

Recycling, Lab Testing, Bangladesh and the Right Bioplastic

Michael shares his thoughts and opinion on important issues that are impacting the bioplastics industry. Today, Michael writes about Recycling, Lab Testing, Bangladesh and the Right Type of Biodegradable Plastic.



Michael Stephen

I have just read an interesting paper entitled “SAVE THE OCEANS – Stop recycling plastic” by Professor Mikko Paunio of Helsinki University.

He says we should continue to use plastic for packaging, because plastic food packaging is an integral and vital part of food hygiene and has had important health and environmental benefits.

In particular, it has proved to be an effective means to control and prevent the accumulation of municipal solid waste, chiefly by reducing the amount of food waste.

He then draws attention to the nonsense that plastic is often deemed officially ‘recycled’ if it is recovered for recycling, no matter what ultimately happens to it, and says that whilst almost all pre-consumer waste (eg factory offcuts) is recycled or reused within the UK, 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.

He says that the best way to deal with 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.

Similarly, the recycling charity RECOUP says 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.

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 irrelevant if the waste plastic is not going to be mechanically recycled.

d2w biodegradable plastic is used for low-value items which are not worth recycling, but experts in Austria and South Africa have found it to be compatible with recycling if anyone still wants to recycle it.

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

Lab Testing

I have heard it said that plastic which becomes biodegradable by oxidation only works in laboratories – not in the real world! but I have never heard any credible reasons for this assertion.

Professor Emo Chiellini, one of the world’s leading experts in this technology says “Scientists have not devised the tests in ASTM D6954 for our own amusement, but precisely because we need to know how the product is likely to perform in the real world. I have for many years observed the results of tests in my laboratory and have confirmed the results with observations in the real world.”

Dr. Graham Swift, Vice Chairman of the Subcommittee on Biodegradable Plastics at ASTM, says “As degradation progresses, the hydrophobic polymeric substrate is converted into low molecular weight oxygenated hydrophilic species, suitable for biodegradation by most microbial species in most aerobic environments, and particles of plastic are not left behind. Oxygen is always needed for oxidation, but

moisture is not, and once initiated, oxidation will continue even at low temperature or if the material is occluded from UV light. Heat and UV radiation merely enhance the rate of degradation.”

Bangladesh

As a lawyer, I was surprised to read in the press that the High Court is suffering from plastiphobia, and has directed the government to ban single-use plastic products in the coastal areas, and hotels, motels and restaurants across the country within one year.

Surely this is a political decision which ought to be made by the government itself.

However, I am not an expert in the laws of Bangladesh.

I don't know what evidence the court heard, but it seems to me that their decision is disproportionate, and is unlikely to be accepted by the people.

If the court is concerned about plastic persisting in the open environment, there was no need to ban plastic products.

They should instead have directed that the products be made from plastic which is designed to biodegrade if it gets into the open environment.

Choose The Right Type of Biodegradable Plastic

There are two main types of biodegradable plastic –

- A. is designed to biodegrade in the special conditions found in an industrial composting facility, and is tested according to EN13432 or ASTM D6400; and
- B. is designed to biodegrade if it gets into the open environment, and is tested according to ASTM D6954.

It is extraordinary how many politicians who are concerned about plastic persisting in the open environment are choosing A instead of B, especially where there are no industrial composting facilities in the country or locality concerned.

Perhaps they are also unaware that A. is not recyclable and does not convert into compost, but converts instead into CO₂.

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

- 1/ 1/ 20 – [Plastiphobia, Microplastics and A Throw-Away Society](#)
- 14/ 1/ 20 – [Plastiphobia and Bioplastics Definitions](#)

Interview with Michael Stephen

- [Questions and Answers on OXO-Biodegradability](#)

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