

# How big a problem is ocean polystyrene pollution?

December 20 2019, by Hazel Akester

---



Foamed polystyrene can cause serious harm to marine life. Credit: budak-Flickr

If you've been to the beach, you're familiar with the joys of beach food—all the way from shaved ice raspados in Mexico to fish and chips in England. And in many cases these treats come bundled up in plastic. A particularly prevalent example is the takeaway container or cup made from foamed white polystyrene (often referred to as styrofoam).

Foamed [polystyrene](#) is a type of plastic that when puffed with air is lightweight, buoyant, water resistant and a good insulator. These properties also make foamed polystyrene a go-to choice for filling bean bags, insulating housing and turning into blocks or nuggets for use as protective packaging for products in transit. While foamed polystyrene can hold a rigid shape, it also easily crumbles back into smaller individual pieces.

Unfortunately, foamed polystyrene's light weight, popularity and potential to rapidly disintegrate also make it a common form of plastic pollution—whether carried away on the wind, by the rain or by a sneaky seagull lured by the smell of fish and chips, foamed polystyrene frequently finds its way into the ocean. Like practically all plastics, foamed polystyrene takes so long to truly biodegrade that it is classed as not biodegradable. Instead, once it is in the ocean, the churning waves and beating sun weather it back down into bite-size pieces more easily than is the case with other plastics.

## **Straight to the ocean**

Foamed polystyrene isn't limited to land-based uses. It is often used in and on the ocean in fisheries, aquaculture and water sports, among other activities, contributing to its presence in aggregated pollution within big ocean gyres and at the top of beach clean product lists. Common maritime uses of foamed polystyrene include:

Buoys—sometimes covered in hard plastic, buoys serve to demarcate areas (e.g. safe sea swimming zones). If not covered in hard plastic or if this hard plastic becomes brittle and breaks over time, the foamed polystyrene core can be quickly blitzed into tiny puffed pieces by waves, wind and animals.

Fish boxes or cool boxes and lids—these boxes help to keep the catch

fresh and cold during fishing trips. However, on deck even mild wind can whip a lid overboard, which explains why these are frequently spotted at sea.

Interior of pontoons and marina platforms—as foamed polystyrene is so light, it can form a buoyant platform for seafarers to reach their moored boats. If uncovered, this surface is subject to ongoing weathering by the elements and thousands tiny crustaceans that burrow into it, creating millions of foamed polystyrene shavings. Even if these platforms are covered, severe storms can split them open—as seen at Holyhead Marina in 2018—blanketing the water in foamed polystyrene confetti.

These products are used on the water and therefore represent a direct potential source of [plastic](#) pollution to the ocean. With this in mind, Fauna & Flora International's Marine Plastics team is conducting scoping of the extent and nature of marine uses of foamed polystyrene and the likelihood of these products becoming pollution. This information will help us to determine how much of a pollution threat the use of foamed polystyrene in marine activities presents to ocean animals and habitats.

### **Plastic popcorn anyone?**

Laboratory research suggests that foamed polystyrene pollution in the ocean could cause serious harm to marine life. While it bobs on the surface foamed polystyrene can be scooped up by a variety of seabirds that might mistake it for food such as fish or squid. Once algae, barnacles and other small organisms grow on its surface, it may sink beneath the surface where even more ocean life can accidentally eat it. When eaten, foamed polystyrene has been demonstrated in experimental conditions to reduce fertility, decrease energy and alter juvenile development of invertebrates at the base of the marine food chain. Like other plastics, it also occupies space in animals' stomachs that should be available for food, sometimes creating a false feeling of fullness or

causing a physical blockage that can lead to internal damage.

Furthermore, foamed polystyrene has raised significant concerns relating to environmental and human health because its chemical components (e.g. styrene) have been linked to serious diseases, including cancer.

## **Our call for information**

As a result, a parade of countries and states have banned or limited the use, production or import of foamed polystyrene food-contact products, such as takeaway containers and cups, in recent years. While this probably reduces the overall amount of foamed polystyrene entering the ocean, foamed polystyrene pollution derived from ocean-based activities remains ubiquitous and largely overlooked in comparison.

As part of our scoping we're conducting a questionnaire for people who are active on or near the ocean. If you use or see foamed polystyrene along beaches, waterways or out on the [ocean](#), we'd love to hear from you. Early results have highlighted use of foamed polystyrene in unlikely places, such as to support boats while they are being built or fixed, use of tiny foamed polystyrene balls as a form of secondary waste-water treatment (e.g. BIOSTYR), and even foamed polystyrene legs supporting a bench in a marina.

We expect we'll learn of many more unexpected marine-related uses of foamed polystyrene over the coming months, as well as the most likely pollution suspects and whether we can play a role in tackling them.

Provided by Fauna & Flora International

Citation: How big a problem is ocean polystyrene pollution? (2019, December 20) retrieved 29 April 2024 from <https://phys.org/news/2019-12-big-problem-ocean-polystyrene-pollution.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.