



Plastics pollute in many ways, from being ingested by and entangling animals to leaching chemicals that effect human and ecological health. Plastic chemicals (“plasticizers”) are in all human bodies, in all food chains, and in all bodies of water. Single-use and disposable plastics make up the majority of plastic pollution.

This guide is meant to introduce individuals, groups, and institutions to actions that can combat plastic pollution. It assumes that you already understand how plastic pollutes and the types of actions that are the most effective.

An educational podcast that accompanies this Guide is at:

<http://emedia.art.sunysb.edu/maxliboiron/webpages/citizensguideplastic.html>

Information and Education:

Plastic Pollution Coalition: plasticpollutioncoalition.org

A global alliance working to end the global dependence on disposable plastic and to reduce the overall global plastic footprint for individuals, businesses and organizations.

Environmental Working Group: www.ewg.org

Non-profit for sound research about chemicals in consumer products, including plastic.

Plastic Free Times: plasticfreetimes.com

Online news source about plastic pollution.

Algalita Marine Research Foundation: www.algalita.org

Pioneering research on ocean plastics. Their research reports and presentations are available for free.

5 Gyres: 5gyres.org

An activist-research group who conducts research and communicates about the global impact of plastic pollution in the world's oceans.

Life Less Plastic: lifelessplastic.blogspot.com

One woman's quest to rid her life of plastic as entirely as possible. Lots of tips on how she does it.

Plastic Pollution: News, Actions and Education: <http://www.facebook.com>

Facebook feed that posts information on plastic pollution.

Movies: *Bag It, Blue Vinyl, Tapped* and *Plastic Planet*.

What Individuals Can Do:

You should be aware that plastics and plastic chemicals are ubiquitous, and you can't eliminate all health risks associated with plastics. But you can reduce them, and you can support businesses and institutions that are attempting to do the same.

Some plastics are more dangerous than others. No. 3 or “PVC” plastics, properly called polyvinyl chloride or just “vinyl” and No. 7 or “PC” plastics, polycarbonates, are the two most dangerous because they leak phthalates and BPA, respectively. Silicone is a safer type of plastic.

How to Handle Plastics:

(from the Environmental Working Group Tips for a Healthy Home)

- Don't microwave food or drinks in plastic containers -- even if they claim to be “microwave safe.” Heat can break down plastics and release chemical additives into your food and drink. Microwaves heat unevenly, creating hot spots where the plastic is more likely to break down.
- Use plastic containers for cool liquids only-- not hot.
- Don't reuse single-use plastics. They can break down and release plastics chemicals when used repeatedly.



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- Avoid old, scratched plastic water bottles. Exposures to plastic chemicals may be greater when the surface is worn down.
 - Wash plastics on the top rack of the dishwasher, farther from the heating element, or by hand. This will reduce wear and tear.
 - If you or a family member is in the hospital, request medical devices without PVC and DEHP.

In Your Home:

- Use glass, ceramic, stainless steel, or pyrex containers whenever possible.
- Cover food in the microwave with a paper towel or an upside down plate instead of plastic wrap.
- Avoid canned foods: the lining of many cans contains BPA.
- Buy milk and juice in glass containers. Many carton containers are lined with BPA laden plastic.
- Shop at farmers markets or places with bulk food bins where food is less likely to be packaged in plastic.
- Use wax paper wrap or cotton vegi bags instead of cling wrap.
- Lay natural flooring instead of vinyl.
- Use wooden cutting boards instead of plastic ones.
- Use a cotton shower curtain instead of vinyl.
- Use bar soap and shampoo instead of liquid soap, which comes in plastic containers.
- Do not use plastic-bead exfoliates—the tiny plastic pellets can go straight down that drain and into the water ways. Instead, use exfoliates made of seeds or other natural materials.

As a Parent:

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- Don't allow your baby or young child to handle or chew on plastic electronics (the remote, your cell phone) because they may be treated with fire retardants.
 - Wash children's hands before they eat.
 - While phthalates were recently banned in new children's toys, they may be in toys made before February 2009.
 - Give your baby natural teethingers like frozen washcloths or natural, uncoated wood.
 - Use toys made of natural materials, like wool, cotton, and uncoated wood.
 - In the tub, play with cotton washcloths, finger puppets, wooden toy boats and lightweight aluminum cups instead of soft plastic bath toys and books.
 - Use plastic-free and non toxic bath and skin products: <http://www.ewg.org/skindeep/childrens-products/>
 - If your child crawls, sweep and mop regularly. Many plasticizers accumulate in house dust.
 - Pack plastic-free lunches: <http://www.wastefreelunches.org/parents.html>.
 - Buy PVC-free school supplies: <http://salsa.democracyinaction.org/o/852/t/2088/signUp.jsp?key=4410>

As a Consumer:

- Avoid as many disposable plastics as possible.
- Avoid #3 and #7 plastics in particular.
- Carry reusable water bottles and to-go cups, and make sure they are glass or stainless steel. Look out for stainless steel bottles that contain a lining, which may leach BPA. If you are without a reusable bottle, buy a drink in a glass bottle.
- Even BPA-free water bottles leach chemicals (just not BPA!). It's best to avoid plastic altogether.
- Do not use plastic covers on hot to-go drinks.
- Tap water is better than bottled water because it isn't stored in plastic and has much higher regulation standards.
- Use reusable food containers and utensils like Lunchbots and reusable utensils like To-Go Ware instead of plastic disposables.
- Bring your own reusable bag.
- Use refillable lighters instead of plastic disposable ones.
- Say no to plastic straws. You can buy stainless steel and glass straws to carry with you.
- Say no to thermal-coated receipts, which contain BPA.
- Say no to all plastics in restaurants. This can include: talking to managers, repeating your request, demonstrating alternatives, and leaving a card or information flier.
- Use the free GoodGuide app to scan barcodes and get the healthiest goods.

As a Citizen:

- Start a plastic bag ban in your city. While plastic bag bans have been criticized for being short sighted when it comes to larger issues of plastic pollution, they are highly symbolic and offer a form of protest against the concept of single-use items and disposable plastics. More at: <http://plasticpollutioncoalition.org/projects/ban-bags-in-your-town/> and <http://www.bagitmovie.com/bagittown.html>
- Start a plastic bottled water ban in your workplace, school, or neighborhood.
- Petition business to replace plastic products or plastic parts of products with nontoxic alternatives.
- Request a reduction in the use of disposable plastics in the events your business, school, or company creates. Or even better, advocate for zero waste events.
- Educate your students about plastic pollution..
- Write letters of support for legislation.
- Join, volunteer or donate to pre-existing campaigns against plastic pollution, including the Plastic Pollution Coalition, 5Gyres, or the Algalita Research Foundation.
- Use the Marine Debris Tracker App to log plastic pollution.
- Read the Rise Above Plastics Activist Toolkit: <http://issuu.com/rise.above.plastics/docs/activist.toolkit>
- Follow the *Plastic Free Times* and other news sources to learn of new legislation.

As an Educator:

Education kits abound! Here is a sample:

- Curriculum Guide from Bag It: http://www.bagitmovie.com/for_educators.html
- Classroom projects from Algalita: <http://www.algalita.org/education/index.html>
- Educators' Kit from the Plastic Pollution Coalition: <http://plasticpollutioncoalition.org/projects/plastic-free-campus/educators-toolkit/>
- Educator's Resource Guide from Plastic Free Schools: <http://kokuahawaiifoundation.org/schoolprograms/plasticfree-schools/educators-resource-guide/>
- C-More science kits on marine debris: http://cmore.soest.hawaii.edu/education/teachers/science_kits/marine_debris_kit.htm
- Other resources can be found on the NOAA website, but keep in mind that not all of these have been reviewed for accuracy and some are created by pro-plastic organizations: <http://marinedebris.noaa.gov/outreach/otherres.html>
- Join the Plastic Free Schools movement: <http://kokuahawaiifoundation.org/schoolprograms/plasticfreeschools/>

As Student:

- Advocate for a plastic-free lunches: <http://www.wastefreelunches.org/>
- Use the Center for Health, Environment & Justice's PVC-free University kit: <http://chej.org/campaigns/pvc/projects/pvc-free-university/>
- Learn about plastic and toxic-free cosmetics and start an education campaign in your school: <http://www.ewg.org/skindeep/>
- Attend the Plastics Are Forever Youth Conference

What Groups, Businesses and Institutions can do:

- Create a purchasing policy that minimizes or eliminates single-use plastics.
- Contact your suppliers, if applicable, and ask for information about the health hazards of their plastics, and/or request that they use plastic alternatives in their products.
- Use the Plastic Disclosure Project to estimate your plastic foot print.
- Conduct a waste audit to find out the types and amounts of plastics your institution disposes of the most, and target those.
- Create Zero Waste events or plastic-free events.
- Use building materials that are plastic free. Avoid PVC and vinyl flooring in particular.
- Publicly designate your institution as Plastic Free.
- Educate your members about plastic pollution.
- If your company produces goods, practice extended producer responsibility for the waste your product involves.
- If your insitution includes health care, join the Healthcare Without Harm movement, which uses plastics that do not leach: http://www.noharm.org/us_canada/issues/toxins/pvc_phthalates/resources.php

FAQs:

Q: I recycle. Doesn't that help?

A: While certain types of recycling for specific materials can be beneficial, this is not the case with plastics. In the US, 93% of plastics are not recovered for recycling. Even PET (soda/water) bottles are only collected 38% of the time (source EPA data 2008). Most plastics are downcycled, meaning they will be converted into an object with less robust properties than the original object, and these new objects will eventually be landfilled. Far better alternatives include the elimination of single-use plastics and extended producer responsibility (EPR), meaning the companies that produce plastics are responsible for collecting and recycling them.

Read More: Harry (2011). *The Recycling Myth. The Flotsam Diaries.*

Hopewell, J., R. Dvorak, et al. (2009). "Plastics recycling: challenges and opportunities," *Philosophical Transactions of the Royal Society B: Biological Sciences* 364(1526).

Q: Can we clean up the plastic island?

A: First of all, there is no island. Plastics in the ocean are more like a soup made of fragmented pieces throughout the water column. They are not all in close proximity, even in a gyre, and are even inside the bellies of fish and in plankton. This makes dividing plastic from its environment and gathering it together impossible by current economic and technical standards. A better alternative is to stop plastic at the source, before it enters the ocean.

Read More: Wilson, S. (2010). *The Fallacy Of Gyre Cleanup: PART ONE, SCALE. 5 Gyres.*

Barnes, D. K. A., F. Galgani, et al. (2009). "Accumulation and fragmentation of plastic debris in global environments." *Philosophical Transactions of the Royal Society B: Biological Sciences* 364(1526).

Greenpeace (2006) "Plastic Debris in the World's Oceans." *Defending Our Oceans.*

Q: What about bioplastics, biodegradable or compostable plastic?

A: Bioplastics are regular plastic made from plants. In other words, instead of using oil, they use plants to make the same product. Bioplastics may or may not be biodegradable, may or may not be toxic. At the moment, there are not independent standards for what biodegradable or compostable plastics mean. Some plastics that claim to be 'biodegradable' or 'compostable' may take many years to decompose or may require special high-heat composting facilities (which are uncommon). Worse, some of these types of plastics are made of thin plastic threads held together by cornstarch. When the cornstarch dissolves, it appears to the naked eye that the plastic has biodegraded, but instead there are tiny plastics left over that are the perfect size for ingestion by small organisms. In short, the problems with biodegradable or compostable plastics are that there is no system for proper capture and composting (recycling them can contaminate regular plastics), there is a lack of definition for what the terms mean and what happens to the plastic, and responsibility for ultimate disposal is with consumer instead of manufacturers.

Read More: Tabone et al. (2010). "Sustainability Metrics: Life Cycle Assessment and Green Design in Polymers," *Environmental Science and Technology*, 44 (21), pp 8264–8269.

Song, J. H., R. J. Murphy, et al. (2009). "Biodegradable and compostable alternatives to conventional plastics," *Philosophical Transactions of the Royal Society B: Biological Sciences* 364(1526).

Additional Reading:

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Ebbesmeyer, C. C. and E. Scigliano (2009). *Flotsametrics and the Floating World: How one man's obsession with runaway sneakers and rubber ducks revolutionized ocean science.* New York, NY, Smithsonian Books : Collins.

Freinkel, S. (2011). *Plastic: a toxic love story*. Boston, Houghton Mifflin Harcourt.

Gray, Janet, (2010). *State of the Evidence: The Connection Between Breast Cancer and the Environment*. Breast Cancer Fund.

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Koch, H. M. and A. M. Calafat (2009). "Human body burdens of chemicals used in plastic manufacture." *Philosophical Transactions of the Royal Society B: Biological Sciences* 364(1526).

Meeker, J. D., S. Sathyanarayana, et al. (2009). "Phthalates and other additives in plastics: human exposure and associated health outcomes" *Philosophical Transactions of the Royal Society B: Biological Sciences* 364(1526).

Shaxson, L. (2009). "Structuring policy problems for plastics, the environment and human health: reflections from the UK" *Philosophical Transactions of the Royal Society B: Biological Sciences* 364(1526).

Thompson, R. C., C. J. Moore, et al. (2009). "Plastics, the environment and human health: current consensus and future trends." *Philosophical Transactions of the Royal Society B: Biological Sciences* 364(1526).

A more complete bibliography is available at:

<http://emedia.art.sunysb.edu/maxliboiron/webpages/biblioplasticpollution.html>

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J. Manuel Mansylla, *Catch of the Day*, scavenged beach plastic, 2011.