

Oxo-Biodegradable Plastics Association

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Dear Ms. Potts,

Our attention has been drawn to the Single-use and Other Plastic Products (Waste Avoidance) Bill 2019.

We are very surprised by Part 3 of the Act which proposes to ban “oxo-degradable” plastics.

The only problem with plastic is that it can lie or float around for many decades if it gets into the open environment, and this is the reason why there is so much public concern. Plastic does not cause significant depletion of fossil-resources, because it is made from a by-product of oil which is extracted to make fuels and would be extracted even if plastic did not exist.

The scientists who invented plastic designed it to be durable, but they realised that this very durability would cause a problem if the plastic gets into the open environment as litter. They therefore found a way to make the molecular structure of plastic dismantle automatically by oxidation when it had served its purpose, and they called this new type of plastic oxo-biodegradable. It is made from ordinary polymers, but the manufacturer of the product adds a catalyst to the polymer mix which accelerates oxidation if it becomes litter in the open environment, so that it becomes biodegradable much more quickly than ordinary plastic – yes, it really does!

Of course, nobody wants to see plastic in the oceans, and everybody wants to see better waste-management - but we all know that this will not solve the problem for many years – even in the developed world. Oxo-biodegradable technology has the capacity to protect the environment against plastic which does not get collected for recycling or composting, but escapes instead into the open environment, but Part 3 of this Bill seeks to deprive South Australia of that option.

MICROPLASTICS

These are tiny pieces of plastic, which are being found on land, in the sea, and now even in the air we breathe. They are created by the fragmentation of ordinary plastics caused by the effects of uv light and mechanical stress. The problem is that although these plastics are fragmenting, their molecular-weight remains too high for biodegradation, so they persist in the environment, getting smaller and smaller over a period of many decades. The answer to this problem is to use oxo-biodegradable technology, so that if they do get into the open environment the molecular-weight of the plastic will rapidly reduce and it will cease to be plastic. It will then have become a source of nutrition for micro-organisms, who recycle it naturally, back into nature.

Faced with the same need to protect their environment, the governments of the UAE, Jordan, Saudi Arabia, Bahrain, and other countries are insisting that plastic items must now be made with oxo-biodegradable technology so that they can still be used, reused, and recycled, but if they do get into the open environment they will biodegrade much more

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quickly and be recycled back into nature. There is little or no extra cost, and there is no loss of jobs in the plastics industry.

Before making this decision, the governments of those countries sent experts to study oxo-biodegradable technology and to audit the laboratories and manufacturing facilities, and they were satisfied that it would be good for their environment. In particular they insisted that plastic products made with this technology were tested according to ASTM D6954 and OECD standards to ensure that would degrade and biodegrade, and that they were not toxic. So why is South Australia going in the opposite direction?

There is huge resistance to this technology from some of the largest companies in the world who make “bio-based plastics” and from other large companies who will not spend even an extra 1% on oxo-biodegradable technology to protect the environment from their products, which we see with their name on them, littered all over the globe. They have all heavily lobbied the institutions of the EU, and we would not be surprised if your government has also been lobbied by them or by people on their behalf, such as the Australasian Bioplastics Association.

EUROPEAN UNION

EU legislation does not of course apply in Australia, but perhaps your government thinks it ought to follow the EU. However, the January 2018 report of the EU Commission did not recommend a ban – it was concerned about microplastics and recommended that the European Chemicals Agency (ECHA) be requested, under Art 69 of the REACH Regulation 2006/1907, to make a study. This request was made, and we submitted a substantial body of evidence to ECHA (which we can also send to you).

Ten months into the study, ECHA informed us by [the attached e-mail](#) that they were not yet convinced that microplastics are formed. The Commission then terminated the study, so there is no scientific justification for any ban from the European Union’s own scientific experts. ECHA also received a large number of submissions from all over the world that a ban of this technology would be seriously damaging for the environment if it were followed in their countries.

The EU has nevertheless moved, without the necessary scientific evidence, and circumventing the safeguards provided by Arts. 69-73 of REACH, to ban plastic that “does not properly biodegrade and thus contributes to microplastic pollution in the environment, is not compostable, negatively affects the recycling of conventional plastic, and fails to deliver a proven environmental benefit.”

This does not however describe oxo-biodegradable plastics, and we have commissioned a leading UK lawyer to examine the scientific evidence See <https://www.symphonyenvironmental.com/wp-content/uploads/2018/11/QC-Opinion.pdf> See also the later evidence from Queen Mary University of London at <https://doi.org/10.1101/719476>

COMPOSTING

Whether the material is compostable or not does not justify a ban, but plastic made with oxo-biodegradable technology has in fact been tested according to ISO 14855, and has been found satisfactory to industrial composters. We can send you the reports. Our members do not make plastic to comply with Australian Standard 4736 because it requires very rapid conversion of the plastic to CO₂ gas, which contributes to climate-change. By contrast Life-cycle Assessments by Intertek show that oxo-biodegradable plastics have the lowest global-warming potential than the other materials used for making shopping bags.

Composting is not however relevant to the problem of plastic in the open environment, which is driving public concern, because plastic litter cannot realistically be collected from the oceans or the countryside for composting.

Part 3 of the Bill does not seek to ban “compostable plastic,” but for the 21 reasons listed at <https://www.biodeg.org/wp-content/uploads/2020/01/21-reasons-why.pdf> it is the wrong technology. The responses to “Turning the tide on single-use plastic products” suggests that the public are not aware of these reasons.

“Compostable” plastic creates microplastics if it degrades in the open environment, and not all compostable plastic will end up in compost.

It also appears that the industrial composters themselves do not want “compostable” plastic. See <https://bioplasticsnews.com/wp-content/uploads/2019/04/Oregon-composters-dont-want-Compostable-Packagine.pdf>

RECYCLING

Recycling is sometimes used as an objection to biodegradable plastic, on the basis that it will contaminate a post-consumer waste stream, but this is clearly inapplicable if the relevant waste plastic is not going to be mechanically recycled. Just as plastic cannot be collected from the oceans for composting, it cannot be collected for recycling.

Whilst almost all pre-consumer waste (eg factory offcuts) is recycled or reused, almost all post-consumer waste plastic is not. There are reasons for this, one of which is that a great deal of water is needed to wash post-consumer waste to make it useable, so the amount of waste-water generated is enormous. Moreover, this process leaves prodigious quantities of dirty solid waste, including biological waste that is hazardous and highly undesirable.

The recycling charity RECOUP says (“Recyclability by Design”) that “where plastic products are particularly lightweight and contaminated with other materials, the energy and resources used in a recycling process may be more than those required for producing new plastics. In such cases recycling may not be the most environmentally sound option.” It is too costly in financial and environmental terms to collect it, transport it, sort it, bail it, store it, and then reprocess it.

The best way to deal with contaminated post-consumer waste plastic is to send it to modern, non-polluting, thermal recycling facilities and to use the energy released from the plastic to generate electricity, instead of wasting it by sending to landfill.

d2w oxo-biodegradable plastic is used for low-value items which are not worth recycling, but experts in Austria and South Africa have found it suitable for recycling with ordinary plastic if anyone still wanted to recycle it. See <https://www.symphonyenvironmental.com/resource/new-tckt-report-confirms-oxo-biodegradable-plastic-can-be-recycled-with-ordinary-plastic/>

They also found that bio-based plastics are not recyclable.

REPORTS

We expect that you will have been referred to a report by the Ellen MacArthur Foundation (EMF), who used to say that “oxo-degradable” plastics simply fragmented into microplastics, and we note that only 11 of the Respondents to “Turning the tide on single-use plastic products” mentioned this as a matter of concern to them.

However, having engaged with our scientists, EMF no longer say that. They admit in their May 2019 report that “oxo-degradable” plastics are manufactured so that they can degrade faster than conventional plastics and that they do become biodegradable, but they say that “it is not yet possible accurately to predict the duration of the biodegradation for such plastics.”

For that reason a broad indication only can be given as to timescale. It is however 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 sea at all, but that is not the present reality.

It is not important how long a particular piece of plastic in a particular place will take to biodegrade – the importance of oxo-biodegradable technology is that it will gradually reduce the overall burden of plastic in the oceans.

You will also be aware of reports from UNEP, DEFRA, the EU Commission, Eunomia, MSU, and Plymouth University. None of these reports recommends a ban, and they are all reviewed at www.biodeg.org

THE BILL

This is the most draconian piece of legislation against our technology that we have seen anywhere in the world. It seeks to ban plastic products of every kind made with the technology, without any scientific study (comparable to that prescribed by Arts 69-73 of the European Union's REACH Regulation), and it seeks to ban the technology even if the plastic is proved to biodegrade! We are advised that this is an unreasonable restraint of trade, and an abuse of legislative power which would be restrained by the courts.

Part 3 of the Bill would ban "oxo-degradable" plastics but would still permit ordinary plastics, which are the source of the microplastics found in the world today, and would also permit "compostable" plastics, which create microplastics if they get into the open environment.

If it was intended to consider a ban on "oxo-degradable" technology, it would have been reasonable to expect a representative from our industry to be invited to join the Taskforce. Audi alterem partem is a fundamental rule of natural justice in Australia as it is in England.

In the responses to "Turning the Tide," only Prospect (a suburb of Adelaide) supported banning products made from degradable or biodegradable plastic materials, and even they mentioned only single-use shopping bags – not all plastic products.

There is mention of public confusion as to the meaning of degradable, biodegradable, oxo-degradable, oxo-biodegradable, and compostable. It is simple enough for governments and retailers to deal with this confusion by providing suitable information – but failure to do this is not a reason for banning useful products.

We consider that the definitions that your Government and the EU are using are adding to the confusion. We submit that you should use the following definitions: "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 abiotically degrade by oxidation in the open environment and create microplastics, but do not become biodegradable except over a very long period of time.

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.

For other definitions you may wish to look at <https://bioplasticsnews.com/2020/01/14/michael-stephen-plastiphobia-bioplastics-definitions/>

One point that needs to be made clearly is that no plastic should be described as "compostable," and the Bill should prohibit this. This is because it does not convert into compost – how many members of the public know that it converts into CO₂, and how many would support this type of plastic if they knew that? Nor should it be described as "biodegradable" because it is tested according to the Australian 4736 Standard to biodegrade in the special conditions found in an industrial composting facility – not under ordinary conditions.

There is a need for great care when responding to public opinion about plastics, lest unintended consequences ensue. See <https://www.biodeg.org/wp-content/uploads/2020/01/plastic-promises-what-the-grocery-sector-is-really-doing-about-packaging-jan-20.pdf>

We have no objection to governments requiring proof of testing according to an appropriate Standard, and requiring appropriate labelling. The Standard for our technology is ASTM D6954.

In the discussion paper "TURNING THE TIDE ON SINGLE-USE PLASTIC PRODUCTS" the public were given no evidence sufficient to justify a decision to ban "oxo-degradable" plastic products, and were given no evidence or reasons for them to consider, as to why they should not be banned.

We consider that Part 3 should be removed from the Bill altogether pending further discussions, in which we and our scientists would be willing to participate.

Regards,

A handwritten signature in cursive script that reads "Michael Stephen". The signature is written in black ink and is positioned above a long, horizontal, slightly wavy line that serves as a decorative underline.

MICHAEL STEPHEN
Chairman

Member of the Environment Select Committee of the House of Commons 1992-95