

**P-04-547 Ban Polystyrene(EPS) Fast Food and Drinks Packaging –
Correspondence from the Marine Conservation Society to the Committee,
18.03.15.**

Dear Petition Committee,

Please find attached further evidence as requested by the committee re banning polystyrene fast food and drink packaging.

We look forward to liaising with you over further developments on this matter.

Should you require any further evidence please don't hesitate to contact me contact me.

Gill Bell

Wales Programme Manager Marine Conservation Society

Written Evidence for Petitions Committee

P-04-547 Ban Polystyrene(EPS) Fast Food and Drinks Packaging

**In support of verbal evidence given by Gill Bell, Marine Conservation Society on
10th March 2015 to National Assembly for Wales Petition Committee**

Background

Rob Curtis Chairman “Friends of Barry Beaches” submitted an on-line petition calling on the Welsh Government to:

*“The time has come to halt the sight of millions of polystyrene food and drinks cartons littering the beaches and countryside of Wales. Polystyrene (EPS) is a major component of urban litter and marine debris. It is detrimental to wildlife that ingests it and costs millions for Welsh Councils to remove from our streets. Polystyrene takes hundreds of years to degrade. **Over 100 US (including New York), Canadian, and also European cities have banned or are about to ban polystyrene food packaging as a result of the negative impacts of the Environment. We hope that Wales will have the vision to join that list. Many alternatives to polystyrene (EPS) packaging are now available which have significantly less impact on the environment and human health***

*and also have the potential to save Welsh taxpayers millions of pounds in **street cleansing costs**.*

MCS additional request to consider

*“We believe that tackling just polystyrene fast food litter is a wasted opportunity to tackle an easily identifiable and preventable source of litter and that Welsh Government should become a world leader as the first country to **ban on all single use fast food wrappers made from non-compostable material.**”*

Introduction

Polystyrene in the marine environment is of particular concern, because of the large densities of this product on UK beaches and because of the potential hazards it pose to marine wildlife and to human health.

Polystyrene products are easily broken down into very small fragments and then form part of the microplastic problem. Microplastics (defined as particles smaller than 5mm), consist of microbeads from the cosmetics industry, plastic pellets produced by chemical companies for use in the plastics manufacturing industry and the degradation products of larger plastic items.

These microplastics have the ability not only to release toxic chemicals into the surrounding water, but also to attract toxic chemicals onto their surface. The fate of these chemicals if ingested by marine life is, as yet, uncertain but there is the real concern that these toxins may be passed up the food chain and ultimately to ourselves as seafood consumers.

Extent of microplastics including polystyrene

As plastic items slowly break down smaller and smaller fragments and fibres are created. In a study of the quantities of microscopic plastic fibres in Northumbrian sand samples, microscopic fibres (0.1 mm – several mm in length) were found in 100% of 45 samples collected, some with more than 10,000 fibres per litre of sand (Thompson and Hoare, 1997). Even beaches that were considered visually clean were found to have up to 5,000 fibres per litre of sand.

Studies of sediments taken from 6 sites around Plymouth, Devon, and 17 other sites around the UK coastline found microplastics to be common in sedimentary habitats, and most common in subtidal sediments (Thompson *et al.*, 2004).

Microscopic plastics have also been found in plankton samples and show a significant increase in abundance from the 1960s to the present day (Thompson *et al.*, 2004). According to surveys collected by Continuous Plankton Recorder (CPR), microscopic plastic fragments appear to be increasing in the NE Atlantic and have been doing so over the last 40 years. The incidence of

monofilament netting snagged by the CPR towed body also seems to be increasing, particularly in the southern North Sea (Edwards *et al.*, 2007).

Polystyrene on UK beaches

During the last 10 years, MCS beach litter surveys have shown:

- Percentage of polystyrene has remained about same but quantity has trebled (200–605 items/km).
- Fast food/cups make up 5–10% of polystyrene waste – 20–27 items /km.
- Polystyrene pieces make up 50 – 75% of total polystyrene.

Material Type	Year	%	Items/km	Year	%	Items/km	Ranges
Total polystyrene	2005	9.4%	200 i/km	2014	10	605	9–14%
Polystyrene Fast Food	2005	10	20	2014	5	27	5–10%
Polystyrene Pieces	2005	60	120	2014	47	282	47–75%

Table 1. Polystyrene on UK beaches (data taken from MCS marine litter database)

Usage and recycling

Although polystyrene is technically recyclable in reality:

- The majority of polystyrene goes to landfill or ends up as litter on streets and on our rivers, beaches and seas. The most effective way to reduce this type of pollution would be at source rather than expensive and ineffective end of line solutions
- Recycling of polystyrene in the UK is minimal and there would be a great cost in setting up a nationwide infrastructure, whereas there is already compostable schemes around Wales, which this could feed directly into.

- Most products would be prohibitively difficult to recycle, given their light weight and high degree of food contamination.
- In San Francisco, where a polystyrene ban aligned with a mandatory composting ordinance, restaurants actually saw lowered costs from municipal garbage pickup fees when they made the switch to compostable materials.
- In San Jose, which approved a polystyrene ban in August 2013, initial resistance was quashed by a robust education and outreach program and declining costs for alternative packaging materials. Wholesale prices for recyclable and compostable alternatives have come down as more cities ban polystyrene
- New York determined that EPS (polystyrene) was effectively non recyclable, a hazard to wildlife, and a contamination to their city organics programme.
- Seattle has had a ban on polystyrene foam single-use packaging since January 2009. In 2008, the city recorded 516 tons of expanded polystyrene used for food packaging. By 2012, that had dropped to 174 tons. The reason the figure wasn't zero is because the city cannot regulate packaged foods imported from outside of the city, such as those used for meat trays in supermarkets.

Within the evidence session, it was also discussed that perhaps once single use fast food wrappers had been tackled that the legislation be adaptable to encompass other sources such as other single use packaged goods.

- Polystyrene is estimated to take hundreds of years to break down and merely breaks down into smaller and smaller pieces which create real problems if littered.
- Polystyrene is made from non-renewable fossil fuels and synthetic chemicals
- Animals can mistake polystyrene for food or nesting materials.
- April 2013: avg. Briton has **12 fast food plastic packaging / per month** spending £100/mth
- World production of polystyrene is 14.6m tonnes of which 37% is packaging (including fast food cups and containers). It is estimated that at least **10%** of this plastic ends up in the oceans.

Impacts

700 marine species are known to have been affected by marine debris through ingestion and entanglement. 92 % of the debris was plastic and 17% of species affected are on ICUN Red List.

The suspension of tiny plastic fibres in the water column can potentially clog the feeding apparatus of small invertebrates. Laboratory studies have shown that amphipods, lugworms,

and barnacles kept in aquaria with microscopic plastic present will ingest the plastics within a few days (Thompson *et al.*, 2004).

Lusher et al have demonstrated that 36% of fish species in English channel had plastic debris in their guts, with an average of almost 2 pieces of litter per fish and that both demersal and pelagic fish were affected demonstrating that this affects both bottom feeders and mid water species.

Toxic compounds are incorporated into plastics and polystyrene during production as plasticizers and other additives (Mato *et al.*, 2001). Plastic particles in the marine environment can therefore carry two types of organic micropollutants. Firstly, the additives and their degraded products such as nonylphenols (an endocrine disruptor), and secondly pollutants adsorbed from seawater such as Polychlorinated biphenyls (PCBs) and Dichlorodiphenyldichloroethylenes (DDEs) (Takada *et al.*, 2006).

Pellets can concentrate PCBs and DDEs from seawater to levels up to a million times greater than in the surrounding seawater, posing a potential hazard for birds and fish which mistake the pellets for food such as fish eggs (Ananthaswamy, 2000). Ultimately, these pollutants may then be passed up the food chain to fish and to human consumers.

PCBs have also been linked to the masculinisation of female polar bears and spontaneous abortions and declines in seal populations. In 1988, Ryan *et al.*, obtained evidence that PCBs in the tissues of Great Shearwaters were derived from ingested plastic particles (from Derraik, 2002).

Toxins adsorbed onto plastics/polystyrene may be ingested by filter feeders (Thompson, 2004), and could be passed up the food chain to fish and ultimately to human consumers. The accumulation of microscopic plastic fibres in sand substrates may leech out toxins such as PCBs and heavy metals (Thompson and Hoare, 1997). These can be absorbed by micro-algae and thus also potentially enter the food chain. The ecological impact, if any, is currently unknown and further research is needed in this area.

The National Research Council (NRC) in the States has recently affirmed the National Toxicology Program's 2011 finding that the organic compound styrene can "reasonably be anticipated to be a human carcinogen."

In terms of consumer hazards, the biggest styrene concern is with food packaging, as studies have shown that this substance can leech out of polystyrene takeout food and drink containers, says Mike Schade of Safer Chemicals. "If you drink coffee or soup or eat Chinese food from a polystyrene foam container you can potentially be exposed to this chemical, which government agencies consider reasonably anticipated being a human carcinogen."

Polystyrene is already recognised as a potential threat to the environment in the Regional Action Plan (RAP) for Prevention and Management of Marine Litter in the North–East Atlantic (OSPAR Agreement 2014–1). The UK government are signatories to the RAP and have stated that they intend to use this as part of their obligation for reaching Good Environment Status under the Marine Strategy Framework Directive (MSFD). The MSFD obligations apply to the whole of the UK – Wales, England, Scotland and Northern Ireland.

Section 49 of the RAP states that Contracting Parties should:

‘Investigate the prevalence and impact of expanded polystyrene (EPS) in the marine environment, and engage with industry to make proposals for alternative materials and/or how to reduce its impacts.’

Who has already banned polystyrene?

Over 100 cities and counties in the USA including New York, San Francisco, Portland Oregon and Seattle as well as Toronto in Canada and Antarctica.

Ban or levy?

EU legislation fixes provisions for packaging and stipulates in article 18 that all packaging which complies with the requirements of the Directive (Directive 94/62) must be able to circulate freely within the EU.

This excludes, in principle, the taking of measures at local level to ban a specific form of packaging.

The EU has just amended Directive 94/62 on packaging and packaging waste to reduce the use of plastic bags by way of taxes or otherwise. . The directive could also be amended for polystyrene packaging, although this would take a much longer time period. However, prior to this change in legislation, Welsh Government implemented a charge on plastic carrier bags and could also in theory do this for single use fast food waste.

In the EU document on Treaty provisions governing the free movement of goods, although protection of the environment is not expressly mentioned in Article 36 TFEU, it has been recognised by the Court as constituting an overriding mandatory requirement. The Court takes the view that ‘... the protection of the environment is “one of the Community’s essential objectives”, which may as such justify certain limitations of the principle of free movement of goods’ (194). (Case 302/86 Commission v Denmark [1988] ECR 4607, paragraph 8. Hence Welsh government could deem protection of the environment from this type of litter justified the ban.

A report to UNEP (Sherrington *et al.*, 2014) recommended:

- Applying taxes to items where alternatives are clearly available (this is likely to ensure a reasonable response to the tax);
- Continual review of the tax to ensure that its effectiveness is not being eroded over time (e.g. through inflation);
- Ensure the tax is designed with sufficient inbuilt flexibility to adapt to changing economic conditions; and
- Prior to introducing the tax, develop an effective communication campaign to advertise the rationale behind the tax. In this respect, there should be a clear rationale for the tax.

Alternative to non-compostable wrappers

Alternative to polystyrene fast food wrapper are readily available and are usually made of either sugar cane or cardboard, such as those used by MacDonalD's and KFC. MacDonalD's have stated. 'In 2012 89% of all packaging used by MacDonalD's UK was made from renewable resources. We removed the last of our polystyrene foam food packaging several years ago and replaced it with a paper card alternative. Many of our other non-food items such as drink carriers and napkins are made from 100% recycled materials.'

Larger companies have adopted corporate social responsibility to address this issue but smaller vendors have so far not been incentivised to do so but given the success of the plastic bag charge we would hope that this would readily accepted but given the success of the plastic bag charge we would hope that this would readily accepted b both vendors and public.

Alternatives to the ban

If a ban is deemed unfeasible, we would advocate that all single use polystyrene fast food waste / cups and utensils (plastic and polystyrene) should be subject to a levy and that compostable alternatives be incentivised.

We would suggest a charge on all fast food wrappers/containers. To incentivise the use of compostable materials we suggest the vendor retains 60% of levy to cover any additional costs and the 40% goes to Welsh Government, ring fenced for environmental and litter collection schemes. This would ensure that any additional cost in purchasing compostable wrappers is not passed onto the vendor and good practice is rewarded. To ensure that polystyrene is phased out and dis-incentivised we would suggest that for those vendors continuing to use polystyrene, all levy goes back to Welsh Government or an environmental levy is imposed on the vendor as a penalty which cannot be passed onto the customer.

Fixed penalty notices and recycling

When implementing the carrier bag charge, there was a change of behavior from the customers rewarding their behavior for reusing shopping bags. However this is not feasible for fast food which by its very nature is unpredictable and difficult to replace.

The transition from non-compostable to compostable fast food wrappers will not in itself instigate a behavior change against littering but it will ensure that any illegally disposed of wrappers will decompose naturally and not remain in the environment for centuries to come. Therefore this ban or levy should also be combined with a campaign to reduce littering in Wales, which has the highest beach litter in the UK.

We would suggest that Welsh Government encourage local authorities to use their right to issue fixed penalty notices for litter and that a public campaign to make littering socially unacceptable is developed. This could be funded from monies received from the ban and levy. Recent Welsh government statistics reveal an increase in the number of fines issued by local authorities for environmental crimes across Wales.

The total amount received by all local authorities was £656,129. The maximum fine offenders can receive is £75. Conwy and Denbighshire councils issued fixed penalty notices totaling £176,925 and £106,395 respectively for the period of April 2013 to March 2014.

Wales recycling continues to increase with a 5% rise from July–Sept 2014, with an overall waste generation of 51 kg per person, which is a decrease of 2%, demonstrating that if given the opportunity people will recycle. As further evidence that polystyrene should be banned, Monmouthshire has the highest rates in Wales at 61% for recycling, composting and reuse rate but they don't have the facilities or infrastructure to recycle polystyrene.

We would also advocate a similar scheme to 'Food on the Go' where vendors have fast food waste bins outside their premises which can be collected and fed into the local food waste collection service to encourage recycling.

Plastic Bottle refund/deposit Scheme

We would suggest that the problem of plastic drink bottle and aluminium cans on beaches could best be resolved through introduction of a deposit/ refund system. Such a system has already been trialled in Scotland and is already established across Europe in such countries as Sweden Denmark and Germany. We would be happy to discuss this further with the committee

References

Ananthaswamy, A. (2000). Junk Food – a diet of plastic pellets plays havoc with animals' immunity. *New Scientist*, 20/01/01

Derraik, J.G.B. (2002). The pollution of the marine environment by plastics: a review. *Marine Pollution Bulletin* 44: 842–852.

Edwards, M., Johns, D.G. , Licandro, P., John, A.W.G. & Stevens, D. P, (2007). Ecological Status Report: results from the CPR survey 2005/2006. SAHFOS Technical Report, 4: 1–8. Plymouth, U.K. ISSN 1744–0750

Lusher, A.L., Mc Hugh, M., Thompson, R. C. Occurrence of microplastics in the gastrointestinal tract of pelagic and demersal fish from the English Channel. *Marine Pollution Bulletin* Volume 67, Issues 1–2, 15 February 2013, Pages 94–99

Marine Conservation Society (2014). Beachwatch 2013 – Nationwide Beach Clean and Survey Report. MCS, Ross-on-Wye, UK.

Mato Y (2001). Plastic resin pellets as a transport medium for toxic chemicals in the marine environment. *Environmental Science and Technology* 35 (2): 318–324

Ryan, P.G., Connell, A.D., Gardener, B.D. (1988). Plastic ingestion and PCBs in seabirds: is there a relationship? *Marine Pollution Bulletin* 19(4): 174–176.

Sherrington, C., Darrah, C., Cole, G., Hogg, D. (2014). Report I: Migratory Species, Marine Debris and its Management: Review Required under CMS Resolution 10.4 on Marine Debris

Thompson, R. and Hoare, C. (1997). Microscopic plastic – A shore thing. *Marine Conservation* 3 (11).

Thompson, R.C., Olsen Y., Mitchell, R.P., Davis, A., Rowland, S.J., John, A.W.G., McGonigle, D. & Russell AE (2004) Lost at sea: Where does all the plastic go? *Science* 304: 838.

Takada H, Mato Y, Endo S, Yamashita R, Zakaria M (2006). Pellet Watch: Global monitoring of persistent organic pollutants using beached plastic resin pellets.

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Gill Bell would like to acknowledge and thank the following people for their assistance in collating this information:

Dr. Sue Kinsey and Charlotte Coombes, MCS

Chris Sherrington and Chiarina Darrah, Euonmia

Ludwig Kramer Client Earth

Prof. Richard Thompson Plymouth University

Rob Curtis and Friends of Barry Beaches for submitting the petition

All MCS volunteers who have surveyed and collected litter from Welsh beaches which provided the statics for this report.