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RESPONSE TO CONSULTATION ON  
**Single-Use Plastics Prohibition Regulations**  
December 25, 2021

We wrote to the Minister for the Environment on 12<sup>th</sup> May 2019 (See below). Since then a Report has been published from the Oxomar project <https://www.biodeg.org/subjects-of-interest/agriculture-and-horticulture/the-marine-environment/>

This was a three-year study, sponsored by the French government, which proves beyond doubt that oxo-biodegradable plastic does biodegrade in the marine environment. To be quite sure, the scientists exposed a sample containing carbon 13 to bacteria, and they identified carbon 13 in the bacteria themselves – proving that the bacteria had bioassimilated the material. They are writing a further report on this.

Research at Queen Mary University London has shown that biodegradation can be up to ninety times faster than ordinary plastic.

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Oxo-biodegradation happens under the normal conditions found in the open environment, so it does not have to be collected and taken to a composting facility. All it needs is oxygen and bacteria.

Ordinary plastic will rapidly fragment into microplastics when exposed to weathering, but in the case of oxo-biodegradable plastic, the molecular structure of the plastic is modified by rapid oxidation, so that it is no longer a plastic. It converts into a waxy substance which is biodegradable.

The European Chemicals Agency was asked to study microplastics in 2018, and they issued a Call for Evidence to which we and many others responded. They also read the reports published by the European Commission, and after ten months (30.10.18) they said that they were not convinced that microplastics were formed. If the European Union's own experts were not convinced we don't see how anyone else could be.

**We are concerned that the opportunity has not been taken in the proposed Regulations to encourage the introduction of oxo-biodegradable plastic in Canada, as it is really the only way to protect the environment from persistent pollution by plastic which cannot realistically be collected for recycling or anything else.**

We had written to the Minister for the Environment on 12<sup>th</sup> May 2019 as follows:

"It is well known that thousands of tons of plastic are getting into the open environment every day, and that there may soon be more plastic in the ocean than fish, but what are governments doing about it? They are trying to reduce the amount of plastic we use, but single-use plastic is essential to protect us from contamination and the spread of disease. The problem remains however that some of this plastic will get into the open environment.

Oxo-biodegradable plastic is a technology which makes ordinary plastic biodegrade if it gets into the open environment instead of lying or floating around for decades, and it has been used successfully around the world for more than 20 years. It has been used by the largest bakery in the western world for more than 10 years with no problems, but only a very few forward-looking governments have made it compulsory. What are the rest doing? They prefer to encourage recycling and composting, but these will not deal with plastic in the open environment which cannot be collected.

So why are they not all making oxo-biodegradable plastic mandatory, and instead allowing ordinary plastic to continue in use? In some cases because they are under inappropriate pressure from multinational commercial interests, and in others because there is no complete consensus among the scientists. There is however in our view sufficient consensus to enable a decision to be made. There is consensus on the following points:

1. Ordinary plastics fragment into microplastics under the influence of weathering, but for many decades their molecular-weight remains too high to allow biodegradation.
2. Adding a pro-degradant catalyst at manufacture reduces the molecular-weight much more quickly if the plastic escapes into the open environment.
3. The only environmental conditions necessary for oxo-biodegradation are oxygen and bacteria, both of which are ubiquitous in the open environment. Sunlight and heat will accelerate the process but are not essential. In any event most of the plastic litter is exposed to both.
4. Bacteria found on land and sea are able to consume the low molecular-weight residues of plastic.
5. These residues are not toxic

6. There are Standards in the USA (ASTMD6954), the UK (BS8472), France, (T51-808) the UAE (5009/2009) and elsewhere which are suitable for testing oxo-biodegradable plastic.

Disagreement remains about:

7. How long it takes before the plastic becomes biodegradable. That depends on variable factors, and for that reason a broad indication only can be given as to timescale. It is well known that conventional plastic fragments do not become biodegradable for many decades, but it is possible to say with certainty that at any given time and place in the open environment an oxo-biodegradable plastic item will become biodegradable significantly more quickly than an ordinary plastic item. That is the point. - Do we want ordinary plastic which can lie or float around for decades, or oxo-biodegradable plastic which will be recycled back into nature much more quickly? Of course, we don't want plastic in the environment at all, but that is not the present reality.

8. Will it fully biodegrade? It is known that plastic whose molecular weight has been reduced is much more likely to fully biodegrade than ordinary plastic, but we have heard no reasons from any scientist why, once degradation has commenced, it should not continue until biodegradation is complete. Moreover, if only 50% of it degraded, that would still be a lot more than would be the case with ordinary plastic. It is possible to test for degradation in the natural environment, and it has been done at the Bandol facility in France, but it is not realistic to expect scientific testing for biodegradation in the open environment because it would be impossible to measure CO<sub>2</sub> evolution under those conditions. Scientists have therefore devised laboratory protocols over many years which simulate the natural process of biodegradation – for example Tier 2 of ASTM D6954.

In summary therefore there seems to us to be sufficient consensus to enable decision-makers to conclude that oxo-biodegradable plastic is better than ordinary plastic, and to decide to stop plastic accumulating in the environment, by requiring it to be oxo-biodegradable. Delay about this is no longer an option, because thousands of tons of plastic are getting into the open environment every day.

## **THE CONSULTATION** dated December 25 2021

The proposed Regulations would ban the following SUP plastic items: checkout bags; cutlery; foodservice-ware made from or containing problematic plastics; ring carriers; stir sticks, and straws.

With regard to plastic checkout bags, a Life-cycle Assessment by Intertek for the UK government has shown that plastic is the best material for this purpose chrome-extension://efaidnbmnribpcajpcglclefindmkaj/viewer.html?pdfurl=https%3A%2F%2Fwww.biodeg.org%2Fwp-content%2Fuploads%2F2021%2F04%2Fuk-ea-publishes-lca-of-supermarket-carrier-bags-.pdf&clen=2148047&chunk=true

The only problem with plastic checkout bags is that if they get into the open environment as litter, they can persist for decades, but when they included the litter metric Intertek found that the LCA for d2w plastic bags is even better. [chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/viewer.html?pdfurl=https%3A%2F%2Fwww.biodeg.org%2Fwp-content%2Fuploads%2F2021%2F04%2Fintertek-final-report-15.5.121.pdf&clen=1315719&chunk=true](https://efaidnbmnnnibpcajpcglclefindmkaj/viewer.html?pdfurl=https%3A%2F%2Fwww.biodeg.org%2Fwp-content%2Fuploads%2F2021%2F04%2Fintertek-final-report-15.5.121.pdf&clen=1315719&chunk=true)

See also LCA by Franklin Associates [chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/viewer.html?pdfurl=https%3A%2F%2Fwww.biodeg.org%2Fwp-content%2Fuploads%2F2021%2F08%2FFranklin-LCA-Apr-2018-1.pdf&clen=3281624&chunk=true](https://efaidnbmnnnibpcajpcglclefindmkaj/viewer.html?pdfurl=https%3A%2F%2Fwww.biodeg.org%2Fwp-content%2Fuploads%2F2021%2F08%2FFranklin-LCA-Apr-2018-1.pdf&clen=3281624&chunk=true)

**We do not therefore think it would be wise to ban SUP checkout bags. They should instead be required to be made with oxo-biodegradable technology tested in accordance with ASTM D6954.**

With regard to food service ware, we note that there is a proposal to ban these items if they are made from oxo-degradable plastic, but we think that **food service-ware made with oxo-biodegradable plastic should not be banned**. The following words should therefore be removed from the definition in Regulation 1 *“or a plastic that contains any additive that, through oxidation, leads to chemical decomposition or to the fragmentation of the plastic material into micro-fragments.”*

This is in any event a definition, taken from the EU Single-use Plastics Directive which could lead to confusion with oxo-biodegradable plastic. The only scientific definition is the following given by CEN in TR15351.

“Oxo-degradation” is “degradation resulting from oxidative cleavage of macromolecules.” This describes ordinary plastics, which abiotically degrade by oxidation in the open environment and create microplastics, but do not become biodegradable except over a very long period of time. Plastics manufacturers do not put additives into these plastics to promote oxidation.

By contrast, “oxo-biodegradation is defined by CEN as “degradation resulting from oxidative and cell-mediated phenomena, either simultaneously or successively”. This means that the plastic degrades by oxidation until its molecular weight is low enough to be accessible to bacteria and fungi, who then recycle it back into nature. Oxidation is promoted by additives specifically included in the plastic for that purpose.

With regard to **single-use plastic cutlery, single-use plastic ring carriers and single-use plastic stir-sticks**, these should not be banned if they are made with oxo-biodegradable technology tested in accordance with ASTM D6954.

## COMPOSTABLE PLASTIC

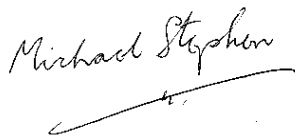
On page 16 of the Consultation, there is discussion of a possible exemption for non-conventional plastics, which are described as oxo-degradable, or compostable. However, it is clear from the consultation that no distinction has been made between these fundamentally different types of plastic.

Opposition to the exemption was mostly linked with concerns about non-conventional plastics contaminating the recycling stream. This is certainly true of plastics marketed as compostable, as there is no dispute that they do contaminate the recycling process if mixed with ordinary plastics. However, oxo-degradable plastics (as defined by CEN above) do not do this, and nor do oxo-biodegradable plastics See <https://www.biodeg.org/subjects-of-interest/recycling-2/>

There was also opposition based on failure to compost in the short time frames associated with municipal compost facilities. This is a very real concern, and we agree that there should be **no exemptions for the type of plastic marketed as “compostable”** See <https://www.biodeg.org/subjects-of-interest/composting/>

My technical colleagues and I are willing to answer any questions, in writing or by another audio visual conference.

Yours sincerely,



MICHAEL STEPHEN  
Deputy Chairman

(Member of the Environment Select Committee of the UK Parliament 1994-97, and Parliamentary Private Secretary at the Ministry of Agriculture)