Bioplastics NEWS

Intertek and Composting (FREE)

Michael Stephen, an international expert on bioplastics, shares his thoughts and opinion on important issues impacting the bioplastics industry. Today, Michael writes about Intertek and compostable plastic bags. This is a free Article.

Intertek

I have been reminded of the report which Intertek sent to the European Chemicals Agency in May 2018 when ECHA were investigating oxo plastics https://www.biodeg.org/wp-content/uploads/2021/01/Intertek-Report-to-ECHA-24.5.18.pdf

Intertek said:

"Some of the opinions voiced by some parties have led some stakeholders to consider a potential ban on oxo-biodegradable additives. This seems unjustified, unnecessary, and also counterproductive. For the foreseeable future, conventional plastics will continue to be used all over the world, in increasing amounts due to global development, despite the efforts of environmentalists and governments in some countries. Even if oxo-biodegradable technology was no longer available on the European market, large quantities of conventional plastics will continue to enter the ecosystem and will remain there as a problem for future generations. Therefore, a ban would be ineffective because it would have no perceivable impact on the problem."

Also, "A ban of any product would normally be justified only where there existed proof of significant harm. In the case of oxo-biodegradable plastics, the worst possible case (based on the views of the most sceptical stakeholders) could be that oxo-biodegradable plastics are little different from conventional plastics in terms of environmental impact. The best possible case is that they would be beneficial in relation to the micro-plastics issue. The point is that the range is neutral-to-good, not harmful. Therefore, a ban does not seem to be logical or justified."

Composting

I read an article a few weeks ago in "Lets-recycle" magazine by David Newman, managing director of the "Bio-based and Biodegradable Industries Association" (BBIA) and Tony Breton, UK market developer for the Italian company Novamont. In this article the dynamic duo seek to persuade us that their plastic, which they describe as "compostable" is a good idea. They have even employed a lobbying firm called Sancroft to write a report. These lobbyists are very very expensive, and for the reasons mentioned below I don't think that their report is of much value.

The main thrust of the Newman/Breton article is that food waste should not be sent to landfill, but should instead be converted into biogas (by anaerobic digestion) or into compost. So far so good, but food should not become waste in the first place. The best way to protect food from damage or contamination is to pack it in plastic, not in paper, and the best way to preserve it from deterioration is to pack it in plastic packaging which adsorbs the ethylene which causes over-ripening. eg https://www.symphonyenvironmental.com/solutions/sym-fresh/

However, given that some of the food will inevitably become waste, it could usefully be sent for industrial composting or aerobic digestion. Yes, the food waste should be sent in plastic bags so as not to attract vermin or flies, but "compostable" plastic is not welcome in these industrial facilities (even if sold as compliant with EN13432 or ASTM D6400) and many of them are not willing to accept it.
See https://www.biodeg.org/subjects-of-interest/composting/ Also, composters and/or local authority collectors would not want the task of checking that all the bags are in fact made of "compostable" plastic.

[plastics] too." Likewise Sancroft admit that there is "a range of sites across Europe that are able to extract compostable bags."

Rather surprisingly Sancroft refer to Epsom & Ewell Borough Council's website, https://www.epsom-ewell.gov.uk/why-it-ok-put-plastic-bags-food-waste-not-green-recycling-bin which says "When you use plastic bags in your food waste caddy you're simply using them to contain the food, and keep your caddy clean. They don't get recycled. In fact, the first thing that happens when your food waste gets to the recycling plant is the plastic bags are all dredged out. They're sent off for burning along with normal refuse to generate electricity. After that, the food waste can be recycled."

"We used to ask you to use bio-liners to line your food waste caddy, but the food waste recycling companies found that bio-liners compost down much more slowly than the food. That slowed the recycling process and made it much more expensive. They tried dredging the bio-liners out of the food waste, but the sticky bio-liners got tangled around the dredging equipment. Cleaning them off was very expensive. So they found that using plastic bags was, overall, much more cost-effective. They're not recycled but good stuff still happens to them. And you can use old bags like bread-bags or carrier bags if you like."

When incinerated in a modern facility the bags release their calorific value for the generation of electricity, but if left in the composting process they generate only CO_2 (as required by EN13432) and microplastics, and produce nothing of any value for the soil. How can this help to cut plastic waste? In fact it's a deliberate waste of resources. One of the "principles" of the Sancroft report is reducing GHG emissions, so deliberately turning plastic into CO2 is obviously contrary to that principle. Another of their "principles" is "increasing circularity, including returning nutrients and organic carbon to the Soils." Again, there is nothing circular about turning plastic into CO2, and it does not return nutrients or organic carbon to the soil.

Then Sancroft say "we wanted to highlight the challenge of plastics pollution, which is a risk too big to ignore." Indeed it is, and this is the main reason for the demonisation of plastic. This is why oxo-biodegradable plastic is a much better option than conventional or "compostable" plastic. It will biodegrade automatically if it gets into the open environment, but "compostable" plastic is tested by EN 13432 or ASTM D6400 to biodegrade only if collected and taken to an industrial composting or AD facility.

Sancroft refer to the PAS 100 standard for composting, but admit that it does not solve the microplastic issue, because fragments below 2mm are not covered. There is still therefore the likelihood of microplastics getting into the soils, even from "compostable" plastic processed in accordance with that standard. By contrast, if any conventional plastic had not been removed by the operator it is less likely to cause microplastic pollution because it is unlikely to have degraded in the relevant timescale to the point where its fragments will pass through the 2mm sieve.

Sancroft note that "every year that goes by as a nation, we are permitting more plastics to enter the soils which will not naturally degrade, compounding the problem for every year after it is obvious we will never be able to remove those plastics." Absolutely right – and this is why governments should require all everyday plastic items made from PE or PP to be upgraded with oxo-biodegradable technology so that they will naturally biodegrade and be recycled back into nature much more quickly.

Sancroft say "In 10 years' time, after another decade of compounding the issue – likely increased by arrival of universal food waste collection, therefore more processing of plastic bags – we could have done irreparable harm to our many agricultural areas throughout our country." Absolutely right – unless urgent action is taken to make all plastic bags oxo-biodegradable.

They point out that microplastics in agriculture are being studied and it seems that they can impede seed-germination, but where are these microplastics coming from? They are coming from the fragmentation of conventional plastic litter, and from fragments of "compostable" plastic which have passed through the PAS 100 sieve and have been deliberately spread on the fields in the compost.

They say that "microplastics in soils lead to a reduction in size and weight of earthworms – with potential implications for soil structure that affects plants." That is true of conventional microplastics, but earthworms exposed to the degraded residues of oxo-biodegradable plastic in tests under the OECD 207 protocol demonstrated an increase in size and weight. In fact successful tests on oxo-biodegradable mulch films for agriculture have been done in Wales. See https://www.biodeg.org/wp-content/uploads/2020/09/Pembroke-Mulch-Film-Trial-Report-30.09.13V1.pdf

Sancroft suggest incentives for composting (ie public money for buying their clients' plastic bags) "recognising the value compost can create in delivering organic carbon to soils, restoring soils etc, but I have not heard composters complaining of any shortage of feedstock, nor in all food waste collection in order to support "consistency in messaging" – whatever that means.

Sancroft place much emphasis on the need to avoid confusing householders, and of course their answer is to force everyone to use their clients' bags. That is not going to avoid confusion, as householders will still need to be advised what to put into the bags. No, the way to avoid confusion is to make a clear statement to householders, as Epsom & Ewell BC have done.

With regard to the UK Plastic Packaging Tax which will apply from April 2022, we are told that government intends to apply the tax to all liners that do not have at least 30% recycled content. "Compostable" plastic liners will not be exempted, because they are not made from recycled material, but Sancroft seek to argue that PE liners should not be exempted either, because they might be made from recycled material that could result in the carry-through of ecotoxic substances to soils. This is not a sound argument, because we have already seen that the PE bags would not be left in the compost but would be extracted and sent for incineration.

Sancroft say that "Compostable bags also enable the use of ventilated caddies (which cannot be done with PE bags), which have a wide variety of benefits." They do not justify this assertion, and I can see no reason why "compostable" plastic bags should be any different to ordinary PE bags in this application, as both are impervious to air.

I would agree with them that "paper bags tend to result in lower compliance as they split regularly reflected in the fact that they are not a choice at scale in other markets, unlike PE and compostable [plastic] bags."

Sancroft then suggest using compostable bags, "which would eliminate the risk from the use of plastic bags" How can this be so? It would only eliminate the risk from the use of plastic bags if they were all collected and taken to a composting facility, and if all their microplastic were removed from the compost. However, if you can collect a plastic bag there are better things to do with it than convert it into CO2 and microplastics in a composting facility.

The unsurprising conclusion of the Sancroft Report is that "evidence shows that the most cost-effective option that delivers the biggest benefits for the nation is the use of compostable bags as a liner." For the reasons mentioned above I do not think that the evidence points to any such conclusion.

Conversion of organic materials to CO2 at a rapid rate during the composting process is not "Recycling" – nor is it "recovery" as required by the European Directive on Packaging and Packaging Waste (94/62/EC). Nature's lignocellulosic wastes do not behave in this way, and if they did the products would have little value as soil improvers and fertilisers, having lost most of their substance and their carbon.

So far as garden waste is concerned, grass cuttings, dead flowers, twigs etc are normally put on a compost heap in the garden, and all you need is a bucket or a wheelbarrow. You certainly don't need to buy an expensive plastic bag. It is not economic for any local authority to collect vast tonnages of garden waste and transport it long distances, but even if they did collect it, garden waste does not need protection from vermin or flies and there would again be no need to buy the so-called "compostable" bags. These would not be strong enough for this purpose anyway, and as mentioned above, are unlikely to be accepted by the industrial composters.

It is unlikely that other items deceptively sold as "compostable" such as plastic knives, forks, plates, cups, coffee pods, or fruit and vegetable bags, magazine wraps and carrier bags are going to be accepted by composting facilities, as they convert into CO2 not into compost, and the thicker they are the more likely they are to leave fragments of plastic in the compost or digestate. As a result they will be landfilled or incinerated, so why pay for "compostable" plastic?

Michael Stephen

Michael Stephen is a lawyer and was a member of the United Kingdom Parliament, where he served on the Environment Select Committee. When he left Parliament Symphony Environmental Technologies Plc. attracted his attention because of his interest in the environment. He is now Deputy Chairman of Symphony, which is listed on the AIM market of the London Stock Exchange, and is the founder and Chairman of the Oxo-biodegradable Plastics Association.

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- Questions and Answers on OXO-Biodegradability

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