careful not to toss plastic products in water ways, beaches or open spaces.
- Pick up trash -especially plastics- whenever you see it, especially in ponds, streams, rivers, beaches, when possible.
- Participate in organized clean-up activities as much as you can.
- [Look up products on the Internet](#) and choose not to buy products containing microbeads. Choose products that have natural exfoliators instead.
- [Consider changing the way you wash your clothing](#) to reduce the number of microfibers that are released. There are also bags and other devices you can use in your washing machine to collect the fibers.
- Consider purchasing items made of natural fibers, when possible.
- Do not wash off lint from your dryer down the drain. Dispose of it on the trash.



ADDITIONAL RESOURCES

ARTICLES/BLOGS/READINGS

What are microplastics? - NOAA

www.oceanservice.noaa.gov/facts/microplastics.html

This article defines microplastics and explores their negative effects on marine life. Microplastics are added to several everyday materials, such as soap and toothpaste. This substance is still under research and testing in order to find other negative impacts on human and animal health.

Which products contain microplastic ingredients and which not?

www.beatthemicrobead.org/product-lists/

In this site you can choose a country to find out if products in the respective country still contain microplastic ingredients or are free of them.

Good guide on microfibers in clothing

<http://bit.ly/2nhAvLk>

Microfibers are responsible for 85 percent of shoreline pollution across the globe. How can we stop this pollution?

Why Use Microbeads When the Alternatives are Better?

<http://bit.ly/2FhVbyO>

They're cheap and work great for skin care, but plastic microbeads that can be found in your skin care products are polluting the Great Lakes and many other areas. The author explains why microbeads began to be used in the first place, mainly stating that they are cheap to produce. If the danger of pollution isn't enough to change your mind on microbeads, it should be said that the non-plastic alternatives are even better.

Researcher finds 'beautiful' and 'horrible' microplastics polluting Lake Winnebago - Rory Linnane

<http://post.cr/2CXrOfM>

This article states the dangers of microplastics, such as microbeads, that can now be found in natural habitats. Though a ban on these microscopic products has already been placed, these bits of plastic can already be found in large amounts in many oceans and lakes. There is a great need to educate the public about the dangers of microplastics.

VIDEOS

What is a Microplastic? - CNN

<https://youtu.be/sjyDHlplvpM>

This video explains that a microplastic is a substance that arises when larger pieces of plastic break down. These microplastics can pick up harmful chemicals and move them along natural habitats, causing a potential danger to living creatures who eat this plastic. If the microplastics are small enough, they can cross directly through a fish and damage the interior organs.



The Story of Microfibers

<https://youtu.be/BqkekY5t7KY>

Most of us wear synthetic fabrics like polyester every day. Our dress shirts, yoga pants, fleeces, and even underwear are all increasingly made of synthetic materials -- plastic, in fact. But these synthetic fabrics, from which 60% of all clothing on earth is made, have a big hidden problem: when they're washed, they release tiny plastic bits -- called microfibers -- that flow down our drains, through water treatment plants, and out into our rivers, lakes and oceans by the billions.

OTHERS WORKING ON THIS

Beat the Microbead

www.beatthemicrobead.org/partner-ngos/

This nonprofit organization focuses on a campaign that helps ban microplastics worldwide. They help educate the public about what microbeads are, and how they can infiltrate animal and human bodies and cause potential harm to living organisms. They include lists of products that contain this hazardous material.

REPORTS

Microplastics in the Marine Environment

<http://bit.ly/2FbiQ4P>

Anthony Andrady explains how microplastics are created, and their potential dangers to the Marine Environment. This article illustrates how easily microplastics can be moved by wind or water in natural environments, and consequently how they can enter living organisms and therefore impact the food chain.



Plastic Pollution and our Health

Plastic pollution is not only damaging the health of our planet. After decades of producing trillions of oil-based plastic items, the discovered negative consequences to human health are startling. Many plastics contain phthalates (DEHP) and the chemical bisphenol-A (BPA), now recognized as a hazard to public health and the human body. Both chemicals are potentially harmful to human hormones and reproductive systems. When heated in the Microwave, as reported by Fox News, these chemicals can leach out into the food they contain. In fact, many correlations have been shown between levels of some of these chemicals, and an increased risk of the following health problems.

Chromosomal and reproductive system abnormalities

Impaired brain and neurological functions

Cancer

Cardiovascular system damage

Adult-onset diabetes

Early puberty

Obesity

Resistance to chemotherapy

Now, you may be intimidated by the previous list of threatening health risks and want to avoid plastic at all costs. That's understandable, but unfortunately, not reasonable. Even if you spend absolutely no time in nature, plastic pollution can still have a direct impact on your life. Many of the foods you eat and the beverages you drink come in plastic packaging. If the chemicals in the packaging make it into your food, there could be dangerous outcomes. Here are some facts:

BPA

According to the [National Institute of Environmental Health Sciences](#), bisphenol A (BPA) is a chemical that is found in plastics with recycle codes 3 or 7, including some food and drink packaging. The BPA found in these containers is accountable for the majority of human consumption of the chemical. It leaches into food and drink from the container and accumulates in the body. The Center for Disease Control and Prevention's 2003-2004 National Health and Nutrition Examination Survey concluded that BPA was found in 93% of urine samples they took from people above the age of six. Unless you only eat food that you grew yourself, you likely fall under this category as well. Animal studies show that BPA has effects on fetuses and newborns. Moreover, according to [Mayo Clinic](#), BPA may be harmful to the brain and cause increases in blood pressure. In general, it is not recommended to heat food in plastic containers with the codes 5 and 7.

PHTHALATES

Another concerning chemical commonly found in plastics are phthalates. According to the [CDC](#), phthalates are often referred to as plasticizers. They are used to increase the flexibility of plastics and are found within plastic packaging film and sheets, some children's toys, blood-storage containers, and others. Not much is known about the effects of phthalates on the human body, but animal research shows effects on the reproductive system. Other studies have shown a link between phthalate blood levels and childhood obesity. There are many alternatives to plastic packaging and as consumers, we should demand these products instead of the plastic ones that are drowning our planet and causing unknown health impacts to us and our children.

Keep reading for ways to understand and reduce the amount of plastic you consume on a day-to-day basis!



ADDITIONAL RESOURCES

VIDEOS

Fox News - Childhood obesity linked to chemicals found in plastics

<http://bit.ly/2FT0dje>

REPORTS

Plastics in the Ocean Affecting Human Health - *Gianna Andrews*

<http://bit.ly/2ztX1KY>

This study focuses on plastics in the ocean and how they are affecting human health. It explains in four parts: sources of plastic, the rubbish path in the ocean, prevention of contamination and the role that humans play.

Plastic Waste: Ecological and Human Health Impacts

<http://bit.ly/2azjSEZ>

This report focuses on the mass plastic production worldwide, and on the dangers of filling up landfills with plastic waste.



Plastic Pollution Footprint Calculator

Now that you have learned about plastic pollution and have been able to assess the evidence that we need to address this issue, are you curious to know what has been your contribution in the past?

If you feel compelled to join the fight to drastically reduce plastic pollution, you will first need to know where you stand now. Do you know how many plastic items have you been buying and discarding?

This plastic pollution footprint calculator will help you to calculate your total yearly consumption of plastic products. This will allow you to analyze your past consumption. That is the first step to make a plan to reduce your plastics pollution footprint. You will be able to develop your plan later in this journey.

This calculator only evaluates your use of plastic items designed for short term use that will be discarded approximately within 30 days of the original purchase date. In addition to these items, you may also want to evaluate your use and disposal of more long-term items made of plastic. These might include consumer electronics, vehicles, furniture, construction material, and clothing. The calculator does not address those items.

This calculator will also be made available as an online tool and as an interactive spreadsheet document.

Flip to the next page
to calculate your
plastic consumption.



CALCULATE YOUR PLASTIC CONSUMPTION

How many of the following items do you consume?

CHART 1 (Daily)	#/ DAY		#/ YEAR
Plastic bottles		x 365 =	
Plastic cups		x 365 =	
Straws		x 365 =	
Cotton swabs with plastic sticks		x 365 =	
Cigarette butts *		x 365 =	
Plastic resealable bags		x 365 =	
Plastic cling wrap		x 365 =	
Plastic silverware		x 365 =	
Plastic plates		x 365 =	
Food containers		x 365 =	

CHART 1: Total # consumed / year:

*(Majority of cigarette butts or filters are made from fibrous material called cellulose acetates, a kind of plastic that are thin tows that are packed tightly to form a filter [source](#))

CHART 2 (Monthly)	#/ MONTH		#/ YEAR
Food Packaging **		x 12 =	
Plastic grocery bags		x 12 =	
Cleaning containers***		x 12 =	
Toothbrushes		x 12 =	
Toothpaste		x 12 =	
Medicine bottles		x 12 =	
Diapers		x 12 =	
Feminine products		x 12 =	

CHART 2: Total # consumed / year:

** Plastic bags for produce, produce in plastic packaging, large beverage containers.

*** Dish washer fluid, laundry detergent, fabric softener etc.

	Total # Consumed / Year
Chart 1	
Chart 2	
GRAND TOTAL	<input type="text"/>



Now that you know how many plastic items of short term use you consume every year, we hope you are thinking about what to do with this information.

This Plastic Pollution Primer and Action Toolkit will help you figure out things that you can do to reduce your plastic pollution footprint. In the next sections we will present to you the different aspects of reducing to End Plastic Pollution that you might want to consider.

We will explore with you Reduce, Refuse, Reuse, Recycle and Remove. Actions we are calling the 5 Rs.

Once you have learn about the benefits of embracing the 5 Rs in your daily live, we will invite you to create a goal for decreasing your plastic pollution footprint for the next 12 months. Then you can use the Plastic Pollution Footprint Tracker provided to see how adopting some of the actions explained in this Plastic Pollution Primer and Action Toolkit help you reduce your plastic pollution footprint over the course of a year.

SO, ABOUT YOUR GRAND TOTAL

Was it more than expected?

- **YES:**
Well, now you know! Keep reading our toolkit for ways to reduce your plastic pollution footprint!
- **NO:**
Great job! Keep reading for more steps towards a plastic waste- free lifestyle!



Reduce

It's time for you to start cutting out that plastic. This Plastic Pollution Primer and Action Toolkit is full of tips and guides for how to minimize your consumption of plastic. The most important step we can take to limit the amount of plastic pollution that makes its way into our oceans is to reduce the amount of plastic we consume in the first place.

While recycling plastic waste is important, it is not nearly enough. You may be lulled into thinking it is ok to consume plastic products because you plan to recycle them. Unfortunately, recycling is far from perfect, many plastics can't be efficiently recycled and will end up in the landfill regardless of which bin they were put in. Some localities lack the infrastructure to sort and recycle plastics. For this reason, it is much more important to focus on reducing your own level of plastic consumption. As consumers, we can't only be responsible for what happens to products at the end of their lifecycle, we have to be responsible for which products we purchase in the first place. Through reducing your plastic consumption, you will directly and actively reduce the amount of plastic that makes it into the environment. The next two sections will talk about two specific ways you can reduce your consumption, refusing plastic products, and reusing items to extend their lifecycle and keep them out of the landfill.

When considering anything you may purchase, ask yourself these two questions:

Do I need it?
Can I use something else?

CONSUME WHAT YOU NEED

Many plastic products you may frequently use are generally unnecessary - do you really need a straw to drink a glass of water? It is important to only consume what you need, especially when it comes to plastics. Many of the most commonly disposed of plastic products have viable alternatives. Always ask yourself if you can get the same product without consuming plastic before you buy something.



ADDITIONAL RESOURCES

ARTICLES/BLOGS/READINGS

California banned plastic bags. Now it's up to consumers to stop being wasteful

<http://bit.ly/2oHgy2Y>

California has officially banned (most) plastic bags. This is a bold step forward toward drastically reduced plastic waste.

Cut it Out! - Greenpeace UK - *Louise Edge*

<https://greenpeace.org.uk/cut-it-out-20170313/>

According to this article, in order to reduce the use of plastics consumers can stop using plastic bags and use reusable bags instead. Similarly, single use straws should be completely eradicated because they accumulate in the environment and cannot be recycled. Plastic non reusable bottles should not be purchased, and an alternative reusable bottle should be used instead.

11 Easy Ways to Reduce your Plastic Waste Today - *Margaret Badore*

<http://bit.ly/2qDkTIP>

In this blog, Margaret Badore gives tips on how the public can reduce the use of plastics and therefore end the contribution to plastic pollution. Ideas include using reusable bags and water bottles, using cardboard or paper based materials in place of plastics, and stopping the use of straws.

Indonesian Entrepreneur Tackles Plastic Scourge

<http://bit.ly/2H3AF20>

This article describes an Indonesian sustainable plastic alternative company that is helping to reduce global plastic consumption. It focuses on the work done by Mr. Kumula, who has created objects that biodegrade and are not harmful to the environment.

VIDEOS

10 Easy Ways to Reduce Plastic Use - Zero Waste

<https://youtu.be/H76dXQoydmU>

This vlog outlines 10 easy ways to reduce daily plastic intake

STORY TELLING

Is it possible to live a plastic free life?

<http://ab.co/2qbYMI8>

Lindsey Miles took a plastic free challenge five years ago, she never stopped. See how, through a few lifestyle changes, she was able to reduce her plastic waste to just 1 or 2 items per month.

Seven people who drastically reduced their use of plastic.

<http://bit.ly/1TVRcI1>

Seven stories of people who took it upon themselves to stop creating so much plastic pollution, that actually made a difference.



Could you fit four years' worth of your trash into one jar?

<http://cnn.it/2xsVToo>

Lauren Singer's TED Talk about her zero-waste lifestyle. Why she does it, how she does it, and why you should too. She gives her step by step method of transitioning to this empowering and sustainable lifestyle.

The Economic Injustice of Plastic - Van Jones

<http://bit.ly/2Fd0VXe>

This is a hard hitting Ted talk that shows us how our throwaway culture hits poor people and poor countries "first and worst," with consequences we all share no matter where we live. The story some ways to reclaim our planet from plastic garbage.

There is no 'Away'- Bali to Komodo Island Expedition

<https://youtu.be/Eu-77KAjMFY>

A team of artists, scientists, activists, and filmmakers took a recent expedition from Bali to Komodo Island to document plastic pollution in the region. "There is no 'away'"

OTHERS WORKING ON THIS

Bye Bye Plastic Bags:

<http://bit.ly/1o5cEhH>

An organization based in Bali created by young girls (a Tedx talk to explain). Melati and Isabel Wijsen are on a mission to stop plastic bags from suffocating their beautiful island home of Bali. Their efforts -- including petitions, beach cleanups, even a hunger strike -- paid off when they convinced their governor to commit to a plastic bag-free Bali by 2018.

Avani

<https://youtu.be/24Nyn7DQn6Q>

This company is embarking on a campaign in striving for a cleaner and greener world. Close to 300 million tons of plastic is generated globally per year, and with that plastic has caused much damage for our lands, oceans and also the whole biodiversity around us. While Reduce, Reuse Recycle is being encouraged by institutions this slow trickle of education may take too long and REPLACE, inevitably becomes the only hope to combat this massive epidemic. Avani offers a wide range of biodegradable and compostable products which could REPLACE the usage of petroleum-based plastic right away.

REPORTS

Classify Plastic Waste as Hazardous - Chelsea Rochman and Mark Anthony Browne

<http://bit.ly/2FdSPOi>

This report is arguing to classify plastic waste as a hazard in governmental policies.

Green Purchasing Behaviors Analysis of Government Policy about Paid Plastic Bags

- Muhammad Khoiruman and Aris Tri Haryanto

<http://unpas.id/index.php/ijsam/article/view/25>

This is an analysis of "green purchasing power" and the Indonesian government's decision to impose a tax on plastic bags.

Doing Away with Plastic Shopping Bags: International Patterns of Norm Emergence and Policy Implementation - Jennifer Clapp and Linda Swanston

<http://bit.ly/2tjUC2S>

This is a report on the international reduction of plastic bag usage. This also shows the results of these new implemented policies and how it affects everyone.





WHAT CAN YOU DO DIFFERENTLY TO **REDUCE** YOUR PLASTIC CONSUMPTION?

1.

2.

3.

4.

5.

Refuse

Do you ever wonder why water at a restaurant always comes with a straw? Do you ever marvel at how many plastic shopping bags grocery stores will wrap around your purchases? If you are conscious of the harm that plastic is having on the planet it should astound you how often we are offered free items of disposable plastic in our daily lives. As conscious campaigners against plastic pollution, it is important, whenever possible, to refuse plastic. Much of the most frequently discarded plastic items, with the shortest lifecycles, are those given to us for free. Plastic straws, grocery bags, plastic utensils, plates, and cups are all frequently given away with other purchases.

All you have to do to eliminate this source of plastic pollution is to simply refuse to accept these items. Refusing these giveaways in your everyday life will have a large impact on your overall plastic pollution footprint.

If you can't outright refuse something, there is almost always a non-plastic alternative. Until around the middle of the 20th century, widespread use of plastics was not the reality. While plastic products have brought a certain level of convenience, there were already alternative products at the advent of plastics. Now, 70 years in the future, modern technology has created a host of new products that make most common plastic products obsolete. With a little preparation and planning, you can easily, refuse plastics.

TIPS TO REFUSE PLASTICS

- When you order a drink at a restaurant, you can tell the waiter that you don't want a straw. If you know you need a straw, you can purchase a metal or wood/paper based straw and bring that with you. You could also go a step further and ask the restaurant to stop providing plastic straws or to only provide straws to customers when requested.
- Plastic bags are one of the biggest sources of plastic pollution. Refusing the plastic shopping bags given away at retailers and grocery stores is easy. If you need a bag to carry your purchases, bring reusable canvas bags instead. And buy cloth or mesh bags to carry fresh produce to the cashier.
- Take a little extra time while doing your shopping, select products without plastic packaging and always be sure to avoid or even boycott products that are excessively wrapped in plastic (for example fresh produce).
- When you go clothes shopping, it is best to avoid fabrics with plastic microfibers such as nylon and polyester. Or check ways to collect the fibers in your dishwasher.



ADDITIONAL RESOURCES

ARTICLES/BLOGS/READINGS

The Be Straw Free Campaign

<http://www.ecocycle.org/bestrawfree>

Americans consume too many drinking straws a day. Especially considering it's not something we actually need.

Confronting Plastic Pollution, One Bag at a Time

<https://blog.epa.gov/blog/tag/plastic-bags/>

The worldwide problem of plastic bags is illustrated in this powerful article.

Wagamama to End Use of Plastic Straws - *Josie Clarke*

<https://ind.pn/2reHLOh>

A UK restaurant has banned the use of plastic straws and now offers biodegradable alternatives, proving how easy it is to do so.

VIDEOS

The Non-Disposable Life - *Lindsay Miles*

<https://youtu.be/hb9uEbUaREE>

This is a TED talk about woman who chose plastic free lifestyles, and challenges on her path to do so.

How to Live a Plastic Free Life - *Alexis McGivern*

<https://youtu.be/59omJe880dl>

This TED talk is about being conscious of your plastic consumption, and how to eliminate it from your daily life.

Kids Take Action Against Ocean Plastic - *National Geographic*

<https://youtu.be/hKFV9lquMXA>

This video Highlights the negative effects of plastic, and how you can refuse the plastic that pollutes the ocean.

STORY TELLING:

Lonely whale stop sucking video

<https://youtu.be/rfFpz8KM-9E>

Celebrities tell us why they have chosen to stop using plastic straws.

My Plastic Free Life - *Beth Terry*

www.myplasticfreelife.com

Beth Terry, an accountant turned activist created this site to encourage and instruct people on how to live a plastic free life.



Interview with Plastic Free July - *Rebecca Prince-Ruiz*

<http://bit.ly/2aVnINl>

This leader and founder of Plastic Free July discusses how and why she got started living a life without plastics.

A Documentary for a Sea of Change

www.strawofilm.com

This film will leave you with a good understanding of the problems plastic pollution causes and will empower you to be a part of the solution.

Think you Can't Live Without Plastic Bags? Consider This: Rwanda Did it!

<http://bit.ly/2D01Rw5>

An article on the plastic bag ban recently enacted in Rwanda.

Fresh push for plastic bag ban in Australia

<http://bit.ly/2FSGpfP>

An article on the push to ban plastic bags in Australia.

OTHERS WORKING ON THIS

Surfrider Foundation

www.surfrider.org

This foundation is dedicated to advocating against ocean plastic pollution through urging refusal of single use plastics.

PlasticBagLaws.Org

www.plasticbaglaws.org

This nonprofit site is dedicated to influencing cities and communities to enact plastic bag legislation.

REPORTS

An Evaluation of the Effects of California's Proposed Plastic Bag Ban - *Julian Morris & Lance Christensen*

<http://bit.ly/2oEvBKY>

This article explores a study showing proposed environmental benefits of the California Plastic Bag Ban.





WHAT CAN YOU DO DIFFERENTLY TO REFUSE PLASTIC?

1.

.....
.....

2.

.....
.....

3.

.....
.....

4.

.....
.....

5.

.....
.....

Reuse

The next step we encourage you to take as part of your reduction of plastic consumption is to reuse. One of the main drivers of the massive plastic pollution problem is the incredibly brief life cycle many of these products have. A majority of the items we use one single time before disposal are plastic. This leads to unnecessary waste for low usability. Selecting products that are designed for multiple uses and making sure nothing gets thrown away before its usefulness is spent is another effective way to drastically reduce one's plastic pollution footprint. You can get creative and reuse items for secondary purposes. You can also purchase specialty items that replace single use plastics and can safely be used again and again.

WAYS YOU CAN REUSE IN YOUR DAILY LIFE:

- You can buy reusable mesh bags that replace the plastic bags you use for bulk produce at the grocery store.
- You can purchase canvas shopping bags and leave them in your car for anytime you go shopping.
- Get a reusable water bottle instead of buying plastic ones and throwing them out.
- There are reusable wax lined bags and wraps that effectively replace single use sandwich bags.
- When you finally decide to get rid of old clothes, toys, furniture, or electronics, donate them rather than throwing them away.
- Use dishes, glasses, and metal silverware instead of their plastic counterparts.
- Consider trying washable reusable cloth diapers instead of disposable ones
- Many food containers from restaurants are durable enough to be reused for kitchen storage.



ADDITIONAL RESOURCES

ARTICLES/BLOGS/READINGS

23 Creative Ways to Reuse Old Plastic Bottles

<https://www.boredpanda.com/plastic-bottle-recycling-ideas/>

This blog includes several ways to upcycle old plastic bottles in order to impede the hazardous cycle of having them circulate through natural ecosystems and oceans.

The Effect of Recycling Plastic Water Bottles on the Environment - *Rebecca Lake*

<http://bit.ly/2Fd3gph>

This article includes the necessity of recycling plastic products on the environment. It provides several ways in which recycling benefits all communities and reduces climate change.

What are the Benefits of Reuse? - *Kasandra Rose*

<https://sciencing.com/benefits-reuse-4586.html>

This article focuses on the environmental and monetary benefits that reusing has on all communities worldwide. It provides tips and practices that allow people to better care for the environment and finances.

Ten Facts About Reusing Cans and Bottles

<https://sciencing.com/ten-reusing-cans-bottles-2766.html>

If the entire population of the U.S. were to use reusable drinking water bottles for a year rather than single use plastic bottles, it would save enough crude oil to fuel one million cars for that same year!

VIDEOS

Environmental Benefits of Reusable Packaging

<https://youtu.be/NFppi3R1y7I>

This video expresses the idea that reusing packaging that makes up a large portion of plastic production is essential for sustainability. Plastic bottle manufacturers use 17 million barrels of crude oil annually in order to make the 29 billion plastic bottles that Americans alone consume. Reusing would lower this amount and benefit the environment at large. If you choose to drink from reusable bottles, each single-use plastic bottle not used will save enough energy to power a 60-watt lightbulb for more than six hours.

OTHERS WORKING ON THIS

Bahamas Plastic Movement

www.bahamasplasticmovement.org

This movement encompasses the importance reusing plastic, and focuses on upcycling products. This organization encourages people to think about plastic waste and how it negatively affects many populations.



The Plastic Solution: Reuse Plastic, It's Fantastic!

<https://zhostel.com/the-plastic-solution-reuse-plastic-its-fantastic/>

This article focuses on “The Plastic Solution” in the Philippines, which focuses on making “eco-bricks” as a substitute for regular bricks. This idea can get plastic waste out of the environment, and used for something advantageous.

STORY TELLING

20 Creative Ways to Reuse and Recycle Empty Plastic Bottles

<https://www.budgetdumpster.com/blog/diy-plastic-bottles-recycling/>



Ideas for reusing plastic waste

<http://bit.ly/2l1cu5E>

This article gives 20 examples of things you can do with your used plastic for those feeling creative!

PH Group Advocates New ‘Plastic Solution’ - *The Manila Times*

<http://bit.ly/2FdPZgg>

This article argues in favor of eco-bricks, which are bricks made out of plastic bottles full of waste. These bricks are free to make, reduce plastic pollution, and can provide insulation for homes. This presents a possible solution that can help reduce plastic pollution.

REPORTS

A Production-Recycling-Reuse Model for Plastic Beverages Bottles - *Nouri Dawood Matar*

<http://bit.ly/2FmkvDK>

This thesis encompasses the idea that there is a cost to the amount of land disrupted by contamination, and there is also an environmental cost to sending bottles to the landfill. Matar focused on alternatives to PET bottles, and how they degraded in the natural system.



WHAT CAN YOU DO DIFFERENTLY TO REUSE MORE?

1.

2.

3.

4.

5.

Recycle

You have made it through the section about adopting a plastic reduction regimen. You are now thinking about turning down straws, carrying your own shopping bags, and encouraging your friends and family to do the same. But in a world where plastic is so ubiquitous, there are going to be instances where consuming plastic might be necessary. It would be difficult to expect you to reduce your plastic consumption to zero overnight. That's where recycling comes in. Your next step is to learn about recycling.

Recycling is far from the final solution to the Plastic Pollution problem, but it is an important part of it. It cannot replace the need for reducing consumption or refusing and reusing plastics when you can. If recycling is the best option, you should do so following the rules of the community, town or city in which you live. For the most part, only recycle if you are positive that the item is truly recyclable. If you are unsure about an item, don't try to recycle it as it will only slow the sorting process. If you know for sure that the waste management company or entity serving your community uses a technology or system to sort out non-recyclable plastics, you can afford to make a few mistakes.

Educating yourself on proper recycling is crucial to its effectiveness. Recycling properly might feel daunting at times, but once you figure out the rules in your community it will all feel easier. You can even make a sign explaining the rules and hang it near your recycling and trash cans.

Why should you recycle?

Recycling produces environmental and economic benefits. [It reduces energy consumption](#) and the need for new material to be used while slowing the rate of resource depletion. It decreases pollution from industrial waste and limits the amount of waste sent to the landfill.

Where to start:

If you live in the US, visit www.iwanttoberecycled.org and enter your zip code to quickly find out what items you can recycle in your community. If you cannot find information there, or you live in another country and cannot find a similar resource, you should check with the proper authorities about what can and cannot be recycled in your area. Most municipalities or utilities companies will have this information available on their website.

If your community lacks a formal system to sort and collect recyclable plastics, you should check if there are any private or community organizations that offer or help with that service.

Other things to know:

Recycling is often not cost effective as it is an expensive process and has its own environmental impact. It is fraught with complications because people make mistakes constantly about the items that can be placed in the recycling bin. Not all waste management facilities use the same technology. Some might be able to deal with plastics that are not recyclable when deposited in the wrong bin, but for others, the process will be much more complicated when mistakes are made.

Most recycling programs in the US do not accept plastic bags. However, the bags are recyclable. To recycle these, specific collection points exist, usually at the grocery stores that provide them, including at these [18,000 locations](#).

New technologies are constantly being developed to improve the process of recycling plastics, but systems used are very different from place to place. In many communities, maybe in yours, waste pickers sort the recyclable items out of the garbage and make a living out of it. They often work in very unhealthy and difficult conditions but provide an important contribution to cities and towns that otherwise will send all their plastics -whether recyclable or not- to the landfill.



General information about plastics that can be recycled:

Deciding which items to recycle is not always easy and intuitive. It requires looking at the product and making a decision based on the instructions given by the waste management department that serves your community. If you live in a place that does not have a formal system to deal with waste and plastics, it can be even more complicated. Recycling rules vary from place to place. Before recycling it is important to understand your local recycling programs, what can and can't be recycled, how you should sort your recyclables, and which plastics to leave out and throw in the trash.

A point of contention is the benefit of recycling food containers that need to be washed before they can be placed in the recycling bin. The general wisdom is that you should first check if your community requires that you wash those containers. If yes, try to use as little water as possible because using tap water has its own economic and environmental cost, and you do not want to waste resources. One recommendation is to collect some of the water used to wash your dishes and use it again to wash your plastic containers. If you are not required to wash the containers, make sure to keep them in a bin with a tight lid to avoid unpleasant odors and pests.

[There are many resources available on the Internet](#) that give additional advice about what to do. You can look through them and choose the practices that suit your lifestyle and local circumstances.

In general, this is a good chart to follow, but in some cities, new technologies and regulations allow new things to be added to the recycling bin, such as orange juice and milk containers, that normally cannot be recycled. Please make sure to check your local regulations.

SHOULD I RECYCLE THIS?



RECYCLING PLASTICS IS AS EASY AS ... 1 , 2, 3 4, 5, 6, 7!

The numbers shown inside the triangles refer to different types of plastics used in making plastic products and containers. The numbering system is based on a voluntary plastic guide developed by the Society of The Plastics Industry (SPI). Presently, SPI is working to improve the numbering system to make it easier for you to know what to recycle.

WHAT DO THESE NUMBERS MEAN?



PETE

PET (Polyethylene terephthalate) PET is used in the production of soft drink bottles, peanut butter jars etc. PET can be recycled into fiberfill for sleeping bags, carpet fibers, rope, pillows etc.



HDPE

HDPE (High-density polyethylene) is found in milk jugs, butter tubs, detergent bottles, motor oil bottles, etc. HDPE can be recycled into flower pots, trash cans, traffic barrier cones, detergent bottles, etc.



PVC (Polyvinyl chloride) is used in shampoo bottles, cooking oil bottles, fast food service items... PVC can be recycled into drainage and irrigation pipes...



LDPE

LDPE (Low-density polyethylene) is found in grocery bags, bread bags, shrink wrap, margarine tub tops, etc. LDPE can be recycled into new grocery bags, but in general, it is not recommended to put plastic bags in your recycling bin. Take your used shopping bags to a supermarket that offers plastic bag collecting services.



PP

PP (Polypropylene) PP is used in most yogurt containers, straws, pancake syrup bottles, bottle caps, etc. PP can be recycled into plastic lumber, car battery cases, manhole steps, etc.



PS

PS (Polystyrene) PS is found in disposable hot cups, packaging materials (peanuts), and meat trays, etc. PS can be recycled into plastic lumber, cassette tape boxes, flower pots, etc.



OTHER

OTHER This is usually a mixture of various plastics, like squeeze ketchup bottles, "microwaveable" dishes, etc. Other (number 7) is usually not recycled because it is a mixture of different types of plastics.

Source: New York State
Department of Environmental
Conservation



ADDITIONAL RESOURCES

ARTICLES/BLOGS/READINGS

Throw Away Culture: The Truth About Recycling - *Bob Holmes*

<http://bit.ly/2tTFBiY>

Article from New Scientist explaining the limitations of plastic recycling. Includes charts, and graphs to show the breakdown of the plastics system, and poses the question: is it worth it?

Plastics by the Numbers

<http://learn.eartheasy.com/2012/05/plastics-by-the-numbers/>

This article explains each different type of plastic and the number classification in order to clarify which plastics can be recycled and give more information about the different types of plastics.

VIDEOS

CarbonLite: Inside the World's Largest Plastic Bottle Recycling Plant

https://youtu.be/vAr4BZM_Tzk

This video shows the recycling process of turning plastic bottles into PET pellets which can be transformed into new bottles.

Know Your Plastics - *GOOD Magazine*

https://youtu.be/_qTelxi3MjU

This video explains the different types of plastics, their labels/numbers, and how to best recycle them.

Precious Plastic - *Dave Hakkens*

<https://youtu.be/8J7JZcsoHyA>

This video gives instructions on how to turn plastic waste into something new, giving their DIY machine designs to the public for free so that everyone can participate.

STORY TELLING

These DIY Machines Let Anyone Recycle Plastic into New Products

<http://bit.ly/2hIvYcG>

This article reports on business set up that allows people to build simple machines to turn their plastic into other materials.

Plastic Pollution from the Oceans is Being Used to Make Designer Sunglasses

<https://ind.pn/2zEGNeV>

This article reports on a company that uses ocean plastic debris to make and sell sunglasses.



OTHERS WORKING ON THIS

The Materials Recovery for the Future Collaborative

www.materialsrecoveryforthefuture.com

Group publishing reports and organizing collaborations with industries to research and develop ways to recycle flexible plastic packaging.

Plastics Recycling Convention

www.plasticsrecycling.com

Convention for the plastics recycling industry to generate and share new achievements, investments, and ideas.

Association of Plastic Recyclers

www.plasticsrecycling.org

National trade association of companies involved in the plastics recycling process.

REPORTS

Plastics recycling: challenges and opportunities

<http://bit.ly/2tiWwfn>

This report is showcasing research done in support of plastics recycling mentioning the tradeoffs involved, and future improvements for the industry.

The New Plastics Economy Rethinking the future of plastics - *World Economic Forum*

<http://bit.ly/1Ou5wDU>

This Report creates a more circular model for plastics industry which involves recycling for a more sustainable plastics industry.

2015-16 Centralized Study on Availability of Plastic Recycling

<http://bit.ly/2i7RHj0>

This study is analyzing the availability and systems involved for the process of plastics recycling.





WHAT CAN YOU DO DIFFERENTLY TO ENSURE YOU ARE **RECYCLING** PROPERLY?

1.

2.

3.

4.

5.

Remove

So far, so good! With this toolkit, you have made every effort to reduce the amount of plastic pollution we allow to flow into the environment. Unfortunately, the fact of the matter is that there is already an immense amount of plastic pollution dirtying our waterways and harming the planet's organisms. At this point, we as humans have to accept the fact that we need to do more than stop producing plastic pollution; we need to reverse the impact we have already made. We need to work to clean up the world's oceans and to find a way to deal with all the plastic we collect.

Our fifth and final step in this toolkit is to remove existing plastic. This process presents exciting opportunities. Plastic/litter clean-ups are great community events that let you meet the people who live around you while cleaning up your local community at the same time. New technologies are being invented as we speak to collect the plastics in the world's oceans. New products are being created to take advantage plastics collected from the environment and recycled.

The best way you can help the effort to remove plastic pollution from our environment is to support some of the great organizations working right now on that very issue. They need your support in resources to supply clean-up efforts around the world, and they need your physical presence to come out and volunteer for a beach clean-up. Some of these groups are researching and discovering new ways to remove plastic from our oceans. The other side of the equation is the demand for recycled plastic products. If consumers demand the products they buy come from 100% recycled materials, and they support innovative businesses that turn plastic recovered from the environment into new materials like clothing and building materials, there will be increased incentive for these groups to remove the plastic from the environment.

Check the following section to learn about organizations working on efforts to remove plastics from the environment.

HELP THE EFFORT TO REMOVE PLASTIC

- Start a beach or river clean-up in your local community.
- Support the work of organizations removing plastic from the environment.
- Purchase innovative products created from recovered ocean or environmental plastics.



ADDITIONAL RESOURCES

ARTICLES/BLOGS/READINGS

How to Plan a Beach Cleanup

<http://www.greenhandsusa.com/eventguide/page:260>

This simple guide shows you the things you need to do in order to plan a beach or community clean-up.

How scientists plan to clean up plastic waste threatening marine life - *Steve Connor*

<https://ind.pn/1JeQgfn>

This article explains scientist's strategy for cleaning up garbage patches in ocean gyres. They claim that it is more effective to install inflatable booms off the coast of highly populated areas in order to prevent more plastic from entering the oceans. This will remove around 31% of microplastics from our oceans, opposed to 17% will booms placed inside the garbage patches.

Can You Remove Plastic Bottles From Your Life?

<http://bit.ly/2FQi8qB>

This article highlights the modern obsession with plastic and encourages readers to reduce their plastic bottle consumption.

VIDEOS

How Does 4Ocean Remove Trash from the Ocean

<https://youtu.be/tsiQkiUqkA4>

This video from 4Ocean discusses the ways in which this company removes trash from the ocean.

Iceland Becomes First Store to Remove Plastic Packaging - *World News*

<https://youtu.be/cE6QavKXvcM>

World News: A UK supermarket in Iceland becomes the first to remove plastic packaging from their supermarket.

OTHERS WORKING ON THIS

The Drifters Project

www.driftersproject.net

The Drifters Project works to remove vast quantities of plastic pollution from the oceans and repurposes it in meaningful ways.

The Ocean Cleanup

www.theoceancleanup.com

A start-up founded in 2013 that has a new technology that it says will be able to clear 70 million kg (>154 million pounds) of plastic debris in ten years from the 5 ocean plastic patches.



Effort to clean up ocean plastic to begin in 12 months, years ahead of schedule - *Lindsey Jacobson*
<http://abcn.ws/2pD9W3o>

This article describes The Ocean Cleanup's plan to install a passive plastic filtration system off the coast of highly populated areas within the next 12 months. If this plan is successful, an estimated 50% of the Great Pacific Garbage Patch will be cleaned up within the next 5 years.

The Largest Cleanup in History
www.theoceancleanup.com

The Ocean Cleanup organization provides the clean up of trillions of pieces of plastic litter in beaches, including a cleanup in the Great Pacific Garbage Patch.

This New Technology Could Help Clean Ocean Plastic Pollution
<http://bit.ly/2tiGKWk>

This video explores Robert Edwin Rouse's design, a hybrid turbo-machinery system for reclamation and prevention of ocean plastics, providing marine energy and propulsion, while removing micro plastics from the water.

STORY TELLING

Every minute, one garbage truck of plastic is dumped into our oceans
<http://bit.ly/2oMC5IV>

This article illustrates the sheer size of the problem we will have to clean up to rid our oceans of plastic pollution.

From Filthy to Fabulous: Mumbai beach undergoes dramatic makeover
<http://cnn.it/2Fpi0kk>

This article proves that one person really can make a difference when it comes to plastic pollution.

Ocean Cleanup Array That Could Remove 7,250,000 Tons Of Plastic From the World's Oceans -
Timon Singh
<http://bit.ly/2BRQycl>

This article profiles 19 year old Boyan Slat, the inventor of a device that could potentially remove 7,250,000 tons of plastic from the ocean. It describes the intricacies of the device, and the foundation of his company, The Ocean Cleanup Foundation.





WHAT CAN YOU DO TO HELP REMOVE PLASTIC FROM THE ENVIRONMENT?

1.

2.

3.

4.

5.

Make a Plan and use the Plastic Pollution Footprint Tracker

You now know where you stand as far as plastic pollution footprint and likely you now want to know what you can do to lower it. There are three important things that you can do.

You will probably agree with us that the first, and most important thing you should do is to reduce your consumption of plastics. This includes both refusing plastic items that you feel are not necessary for you (for example refuse the plastic straws offered at restaurants) and reusing products to extend their lifecycle and keep them out of the landfill (for example buying a bottle to carry your own water instead of buying bottled water).

The second step to be sure to take is recycling the plastic you do use and making sure you are doing so properly.

The final step is contributing to the removal of plastic that is already in the environment.

As you put more and more of these actions into practice you will discover that they become habitual and second nature. They will also bring you satisfaction. After all you will not only be contributing to the solution of a serious planetary problem, but you will also be creating a better living environment for yourself and others.

Once you adopt these practices into your life you will truly be a part of the campaign to end plastic pollution!

At the end of each of the 5 Rs sections you were asked to think about what you could do differently. Here you will have the chance to choose how you can apply those plans and set a goal to reduce your plastic pollution footprint.

- 1. Reduce your consumption of plastics.**
- 2. Properly recycle the plastic you use.**
- 3. Remove plastic that is already in the environment.**



MAKE A PLAN

We invite you to review your results from the plastic pollution footprint calculator (page 24) and determine which plastic products contribute most to your plastic pollution footprint. Then, we suggest that you determine if any of the items on the list could be easily given up completely. After that, determine how you could reduce, refuse, reuse, or recycle other items on the list.

Check the column that corresponds with the action you intend to pursue to decrease your plastic pollution footprint of a specific plastic item. Then write down a short explanation of the way you intend to do this.

CHART 1	Reduce	Refuse	Reuse	Recycle	HOW?
<i>Example - Plastic bottles</i>	X				<i>Buy reusable water bottle and pitcher to filter water.</i>
Plastic bottles					
Plastic cups					
Straws					
Cotton swabs w/ plastic sticks					
Cigarette butts					
Plastic resealable bags					
Plastic cling wrap					
Plastic silverware					
Plastic plates					
Food containers					

CHART 2	Reduce	Refuse	Reuse	Recycle	HOW?
Food Packaging					
Plastic grocery bags					
Cleaning containers					
Toothbrushes					
Toothpaste					
Medicine bottles					
Diapers					
Feminine products					



This is a personal plan and putting it in practice will require you to make a commitment. A good practice when you are starting off is to rely on a friend, family member, co-worked, etc. who will call you out when you “forget” your commitment. Commitments that are made publicly to others generally are more likely to take place.

USE THE PLASTIC POLLUTION FOOTPRINT TRACKER

Now, you can set a commitment or a goal for a reduced level of plastic pollution. Every month, as you adopt more and more behaviors to reduce your plastic consumption and pollution, you will be able to see your footprint shrinking. At the end of every month and at the end of a year, you will be able to compare your results to the goals you set at the beginning of the process. Hopefully you will not only meet but exceed them!

This chart will allow you to track your ongoing efforts to reduce your plastic pollution footprint. It will illustrate how the behavioral changes and day to day decisions can add up to a great impact. Over the course of a year, you will track your monthly consumption of the same list of plastic polluting products from the footprint calculator. At the end of the year you can tally up your entire consumption of each item and compare it to the goal you set at the beginning. If your actual consumption is lower than your goal, great job! You can consider setting an even more ambitious goal for next year. If your actual consumption outpaced your goal, you may want to evaluate which parts of your plan you fell short on.



Flip to the next page
to calculate your
plastic consumption.



ITEMS	MY ORIGINAL FOOTPRINT <i>Results from page 24</i>			MY GOAL FOOTPRINT <i>Total # I hope to consume, now that I am reducing my footprint</i>		
	Total # consumed / year		Total # consumed / month	Total # to consume / month		Total # to consume / year
<i>Example - Plastic bottles</i>	100	\ 12 =	8.3	4	x 12 =	48
Plastic bottles		\ 12 =			x 12 =	
Plastic cups		\ 12 =			x 12 =	
Straws		\ 12 =			x 12 =	
Cotton swabs w/ plastic sticks		\ 12 =			x 12 =	
Cigarette butts		\ 12 =			x 12 =	
Plastic resealable bags		\ 12 =			x 12 =	
Plastic cling wrap		\ 12 =			x 12 =	
Plastic silverware		\ 12 =			x 12 =	
Plastic plates		\ 12 =			x 12 =	
Food containers		\ 12 =			x 12 =	
Food packaging		\ 12 =			x 12 =	
Plastic grocery bags		\ 12 =			x 12 =	
Cleaning containers		\ 12 =			x 12 =	
Toothbrushes		\ 12 =			x 12 =	
Toothpaste		\ 12 =			x 12 =	
Medicine bottles		\ 12 =			x 12 =	
Diapers		\ 12 =			x 12 =	
Feminine products		\ 12 =			x 12 =	



MY ACTUAL FOOTPRINT

Track your results for 12 months

MONTH:	1	2	3	4	5	6	7	8	9	10	11	12	YEAR TOTAL
<i>Example - Plastic bottles</i>													
Plastic bottles													
Plastic cups													
Straws													
Cotton swabs w/ plastic sticks													
Cigarette butts													
Plastic resealable bags													
Plastic cling wrap													
Plastic silverware													
Plastic plates													
Food containers													
Food packaging													
Plastic grocery bags													
Cleaning containers													
Toothbrushes													
Toothpaste													
Medicine bottles													
Diapers													
Feminine products													





EARTH DAY NETWORK

Thank you for taking the time to read through our Plastic Pollution Primer and Action Toolkit.

We hope you have picked up a few tips along the way that will help you to tangibly lessen your plastic pollution footprint. As a global problem, plastic pollution requires a global solution. It's up to each and every one of us to do as much as we can. If you thought our toolkit was helpful, please be sure to spread it among your friends and family. The more people on earth actively working against the accumulation of plastic pollution, the closer we are to reaching a solution. From everyone at Earth Day Network, we appreciate your contribution.

WWW.EARTHDAY.ORG