

SINGLE USE PLASTICS & GEORGIA

Science Facts and Analysis from Science for Georgia

Problem

Single use plastics are the most commonly thrown away plastic items, and include straws, utensils, bottles, and grocery bags. Chemically, single use plastics last forever but are generally designed to be used only once and thrown away. Of the more than 300 million tons of plastic produced per year, 50% is designed for single use. Almost all commonly used plastic is not biodegradable, and only 2% of plastic waste is recycled. Additionally, recycling cannot keep up with the increase in plastic production which is predicted to quadruple by 2050. An estimated 17.6 billion pounds of plastic leaks into the marine environment from land-based sources every year. This waste ends up in our landfills, parks, streets, and can wash into rivers and oceans where it can harm wildlife. These plastics never go away, but generally breakdown into smaller and smaller pieces known as microplastics and work their way into the food chain through fish and then eventually into us.

Why is this a problem?

Plastics have caused worsening problems in the global marine environment since the 1970s. Single use plastic items are made of [fossil fuels and synthetic chemicals](#), so they contribute to [climate change](#). **In 2017, all of the top ten items found in trash cleanups were single use plastic items.** These plastics put [marine life at risk](#). **Both marine and terrestrial animals mistakenly consume plastic which can lead to starvation, suffocation, laceration, infection, and reduced reproductive success and mortality.** As a coastal state, Georgia relies on its marine life for tourism and commercial fishing.

Microplastics not only threaten ecosystems but affect humans as well. Emerging research shows humans [inhale microplastic](#) through the air and [consume microplastics](#) through seafood, and processed food and beverages. These plastics contain chemicals that impact humans reproductive, endocrine, and nervous systems when consumed.

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Recommended Actions

- ❑ Companies can adopt alternatives to single-use plastics, following the lead of companies such as Walmart that is banning plastic bags in certain states starting July 1st, 2021.
- ❑ Governments can enact legislation and regulations that limit or eliminate single-use plastics. Single-use plastic bans are present in 30% of U.S. states, such as those in California, Connecticut, Delaware, Hawaii, Maine, New York, Oregon, and Vermont. This can be achieved through a plastic bag ban such as Georgia State Bill 104, a single plastic use tax, or a reusable bag incentive. Over [400 cities](#) in the U.S. have enforced city-wide plastic bag bans.
 - Define “single-use products” as food service-related products that are designed to be used once in the same form and then disposed of or destroyed. Single-use products include, but are not limited to, polystyrene products, plastic straws, and plastic grocery bags.
- ❑ Consumers can make their voice heard to representatives and lead by example by limiting plastic use, recycling their plastic, and choosing companies that are reducing or eliminating single-use plastics.

Facts and Analysis

What do those chemicals do to living things?

Plastics contain harmful chemicals such as [bisphenol A](#), [phthalates](#), and [brominated flame retardants](#), which have proven negative effects on reproductive systems, hormones, and nervous systems in humans. For instance, higher levels of bisphenol A are seen in those diagnosed with [obesity](#). Phthalates have also been linked with obesity, decreased female fertility, and preterm birth and low birthweight. When plastics are improperly disposed of, microplastics seep into soil and water and we are exposed to these chemicals via well-water, plants, animals, and fish that we consume.

Is this just a problem in the oceans?

No. Plastics are not just a threat to marine ecosystems but threaten land as well. A recent study found there are 4 to 23 times more microplastic pollution in terrestrial and fresh water than in the ocean.

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What is being done right now in Georgia?

The city of South Fulton passed a city ban on single-use plastic bags and containers to reduce waste, prioritize sustainability, and protect the environment. Items prohibited by the ban include plastic cups and straws, food containers, and grocery bags. Bags and containers must be certified compostable, 100% recyclable, or created using recycled materials.

The city of Clarkston passed a resolution to implement the “Acceptable Packaging and Products” ordinance, that serves to eliminate the use of polystyrene/plastic foam and single-use plastic products and other non-locally recyclable and non-property compostable food packaging. This was to protect the wildlife of its surrounding river sheds, and downstream waterways, and maximize the operating life of landfills and lessen the economic and environmental costs of managing waste.

Policy Analysis & Recommendations

Recommended policy would to be encourage the use of compostable, biodegradable, reusable, or recyclable alternatives.

Encouragement can range from:

1. Charging a single-use fee of 10 cents per item.
2. Offering discounts on products in acceptable packaging or for the use of reusable bags or containers.
3. Banning all single-use plastics.
4. **Provide a tax incentive or rebate at the end of the year on investments that businesses have made to source reducing efforts**

Studies have shown that charging for plastic bags, via a tax or fee, was the most effective measure to decrease plastic usage, and that very small financial incentives (5 to 7 cents) can lead to behavioral changes. Ban-only legislation can have diminished results depending on the city.

Alternative products range from cost neutral to \$0.06/unit in additional cost, depending on the alternatives being selected. Violations can be fined \$50-250 per violation, after a warning with no violation charge.

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Definitions

- **ASTMD6400 standard specification:** This is a standard specification for compostability used by most ordinances for determining “approved” alternatives to single-use plastics. Conducted by the American Society for Testing and Materials, (ASTM) certified products undergo a third-party test to determine if they can be aerobically composted in municipal or industrial facilities.
- **BPI: The Biodegradable Products Institute** is North America’s leading certifier of compostable products and packaging.
- **Composting:** A foundation of fertilization and food production, composting is the process of breaking down organic material – such as food scraps, leaves, and compostable products – into "compost," a nutrient-dense fertilizer. The key ingredients for composting are oxygen, carbon, nitrogen, and heat. Composting has a variety of benefits, including sequestering carbon dioxide, replacing toxic chemical fertilizers in food production, and diverting up to 30% of the trash we currently send to landfills and incinerators in the United States.
- **Compostable:** means a product will break down into, or otherwise become part of, usable compost in a safe and timely manner in an appropriate composting facility or a home compost pile or device. The product has been certified as compostable by Biodegradable Products Institute (BPI) or American Society for Testing and Material (ASTM D6400), or similar national or international certification authority.
- **Compostable Bag:** refers to a bag that meets the current ASTM D6400 for compostability. Compostable food service ware also must meet ASTM-Standards for compostability, and any bio-plastic or plastic-like product must be clearly labeled, preferably with a color symbol, to allow proper identification such that the collector and processor can easily distinguish the ASTM standard compostable plastic from non-ASTM standard compostable plastic.
- **Postconsumer recycled material (PCR):** a material that would otherwise be destined for solid waste disposal, having completed its intended end use and product life cycle. PCR content is often mandated for paper bags used by vendors in districts with single-use plastic bans.

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- **Reusable bags:** typically defined as an alternative carryout bag that is specifically designed and manufactured for multiple reuses and meets all the following requirement:
 - A minimum lifetime of 125 uses, the capacity of 22 pounds over 175 feet
 - Machine washable material that can be cleaned or disinfected
 - Made of film plastic and is a minimum of at least 2.25 mils thick.

Counterarguments

- **Increase tonnage to landfill.** Opponents have argued that plastic bans will increase demand for commercially compostable products over potentially recyclable plastics. In the short-term, this would mean more volume going to the landfill because the United States currently lacks necessary infrastructure to properly dispose of commercially compostable products.
 - However, **only 30% of recyclable products are recycled.** And an increased demand for commercially compostable products will encourage supply of composting infrastructure. In addition, increased awareness on composting will help divert more compostable products from landfills to **commercial compost facilities.**
- **Environmental footprint.** Paper bags have also come under fire for the carbon emissions estimated in their environmental footprint.

However, this claim does not take the product's full lifecycle into consideration. Unlike plastics, petroleum is not a core ingredient for paper products, and if compostable products are properly disposed, they contribute to carbon sequestration through composting and soil nutrient cycling.
- **Discriminate against people with disabilities.** Opponents of plastic bans - especially those restricting plastic straw use - have viewed these ordinances as an act of discrimination against people with disabilities.
 - However, the Center for Disability rights supports the ban and advises environmental groups and ADA advocates to have a conversation to come up with viable solutions. They emphasize that "the focus must shift from banning straws to pressuring the manufacturers and corporations to create an **environmentally and disability-friendly alternative.**"

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Resources

- <https://onlinelibrary.wiley.com/doi/full/10.1111/gcb.14020>
- <https://www.sciencedaily.com/releases/2018/02/180205125728.htm>
- <https://www.theconsciouschallenge.org/ecologicalfootprintbibleoverview/plastic-land>
- <http://clarkstonga.gov/sites/default/files/inline-files/FULL%20%20Packet%20Agenda%20%20Council%20%20Meeting%2012-3-2019%20.pdf>
- <https://advances.sciencemag.org/content/3/7/e1700782.full>
- <https://news.climate.columbia.edu/2020/02/20/plastic-production-climate-change/>
- https://www.biologicaldiversity.org/campaigns/ocean_plastics/index.html
- <https://www.nationalgeographic.com/environment/article/greenpeace-beach-cleanup-report-highlights-ocean-plastic-problem>
- https://link.springer.com/chapter/10.1007/978-1-4471-6500-2_1
- https://www.ecocenter.org/healthy-stuff/reports/vinyl-floor-tiles/flooring_phthalate_hazards
- https://plasticpollutioncoalitionresources.org/wp-content/uploads/2017/03/Effectiveness_of_plastic_regulation_around_the_world_4_pages.pdf
- <https://www.vox.com/the-highlight/2019/8/20/20806651/plastic-bag-ban-straw-ban-tax>

About Science for Georgia

Science for Georgia is a 501c3 dedicated to bridging the gap between scientists and the public through training, outreach opportunities, and direct contact with the public, policymakers, and the press. Science for Georgia highlights how science can impact people's lives and advocates for the responsible use of science in public policy.

Please reach out with any questions or comments.