

Expanded Polystyrene Foam has No Place in Aquatic Environments

A briefing note from the British Columbia Marine Debris Working Group



The Problem

Expanded polystyrene or EPS foam is used in nearly every dock, raft or other type of flotation in Canadian aquatic environments because it's cheap and lightweight. The problem is that it erodes easily and frequently breaks up or escapes moorings during storm events. Our shorelines are littered with vast quantities of broken EPS that continues to erode into particles too small to be recovered and ideally sized to be mistaken for food by birds, marine mammals and fish. It adsorbs pollutants from water and can be extremely toxic, acting as a vector to transport that toxicity to animals¹.

Scale of the problem

While regional differences are great, BCMDWG members report **40-80% of the debris removed from BC shorelines is EPS**. Worse, the majority of debris left behind is EPS that is inaccessible to cleanup operators because it is too small to be picked up or lodged in inaccessible crevices.

Only a fraction of the coastline impacted by marine debris has as yet been cleared; and more debris washes onto cleared beaches with every tide.

¹ Chelsea M. Rochman et al, Long-Term Field Measurement of Sorption of Organic Contaminants to Five Types of Plastic Pellets: Implications for Plastic Marine Debris, *Environ. Sci. Technol.* 2013, 47, 3, 1646–1654 December 27, 2012 <https://doi.org/10.1021/es303700s>



Alternatives are Manufactured in Canada

- [New Wave Marine Solutions](#) in Campbell River and 100 Mile House uses rotationally molded polyethylene to create air-filled floats in a wide variety of shapes and applications.
- [Sandale Utility Products](#) in Surrey uses air-filled HDPE pipe as dock flotation, with proven results for stability and resistance to storms.
- [Poseidon Ocean Systems](#) in Campbell River manufactures EPS-free flotation for the aquaculture industry

Encapsulated Foam

Some jurisdictions in the US have required foam flotation to be encapsulated. ***We do not recommend this as a solution to the problem.*** Foam encapsulated in concrete or thin-walled plastic coatings breaks up in winter storms and is then more difficult and costly to clean up, due to the additional weight and water retention.

The regulatory challenge

We seek a regulatory solution that would ban all aquatic uses of EPS. Yet no single authority of the federal government has the power to regulate all of those uses:

- DFO can regulate fisheries uses and small craft harbours under its jurisdiction
- private marinas, private dock owners and other industries are not subject to DFO regulation as to the materials used in construction

A regulatory solution

We recommend that the federal government should list EPS for all aquatic applications on the Priority Substances List of the *Canadian Environmental Protection Act*.

- the federal government has established a precedent by listing single-use plastics on the Priority Substances List.
- There is equally, if not more compelling evidence to list EPS in aquatic applications:
 - it is routinely placed directly into aquatic environments
 - it escapes control of owners regularly and with increasing frequency as more frequent and more violent storm events occur
 - it breaks down rapidly into particles that are impossible to control or recover
 - it adsorbs persistent organic pollutants in marine waters and can become extremely toxic¹
 - it is readily mistaken for food by marine mammals, fish and birds

Incenting and Encouraging Change at Home and Abroad

The federal government should work with the Provinces and Territories to establish comprehensive approaches to recovering EPS that is currently polluting aquatic environments. End-of-life solutions for EPS that has weathered in aquatic environments are presently limited to landfilling. The inclusion of sand, water and other contaminants in the material make it unsuited to reprocessing. We accordingly suggest that the Canadian Council of Ministers of the Environment should take on the issue, in the context of the Zero Waste Action Plan, with a view to establishing:

- incentives or subsidies for recycling EPS that encourage owners to surrender it before it has weathered unacceptably;
- disincentives to landfilling EPS;
- funding for Small Craft Harbours to replace flotation;
- incentive programs to encourage private owners to replace EPS flotation; and
- comprehensive federal/provincial funding programs designed to address recovery of all plastic debris, wherever located.

The problem with EPS, as with all plastic debris, is global in nature and we believe that Canada can continue to play a leadership role through its work with the G7 and encouraging implementation of the Ocean Plastics Charter. Specific focus on eliminating the use of EPS in aquatic applications should become a priority action item for Charter signatories.

