Bioplastics NEWS

Say No to Plastiphobia, False Descriptions and the Recycling Myth

Michael Stephen, an international expert on bioplastics, shares his thoughts and opinion on important issues impacting the bioplastics industry. Today, Michael writes about saying no to plastiphobia, false descriptions, plastic recycling is a myth, single-use plastics and new research.

Michael Stephen

Say no to Plastophobia

Daily Express 18.5 2020 "Plastic is the unsung life-saver during this health crisis so let's not demonise it. Until the UK was struck by Covid-19, plastic was number one villain in our battle to make the environment cleaner. Since then, plastic equipment and clothing have been essential to protect our heroic doctors and nurses, and has been deployed to make our supermarket food even more hygienic. Much of this is single-use plastic, disposed of once it has served its daily purpose"

"The chemical industry gets a lot of flak generally over global warming and plastics," says Sir Jim Ratcliffe, the founder of global chemicals titan Ineos. "But we're producing the plastics that are going into medical equipment—face masks, ventilators, sterile gloves, eye visors, it goes on and on. We've seen a huge increase in demand for anything going in to medical products."

“The other area we’ve seen a huge increase in demand is food packaging,” says Ratcliffe, “because everybody wants their food wrapped up. It’s more hygienic and it lasts longer.”

“Until coronavirus, supermarkets were leading the charge against plastic packaging but now it is essential that our fresh food is protected from airborne contagious droplets.”

Symphony Environmental Technologies Plc has gone one step further than Ineos by finding a way to make almost all plastic products lethal to microbes – see **http://www.d2p.net**

False descriptions

In my column on 4th May I noted that the Danish courts in the case of Ellepot v Sungrow (2019) had ordered that the Defendant’s “compostable” PLA plant pots must not be described as biodegradable, because they are not proved to be biodegradable except in the special conditions found in an industrial composting facility.

I have since been reminded that the German courts in Güthoff v Deutsche Umwelthilfe (2014) have held that it is deceptive to market plastics as “compostable” – because they do not convert into compost – instead they convert as to 90% into CO2 gas, as required by EN13432 and ASTM D6400.

So now it seems that retailers risk prosecution if they describe crop-based plastics as compostable, or if they describe them as biodegradable without making it clear that they biodegrade in the special conditions found in an industrial composting facility.

Plastic Recycling is a Myth

PLASTIC RECYCLING IS A MYTH’: what really happens to your rubbish? The Guardian 17.8.19 “You sort your recycling, leave it to be collected – and then what?”

“Incineration, while often criticised for being polluting and an inefficient source of energy, is today preferred to landfill, which emits methane and can leach toxic chemicals. Westminster council sent 82% of all household waste – including that put into recycling bins – for incineration in 2017/18. Some councils have debated giving up recycling altogether.”

“The trouble started when we began trying to recycle household waste, and plastic is where recycling gets most controversial. Recycling aluminium is straightforward, profitable and environmentally sound: but with plastic, it is not that simple. While virtually all plastics can be recycled, many aren’t because the process is expensive, complicated and the resulting product is of lower quality than what you put in. The carbon-reduction benefits are also less clear. “You transport it around, then you have to wash it, then you have to chop it up, then you have to re-melt it, so the collection and recycling itself has its own environmental impact,”

“While the global mood had turned against plastic before COVID-19, plastic packaging has actually done an incredible service for the world, because it has reduced the amount of glass, metal and paper that we were using.”

More serious than the plastic problem is global warming. If we use more glass, cloth, paper and metal, those materials have a much higher carbon footprint.

CBC NEWS Canada 7.3.20

“The label says 100% compostable plastic, but here is what happens when you put compostable plastics in your green bin.” CBC Marketplace discovered that what actually happens is that they end up in landfill.

FAIRWARNING.ORG California 29th April 2020

“Biodegradable” – “Compostable” magic words for environmentally-minded consumers – isn’t always a green panacea.

“Environmentally-conscious shoppers tend to be drawn to such labels. But they might not be aware of a critical drawback: As biodegradable materials break down in a landfill, which is where they usually end up, they can release methane, a potent greenhouse gas with climate warming effects upwards of 30 times that of carbon dioxide.”

“There is a lot of branding around biodegradability,” a materials scientist at the Singapore University of Technology and Design, told FairWarning. “What is good for the environment? And what is just good for selling more bioplastic cups?”

“If the compostable product won’t end up in a commercial compost facility, then there is no reason to favor a material that is compostable,” added an environmental engineering professor at North Carolina State University. “A composting facility carefully controls moisture, airflow and temperature—all of which affect how well and how fast material biodegrades. Critical to the composting process is keeping oxygen flowing through the piles so that oxygen-consuming microorganisms can break down the material. Otherwise, the process is less efficient and produces climate-warming methane.”

“Of thousands of U.S. cities, only about 185 collect compost waste. What’s more, many of them focus on food scraps and won’t accept biodegradable packaging. Or, if composters do accept that material, they will frequently screen it out along with other plastics for shipment to a landfill, explained an engineer at the University of Kentucky.”

“That leaves the vast majority of Americans with the option of tossing biodegradable items in a home compost pile, a recycling bin or a garbage can. A backyard bin rarely gets hot enough to break down compostable plastic – so, that’s out. Recycling is also unlikely to be the answer, as compostable plastics are generally not recyclable. In fact, a compostable item could contaminate other recyclable materials and force an entire batch to be sent to landfill.”

“So, the most likely destination of “compostable” products is the landfill.”

Single-Use Plastics

Chennai News 9.5.20.

“The COVID-19 outbreak has redeemed a material that till a few months ago, was at the receiving end of a massive international campaign against its production and use. Hospitals and healthcare facilities are suddenly staring at a skyrocketing demand for hazmat suits, N95 masks, visors, gloves, shoe covers and goggles – all of which are made of polypropylene (PPE), a thermoplastic that has emerged as the most sanitary, reliable and cost-effective answer so far to the crisis.

New Research

According to the Sunday Times (26.4.20) “Portsmouth University has created an enzyme that can begin to break down plastic in a matter of days while most plastics take hundreds of years to biodegrade naturally.”

A professor of structural biology at the University, was investigating a naturally occurring plastic-eating enzyme that had been discovered in a Japanese rubbish dump in 2016. A slight tweak to the enzyme’s structure, and the team had created — not entirely deliberately — a supercharged enzyme that quickly breaks down polyethylene terephthalate (PET) plastic.”

This would be useful if a way could be found to put these enzymes into plastic at the point of manufacture, without deactivating the enzyme, compromising the performance of the plastic, or significantly increasing the cost – but it is not really necessary. Fifty years ago polymer scientists found a way to make plastic convert into biodegradable materials in the open environment and they called it “oxo-biodegradation.” It does not however work with PET, but PET is a high-value plastic which (unlike PE or PP, for which oxo-biodegradation is suitable) is worth collecting for recycling.

Meanwhile researchers at Cambridge are turning plastic into hydrogen fuel. The Professor who leads the project said: “I look at plastic and I see an extremely useful material that is rich in chemicals and energy — a material that shouldn’t end up in landfills and pollute the environment.”

The Professor is right – plastic should no longer be sent to landfill. He is researching a process called photo-reforming, where plastic is broken down into pure hydrogen fuel and useful small molecules with the help of a photocatalyst, which harnesses the energy in sunlight. The fuel can already be used in hydrogen cars, and researchers hope it will find its way onto public transport.

Again, this would be useful if it can be done at reasonable cost, but you can already extract the calorific value from plastic simply by sending it to a modern non-polluting incinerator, and using it to heat buildings or to drive steam-turbines to generate electricity.

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.

Earlier Postings in this Column

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- 7/ 1/ 20 – Recycling, Lab Testing, Bangladesh and the Right Bioplastic
- 14/1/20 – Plastiphobia and Bioplastics Definitions
- 21/1/20 – Composting, the European Union and Unemployment
- 30/1/20 – Plastiphobia, Malaysia and a Case Against Compostables and Paper
- 7/02/20 – Coronavirus, MPs Letter, Montreal, Australia and the Dominican Republic
- 14/02/20 – Oman, MacArthur Foundation, Stifling Innovation, South Africa and Compostable Plastics
- 24/02/20 – Serbia, India, Pakistan and European Bioplastics
- 03/03/20 – Plastic To Protect Health and Common Sense on Plastic
- 10/03/20 – Plastiphobia, Singapore, Compostable Plastics, Doorknobs and Carbios
- 17/03/20 – Greening our Way to Infection, Defra Warns Against Bioplastics and Montreal
- 24/03/20 – Ditch the Plastic Bag Ban and Inn-Probio
- 01/04/20 – The Come Back of Plastic Bags, Compostable Plastic Not Wanted and EASAC
- 16/04/20 – Coronavirus and Agricultural Plastics
- 11/05/20 – Coronavirus, Peru, Barbados and Recycling

Interview with Michael Stephen

- Questions and Answers on OXO-Biodegradability

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