

Expanded Polystyrene (EPS) Fact Sheet

What is expanded polystyrene (EPS)?

- Expanded polystyrene is a lightweight, insulating plastic material commonly used in thermal insulation and food service containers.¹
- EPS is often incorrectly referred to as Styrofoam, which is a trademarked brand of extruded polystyrene foam (XPS) often used for insulation and as a water barrier in buildings.¹
- EPS can be identified by plastic resin code 6: 

What are the issues with expanded polystyrene (EPS)?

- EPS foam is an environmental pollutant and non-biodegradable substance.²
- U.S. Department of Health and Human Services, through the U.S. National Toxicology Program, listed styrene as "reasonably anticipated to be a human carcinogen" in the 13th Report on Carcinogens.³
- Polystyrene foam appears to last forever, as it is resistant to photolysis, or the breaking down of materials by photons originating from a light source. This, combined with the fact that foam is lightweight and therefore floats, means that over time a great deal of polystyrene has accumulated along coasts and waterways around the world.²
- EPS can be difficult to recycle due to the fact there is currently a lack of viable markets for recycled EPS food containers. In addition, EPS is very difficult to clean once it has been used to carry food.¹

What alternative products are available?

1. Bioplastics

- **Bio-based plastics and bio-derived** plastics both use some sort of natural feedstock or byproduct plus fossil fuels. They are not compostable or biodegradable. They are recyclable. Example is Cokes' "plant bottle" made of 30% plant material.
- **Biopolymers** are compostable (industrial compost facility) and biodegradable materials made of natural substances such as chitin or cellulose. They can be made of plants (polyactic acid - PLA) or produced by bacteria (polyhydroxyalkanoate – PHA). [Eco-products](#) sells many PLA products made of corn (e.g. straws, cups).

2. Paper/Wood:

- Disposable paper (e.g. paperboard) and wood products are often made of birch, palm leaves, or bamboo. It is best to get Forest Stewardship Council (FSC) certified wood products. Paper products containing post-consumer recycled content is preferred. [Eco-Gecko](#) sells disposable paper/wood products.

¹ Center for Sustainable Energy. Recommendations for Reducing or Banning Foam Food Service Containers. March 2017. Available at: https://energycenter.org/sites/default/files/Guide_for_Polystyrene_Reduction_Policies.pdf

² Plastic Pollution Coalition. "What is a Plastic Free Town?" Website: <http://www.plasticpollutioncoalition.org/guides-towns-1/>

³ U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry. "Public Health Statement for Styrene." Website: <https://www.atsdr.cdc.gov/phs/phs.asp?id=419&tid=74#bookmark01>

3. **Combination**

- Products that combine paper and biopolymer together to make a disposable product. These include to-go coffee cups for hot beverages that are paper cups lined with a biopolymer (compostable plastic) lining. There's also paper sleeves with a compostable plastic window.

What alternatives should you avoid?

Do not purchase compostable or other disposable items that contain per- and polyfluoroalkyl substances (PFAS) also referred to as fluorinated compounds. These are a group of man-made chemicals that have been manufactured and used in a variety of industries around the world.⁴ They are used “to impart water-, stain-, and/or grease-resistance to a wide variety of products including non-stick cookware, carpets, cosmetics, textiles, and disposable foodware and food packaging.”⁵

The Environmental Protection Agency states that exposure to fluorinated compounds can lead to adverse health outcomes in humans.⁴ If humans ingest them (by eating or drinking food or water that contain them), the fluorinated compounds are absorbed, and can accumulate in the body. Not only are these persistent chemicals linked to serious health problems they are also highly persistent (which means they break down very slowly, if at all, in the environment), and can build up in the environment and our bodies.⁵

The Center for Environmental Health has been testing products for fluorinated compounds and has created a [database](#) with their lab results.⁶

Recommendations for Businesses

The best environmental choice to make is reusable durable dishware. Not only is less waste going to the landfill, it is cheaper for restaurants in the long-run. If a restaurant is not able to switch to reusable dishware, look for wood or paper products made with recycled content that are FSC certified. Paperboard or paper products that say “made with recycled content” or 30% [or more] post-consumer recycled content and made in the USA are recommended.⁷ Also birch wood, bamboo and or palm leaf products that are FSC certified and produced in the USA are a good choice. Check the [CEH Foodware Database](#) to see if a product contains fluorinated compounds. The database also includes the following information: manufacturer, product, fluorinated compound lab results, price/unit, recycled content, etc. (https://www.ceh.org/wp-content/uploads/CEH-Foodware-Database_Jan2018.xlsx).

⁴ U.S. Environmental Protection Agency. “Per- and Polyfluoroalkyl Substances (PFAS)” Website: <https://www.epa.gov/pfas>.

⁵ Center for Environmental Health. Avoiding Hidden Hazards: A Purchaser’s Guide to Safer Foodware. April 2018. Available at: <https://www.ceh.org/wp-content/uploads/CEH-Disposable-Foodware-Report-final-1.31.pdf>

⁶ Center for Environmental Health. “Foodware Database.” Website: https://www.ceh.org/wp-content/uploads/CEH-Foodware-Database_Jan2018.xlsx

⁷ The City of Portland, Oregon. “Disposable Cups, Cutlery and Dishware.” Website: <https://www.portlandoregon.gov/sustainabilityatwork/article/507589>