

3<sup>rd</sup> September 2022



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## RESPONSE TO CONSULTATION ON Environmental Protection (Single-use Plastic Products) (Wales) Bill

On 15th August 2022 we received notification of this latest consultation, and a link to the Welsh Government's summary of the responses received (WG41757, published on an unspecified date in August 2022) to its 2020 consultation. We wish to comment on Section 2 of the Bill, and the Schedule, insofar as they apply to products defined in the Bill as "oxo-degradable."

We are very supportive of the Welsh Government's programme to reduce the amount of plastic lying or floating around as litter and accumulating in the environment.

We support reduction of the amount of plastic being produced, so long as it does not lead to the use of alternatives which are less effective for protecting people and their food from contamination, and/or have inferior Life-cycle Assessments. See LCA's by Intertek <https://www.biodeg.org/subjects-of-interest/life-cycle-assessments/> and the Denkstatt Report <https://www.biodeg.org/wp-content/uploads/2019/11/Denkstatt-report.pdf>

We agree with improving waste-management, and we agree that plastic items should be re-used whenever practicable. We therefore design our d2w plastic for re-usable products such as shopping bags and polyethylene (PE) bottles and trays, so that they can be re-used many times before degradation begins.

We support the ambition for Wales to become the first country to send zero plastic to landfill. We think that any plastic which has been collected but is unsuitable for re-use or recycling should be sent to non-polluting incinerators (like the one in Zurich) where the plastic is used as a fuel to generate electricity, and reduces dependence on oil and gas as a fuel. It has a much greater calorific value than paper, cardboard, cloth, or any other packaging material.

We agree with the UK Environment Minister, who said in the House of Commons on 27<sup>th</sup> June 2022 that *"Plastics often get a bad name, but they are incredibly important and useful because their strength and versatility make them a very valuable material in many areas of life. For example, the plastic packaging that challenges us when we try to get rid of it, also preserves our food and plays a key part in extending the shelf life of some items and in reducing food waste."*

Food waste remains one of the most environmentally damaging phenomena on earth. Despite the continued concern over plastic's ecological impact, the material plays a vital role in extending food shelf life and preventing rising greenhouse gas (GHG) emissions. Packaging is essential to ensure that food products reach consumers while fit for purpose, and don't end up needlessly wasted, resulting in increased GHG emissions associated with production, transportation and rotting of produce. Symphony can make plastic packaging even better, by including ethylene adsorbers in the plastic, so as to remove the gases which cause the food to deteriorate. This cannot be done with paper or cardboard packaging.



If food waste were a country, it would be the world's third-biggest greenhouse-gas emitter behind China and the US, according to the UN Food and Agriculture Organization.

There is no need to use expensive plastic marketed as compostable, for sending food-waste for composting or anaerobic digestion. See <https://www.biodeg.org/subjects-of-interest/composting/>

In addition, plastic is the only material in common use which can itself be made antimicrobial, and our d2p antimicrobial plastic has been proved by testing in accordance with ISO 21072 to kill 99.9% of viruses within one hour of coming into contact with it. All single-use plastics should now be made with anti-microbial technology.

Polyethylene (PE) and polypropylene (PP) are made from a by-product of oil or natural gas. These are extracted from the ground primarily to make fuels. For the foreseeable future there will still be a demand for oil and gas as fuels, so it makes sense to use the by-product while it is available, instead of growing crops to make plastic, or using materials other than plastic whose functionality and/or LCA is not as good. Further, the energy required to convert this by-product into PE or PP is less than the energy required to collect, sort, wash, and reprocess post-consumer PE or PP.

We also agree with recycling, so we have designed our d2w biodegradable plastic so that it can be recycled into short-life or long-life products if desired, without separation from ordinary plastic. See <https://www.biodeg.org/subjects-of-interest/recycling-2/> D2w is used in PE and PP but is not used in PET.

However, recycling does not address the **principal concern about plastics around the world** – how to deal with the plastic which has escaped into the oceans and elsewhere in the open environment from which it cannot realistically be collected, and is therefore accumulating every day for many decades.

## D2w BIODEGRADABLE PLASTIC

For an audio-visual introduction see [https://www.youtube.com/watch?v=rc-YWqQ\\_HHY&ab\\_channel=SymphonyEnvironmental](https://www.youtube.com/watch?v=rc-YWqQ_HHY&ab_channel=SymphonyEnvironmental).

Some of the polymer scientists who invented plastics realised that they had created a very durable material which could lie or float around for decades if it escaped into the open environment. One of these scientists was Professor Gerald Scott, of Aston University who in 1978 patented a way to cause polymer to biodegrade at the end of its desired life, so that it would not accumulate in the open environment. Instead it would be consumed by naturally-occurring micro-organisms and recycled back into nature. This plastic became known as “oxo-biodegradable” because it oxidises and then biodegrades. (It should not be confused with “oxo-degradable” plastic, which oxidises but does not biodegrade - except over a very long period of time).

Professor Scott later became chief scientific adviser to Symphony Environmental Technologies Plc., a British company listed on the AIM market of the London Stock Exchange, and in the year 2000 Symphony made this technology, as further developed, available to the plastics industry and called it “d2w.” If it had been more widely used, most of the plastic which has found its way into the oceans would have biodegraded, and the ocean garbage patches would be very much smaller.

**If the Welsh Government were to proceed to ban oxo-degradable plastic (as defined in the Bill) they would be making matters worse.**

We at Symphony have concluded that the only way to deal with plastic which has escaped into the environment, and particularly the oceans, is to stop thinking that it escape can be completely prevented in the short to medium term, and to address our minds to what happens to it if it gets into the open environment.



For this reason, our scientists have developed d2w biodegradable technology from Professor Scott's original idea. This is a masterbatch included in the plastic at manufacture which, at little or no extra cost, turns ordinary plastic at the end of its useful life, in the presence of oxygen, into a material with a different molecular structure. It is then no longer a plastic, and has changed into a waxy material which is biodegradable by bacteria and fungi in the open environment. It is not a disposal option - it is there to deal with the plastic if waste-management fails.

No special conditions are necessary. The only environmental conditions necessary for oxo-biodegradation are oxygen and bacteria, both of which are ubiquitous in the open environment.

D2w technology is used to make biodegradable PE and PP products, which look and perform during their useful life just the same as ordinary PE or PP products. D2w plastic has been available for 25 years and has been used by the largest bakery in the western world for more than 10 years with no problems. Much of it has been recycled, but when waste-management fails and it gets into the open environment it will degrade and then biodegrade much more quickly than ordinary plastic, without leaving microplastics or other harmful residues. It does not contain heavy metals, and is proved to be non-toxic according to the OECD Standards.

Although d2w plastic has been used successfully around the world for more than 20 years, only a few forward-looking governments (in the Middle East) have made it compulsory. What are the rest doing? They prefer to encourage recycling and composting, but these will not help them to deal with plastic in the open environment which cannot realistically be collected.

## SCIENTIFIC STUDIES

Professor Scott wrote about this technology in many publications – see eg “Polymers and the Environment” published by the Royal Society of Chemistry, and it has now been studied by scientists for more than 50 years. The most important recent studies are as follows:

**Oxomar** was a three-year study on plastics in the environment, sponsored by the French Government, at l'Observatoire Oceanologique de Banyul Sur Mer. The Report can be found in English and French at <https://www.biodeg.org/wp-content/uploads/2021/07/Final-report-OXOMAR-10032021.pdf> A summary of the results, dated 4th September 2020, says:

“We have obtained congruent results from our multidisciplinary approach that clearly shows that oxo-biodegradable plastics biodegrade in seawater and do so with a significantly higher efficiency than conventional plastics. The oxidation level obtained due to the d2w prodegradant catalyst was found to be of crucial importance in the degradation process. Out of the six-formulations tested, the Mn/Fe pro-oxidant was the most efficient, with no toxic effects under our experimental conditions. Biodegradability was demonstrated either by using the culture bacteria *Rhodococcus rhodochrous* or by a complex natural marine community of microorganisms.”

Following this study, the Oxomar scientists allowed bacteria commonly found in the open environment access to d<sub>2</sub>w plastic film containing Carbon 13. They found Carbon 13 in the CO<sub>2</sub> exhaled by the bacteria, proving beyond doubt that the plastic had been used as a food by the bacteria and the carbon had been recycled back into nature. We are attaching a copy of this Report.

**Queen Mary University London** reported in February 2020 that plastic products containing a d<sub>2</sub>w masterbatch will become biodegradable much more quickly than ordinary plastic if they get into the open environment at the end of their useful life and will then be biodegraded by bacteria commonly found in the open environment, up to 90 times faster than ordinary plastic. The Report can be found at <https://www.biodeg.org/wp-content/uploads/2020/05/published-report-11.2.20-1.pdf>



Of course, nobody wants plastic in the environment at all, but that is not the present reality.

## PREVIOUS CONSULTATION

Our trade association, the OPA (now the BPA), responded on 19<sup>th</sup> October 2020 <https://www.biodeg.org/wp-content/uploads/2020/10/bpa-response-to-wales-19.10.201.pdf> to the 2020 Welsh Consultation WG40193. We also sent to the Welsh Government on 19<sup>th</sup> April 2021 a copy of the OPA submission on 9<sup>th</sup> April 2021 to the second Scottish consultation, <https://www.biodeg.org/wp-content/uploads/2021/04/BPA-Second-Response-to-Scotland-9.4.21.pdf> together with the Oxomar Report. In this submission the OPA dealt with alternatives such as “Bags for Life”, Paper, Refillables, and plastic marketed as “compostable.”

They also dealt with the industry Standards and the European Union. There is no European Standard for oxo-biodegradable plastics, due to the influence of the “compostable” plastics industry in the CEN committee, but there is a British Standard 8472, and an American Standard <https://www.biodeg.org/wp-content/uploads/2021/02/Swift-evidence-to-BEIS.pdf> These standards can be used for testing anywhere in the world.

On 2<sup>nd</sup> March 2021 we sent to the Welsh Government a link <https://www.biodeg.org/wp-content/uploads/2021/03/OPA-Response-to-SAM-Report-Feb-2021-1-3-21.pdf> to the BPA response to the 'Biodegradability of Plastics in the Open Environment' Report by the Group of Chief Scientific Advisors (GCSA) of the European Commission, Directorate-General for Research and Innovation, dated 14th December 2020 and to 'Biodegradability of Plastics in the Open Environment' Report by Science Advice for Policy by European Academies (SAPEA) dated 14th December 2020

The BPA has also commented on the Eunomia Report <https://www.biodeg.org/wp-content/uploads/2020/08/BPA-Comment-on-the-Eunomia-Report-2016.pdf> The EU Commission Report <https://www.biodeg.org/wp-content/uploads/2018/01/BPA-RESPONDS-TO-EUROPEAN-COMMISSION.pdf> the Ellen MacArthur Report <https://www.biodeg.org/wp-content/uploads/2019/11/emf-report-1.pdf> and the Plymouth Report <https://www.biodeg.org/wp-content/uploads/2019/04/BPA-Comments-on-Plymouth-10.pdf>

None of these studies justifies a ban on oxo-biodegradable plastic.

See also the attempt of the “Bio-based” Plastics industry to discredit oxo-biodegradable technology for their own commercial interests <https://bioplasticsnews.com/2021/12/06/history-anti-oxo-biodegradable-plastics-history/> This campaign persuaded the European Parliament to impose a ban, which is under legal challenge in the courts of the EU, and they have also lobbied the UK Governments. See <https://bioplasticsnews.com/2020/06/04/battle-biodegradable-oxo-compostable-industry/>

The Ellen MacArthur Foundation, which has attracted a lot of attention on this subject, has accepted funding from these companies. <https://bioplasticsnews.com/2022/06/13/michael-stephen-recycling-oecd-ellen-macarthur-foundation/>

It should be apparent that Symphony and our trade association have made considerable efforts to assist the Welsh Government to fully understand oxo-biodegradable technology and to distinguish it from other plastic technologies and from oxo-degradable plastic. However, we see no evidence in the Summary WG41757 that any notice has been taken of these submissions and we note that material confusingly described as “oxo-degradable plastic” has been included in the proposed ban.

The only reference to the OPA submission is a quote on page 17 of the Summary as follows:



*“Oxo-degradation” is defined by CEN (the European Standards authority) in TR15351 as “degradation identified as resulting from oxidative cleavage of macromolecules.” This describes ordinary plastics, which degrade by oxidation under the influence of light and heat in the open environment and create microplastics, but do not become biodegradable except over a very long period of time. Oxo-degradable (as distinct from oxo-biodegradable) plastic has been banned for good reason in Saudi Arabia, the UAE, and elsewhere for a wide range of everyday plastic products, and it should also be banned in Wales. Nobody makes plastic and sells it as “oxo-degradable” but this terminology is used by the Ellen MacArthur Foundation, the EU Commission, and others who are reluctant to acknowledge the difference between oxo-degradable and oxo-biodegradable plastic. “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 by cell-mediated phenomena. It does not leave microplastics. Oxo-biodegradable plastics are tested according to ASTM D6954; BS 8472, PAS 9017 and similar Standards, which prescribe tests for biodegradation as well as abiotic degradation. They also include tests to ensure that there is no toxicity, and no prohibited metals or gel content above the prescribed level. Plastic should not therefore be banned if it is proved to be oxo-biodegradable by tests performed according to these Standards.”*

It seems that the Welsh Government is reluctant to acknowledge the difference between oxo-degradable and oxo-biodegradable plastic. The CEN definition mentioned above is the only scientific definition of “oxo-degradable” but it has been ignored in the Bill, in favour of a confusing definition copied from the EU Single-use Plastics Directive.

#### THE RESPONSES TO THE 2020 CONSULTATION

On page 8 of WG41757 it says *“Products made of oxo-degradable plastic. In general, there was a high level of support for including products made of this material.”* We would be surprised if there really was a high level of support, so we requested the Welsh Government under the Freedom of Information Act to send us a copy of each response claimed to support the inclusion of products made of this material in the proposed ban. We received an acknowledgment of receipt of our request on 21<sup>st</sup> August 2022 @15:06.

We made this request because we are conscious that DEFRA claimed that the responses to its own consultation showed *“a clear consensus in relation to plastics containing prodegradant agents aimed at aiding the biodegradation process, which was that such technologies are unproven and likely to be a source of microplastic pollution.”* The Information Commissioner ordered disclosure of these responses, and we found that they showed no such consensus, and that Parliament had therefore been misled. DEFRA are still withholding five of these responses and the Information Commissioner has served notice requiring DEFRA to provide its submission and the withheld information. We were also informed that if DEFRA fails to comply, it could be in contempt of court.

We have not yet received the documents requested from the Welsh Government but we are making this submission now, since the consultation closes on 5<sup>th</sup> September. We will make further submissions when we have received, and have had time to consider, these responses. In the meantime, the Welsh Government should not proceed to adopt the Schedule to the Bill insofar as it relates to “oxo-degradable” plastic as defined in the Bill.

We would have no objection to the Schedule if para. 1 and 2 were amended to remove references to “oxo-degradable plastic” (*“plastig ocso-ddiraddiadwy”*).

#### Microplastics

PAGE 8 of WG41757 *“due to the understanding it hastened the creation of micro-plastics.”* This is a fundamental mistake, and we doubt that many of the respondents are aware that in 2017 the EU Commission referred oxo-biodegradable plastic to the European Chemicals Agency (ECHA) because the Commission was concerned that it might create microplastics.



ECHA made a call for evidence, and after studying many hundreds of pages of evidence, including <https://www.biodeg.org/wp-content/uploads/2021/02/Scientific-evidence-to-ECHA.pdf> and <https://www.biodeg.org/wp-content/uploads/2021/01/Intertek-Report-to-ECHA-24.5.18.pdf> they confirmed in a letter to the OPA on 30<sup>th</sup> October 2018 that they were not convinced that microplastics were formed. If the EU's scientific experts have not been convinced, on what basis could any of these respondents be convinced?

Also, are these respondents aware that the microplastics being found in the open environment and in food and water are caused not by oxo-biodegradable technology but by the fragmentation of conventional plastic packaging when exposed to sunlight and by the washing of clothes made from man-made fibres? They have nothing to do with oxo-biodegradable plastic.

All polymers exposed to sunlight and air for extended periods are likely to experience oxidation, whether or not they contain a pro-oxidant masterbatch. When tested, it was found that the characteristic of the plastic containing the pro-oxidant masterbatch was not that it became fragmentable earlier, but that degradation progressed more rapidly, even in the absence of sunlight or heat, until the plastic became a waxy substance which is biodegradable.

*A minority of respondents were opposed to their inclusion. Of these, many either did not provide a reason or indicated they felt there was not enough evidence of their harm in Wales.* In fact, no evidence at all has been adduced of any harm caused by oxo-biodegradable plastics in Wales.

In its 2020 Consultation paper the Welsh Government said “We are particularly mindful that our research data was more limited in relation to oxo-degradable plastics than for other items” and para. 2.25 of the Preliminary Study for the Welsh Government says that “The impacts of a ban on oxo-degradable plastics were not modelled in this research.” Further, the consultation document gave no reasons for extending the list of banned items beyond the ten specified items, to all SUP made with “oxo-degradable” plastic.

## Definitions

*A number of respondents suggested greater clarification was required on the definitions currently being used to label certain products, for example, oxo-degradable, compostable and oxo-biodegradable, to help businesses and consumers make informed choices in this area. We agree with this.*

*For consistency, one respondent recommended following the definitions used by the European Union's Single Use Plastic Directive. We suspect we will find when we see the responses that this recommendation was made by someone acting on behalf of the “compostable” plastics industry, and that it was made not for consistency but in an attempt to include oxo-biodegradable plastic, which is not included in the CEN definition of oxo-degradable plastic.*

We agree with the need for consistency in definitions, but the Welsh Government and the EU are making matters worse by using a definition which does not distinguish between oxo-degradable and oxo-biodegradable, even though the BPA had made this specific point in their submission to the Welsh Government referred to above.

*We agree with the respondent who said “Currently the marketing world is rife with green-washing and mixed messaging surrounding the compostable or bio-degradable ability of bio-plastics. This needs to be stopped at the source by setting clearly defined parameters around how these products should be classified and advertised and communicating this to consumers and retailers effectively to ensure appropriate disposal.”*



We also agree with the respondents who said that inaccurate definitions *lead to confusion among consumers and retailers, which some suggested was deliberately cultivated, about the source, origin and environmental impact of 'alternative' plastics.*

The Welsh Government should not allow the use of the word “compostable” in relation to plastic, because EN13432 requires that when it biodegrades it converts into CO<sub>2</sub>, not into compost.

Nor should the Welsh Government permit that type of plastic to be described as “biodegradable,” because it is tested to biodegrade in the special conditions found in a composting facility, not in the open environment <https://www.biodeq.org/subjects-of-interest/composting/>

Neither we nor our customers set out to deceive the public. d2w plastic is intended to be used and disposed of in the same way as ordinary plastic, and we remind customers that all forms of packaging should be responsibly disposed of. D2w plastic exists as a fall-back position in case the plastic gets out into the open environment where it would otherwise create microplastics and accumulate for many decades. It is not intended for composting or anaerobic digestion.

Other examples of confusion include *“the use of the term ‘bio-plastic’ which is used to describe either materials derived from plant-based materials, such as corn-starch, or plastic which is ‘biodegradable’ under specific conditions. This ‘degradability’ can apply to traditional or plant-derived plastics.”* We agree that the term “Bioplastic” should not be used unless accompanied by details of the particular type of plastic concerned.

*One respondent, an environmental charity, referred to academic studies and research which had found materials certified to internationally recognised ‘degradability’ standards had failed to meet that standard under the various environmental conditions tested.*

We look forward to examining this evidence. We are aware of a July 2022 report from the University of Bayreuth which shows that finished compost from composting plants in Germany contains a large number of biodegradable plastic particles. The report shows that applicable legal and certification standards for “compostable” plastics (ie EN 13432) are not violated by the sizes and quantities of the particles detected, and therefore calls into question the contribution of these standards to effective environmental protection. The report doubts whether such plastics are suitable for replacing conventional plastics in environmentally and nutritionally sensitive areas.

We do not agree with the anonymous respondent who said *“The difference between oxo-biodegradable and compostable is really subtle.* It is not at all subtle, as they are made from completely different materials and are intended for completely different purposes.

The respondent continued *“While compostable bags decompose completely, the oxo-biodegradable bags leave small particles behind as they decompose, and those particles can be problematic (often made from petroleum products).* This is not correct. It is clear from the Bayreuth report mentioned above that plastics marketed as compostable will leave fragments of plastic even in the special conditions found in composting facilities. Oxo-biodegradable plastic will not. (See eg Oxomar Report, and ECHA).

*Ultimately, oxo-degradable plastics are worse than plastics themselves and in the long term will cause more harm to our environment than good. The small particles will be prevalent in our food chain at a much quicker rate and at a higher percentage than they already do, as they break down faster but never completely decompose.”* This describes correctly what oxo-degradable (ie ordinary) plastic does, but the scientific evidence already mentioned shows that oxo-biodegradable plastic does not behave in this way. At the end of its useful life it quickly converts into a waxy substance which is no longer a plastic and is biodegradable.



*A number of responses commented they did not know enough about the type of plastic being referred to and, therefore, did not feel able to offer an opinion. This is not surprising, because the general public have not been educated on the difference between oxo-biodegradable plastic and other types of plastic. It is however the responsibility of government to have a thorough understanding before passing legislation. For that reason we have made detailed submissions and have offered a technical dialogue with our scientists.*

Behaviour in the environment:

*Of those who did respond, the majority highlighted concerns of using plastics which were made to break into smaller pieces (micro-plastics) and the potential impact they will have on aquatic life and other ecosystems for generations to come.*

We look forward to examining the evidence (if any) cited by these respondents. We have explained above that microplastics are generated by ordinary plastics but not by d2w plastic, and have referred to the scientific evidence. The Oxomar scientists took three years to study oxo-biodegradable plastic in the aquatic environment, and concluded that they had no adverse effect on aquatic life and other eco-systems.

*Further concerns were raised about the risk of micro-plastics entering the food chain and the potential implications for human health, the effect of which is not fully understood. See the Bayreuth University report cited above as to how fragments of “compostable” plastic get into the compost and the food chain.*

*Respondents from the environmental NGO sector and academia supported bans on the basis they believed there was a lack of certainty as to how such materials behaved in the environment. We look forward to examining the reasons given by these respondents. There is no lack of certainty about how ordinary PE and PP behaves in the environment but there are no proposals in the Bill to ban it as a material – beyond the ten specific items. It is well known that it fragments and creates microplastics under the influence of sunlight, and these fragments do not become biodegradable for many decades. This is the problem which d2w plastic was designed to solve, and the Oxomar and Queen Mary University reports show beyond doubt that it biodegrades significantly more efficiently than ordinary plastic, even in the marine environment.*

Additives

*Others referenced research papers which evidenced the additional harm, over and above that of plastic, the additives used in oxo-degradable products caused. We look forward to examining these research papers. We would be surprised if they supported this statement in relation to oxo-biodegradable plastics, because oxo-biodegradable plastics do not contain heavy metals nor any other substance in excess of the limits prescribed by Annex A.1.2 of European Norm 13432 or Art. 11 of the EU Packaging Waste Directive. They also pass the eco-toxicity tests prescribed by Annex E of EN13432 and paras. 6.9.6 – 6.9.10 of ASTM D6954.*

Visual

*A number of respondents noted the timescales required to break down such products would not address the visual aspects of littering.*

The visual aspects of littering are caused by conventional plastics.

D2w plastic has not been designed to degrade immediately, because it would not have any useful life, and would not be suitable for re-use or recycling, but it will not lie or float around as a visual intrusion for anything like as long as ordinary plastic. The report from Queen Mary University mentioned above shows that it would be biodegraded by bacteria commonly found in the open environment up to 90 times faster than ordinary plastic. Recent tests for Symphony by Eurofins Laboratories show 88.9% biodegradation within 121 days, and tests by Intertek show 92.74% in 180 days.





Timescale depends on the composition of the plastic - how old it is when it gets out into the environment, and the environmental conditions to which it is exposed. Sunlight and heat are not essential, but they will accelerate the process, and it is most unlikely that a piece of plastic litter will not be exposed to one or both of these. The abiotic process of degradation is unstoppable unless the plastic is completely deprived of oxygen, which will not occur in the open environment.

If the plastic has been collected and taken to landfill or incinerated, it has been responsibly disposed of and is no longer a problem with which d2w needs to deal.

It is 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?**

Will it fully biodegrade? It was well known – even before the Oxomar Report - that plastic whose molecular weight has been significantly reduced is biodegradable, and we have heard no reasons from any scientist as to why, once the process has commenced, it should not continue until biodegradation is complete.

It is certain that ordinary plastic does not address the visual aspects of littering, and yet the proposed ban does not extend to products made of ordinary plastic except the ten items specifically mentioned in the Schedule. In fact there is no need to ban any of those items if they are made with d2w technology. We agree with the respondents who opposed a ban and wished to see support given to other products to allow market forces to change usage.

#### Littering

*and could indeed encourage more of this type of behaviour [ie littering] if people considered such products to be “less harmful” to the environment.*

We look forward to examining the evidence (if any) provided by these respondents in support of their statement.

It is often claimed that biodegradable plastics are likely to encourage littering, but this is rarely advanced as an objection to bio-based biodegradable plastic, not all of which finds its way into a composting facility.

In our view, even if there were a label describing a product as oxo-biodegradable, it is unlikely that the people who cause litter will look for the label before deciding to throw a plastic item out of a car window. In any event much of the litter is caused inadvertently eg by failure to empty litter bins. Further, even if it were true that biodegradability encourages littering, and supposing that there would be 10% more litter - is it preferable to have 110 plastic items in the environment which will degrade and biodegrade in a few years or even months, or 100 plastic items which will lie or float around for decades?

The Life-cycle Assessment by Intertek shows that when the litter metric is included, oxo-biodegradable plastic is actually the best material for making carrier bags.

[http://www.biodeg.org/New%20LCA%20by%20Intertek%20%20-%20Final%20Report%2015.5.12\(1\)%20\(1\).pdf](http://www.biodeg.org/New%20LCA%20by%20Intertek%20%20-%20Final%20Report%2015.5.12(1)%20(1).pdf)

In 2018 the scientific evidence was reviewed by a former Judge <https://www.biodeg.org/uk-judge-find-the-case-for-oxo-biodegradable-plastic-proven/> He concluded, in a 14-page written Report, that “*the criticism alleging that oxo-biodegradable plastic technology would materially encourage littering can only be regarded as fanciful and unrealistic.*”



## CONCLUSION

**In our view it is not acceptable to continue debating this speculative proposition any longer, while thousands of tonnes of conventional plastic are getting into the environment every day, which will accumulate and pollute the environment for decades into the future. They must urgently be required to be made with d2w technology.**

