



Pioneering Oxo-biodegradable Plastic Technology

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Via Email

Editor

Bangkok Post

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RE: April 16th, 2010 Article: 'Oxo' bags trouble bioplastics industry

Dear Sirs:

This letter is in response to the above article which provided misguided, confused and incorrect information on bioplastics, biodegradable, compostable and oxo-biodegradable plastics.

Firstly, there are two main types of biodegradable plastics, hydro-biodegradable and oxo-biodegradable plastics. They are both designed to ensure plastics are environmentally benign after their disposal. Hydro-biodegradable plastics generally, but not always, biodegrade in a short time and meet standard specifications for compostable plastics (e.g. ASTM D6400 and EN 13432). On the other hand, oxo-biodegradable plastics degrade more slowly by oxidation into fragments that biodegrade.

Much of the confusion about the significance of oxo-biodegradable plastics arises because of the incorrect assumption that biodegradability and compostability are the same process. The fact is they are not. Another inaccurate assumption is to equate compostability with the use of bio-based inputs that create them. Most hydro-biodegradable plastics are made from petroleum while others, such as PLA, are derived from raw materials such as corn starch. Others such as Novamont's Mater-bi and BASF's Ecoflex are reported to be completely or mostly composed of petroleum derived polyesters. It is important to note that all compostable plastics are biodegradable but not all biodegradable plastics are compostable.

Many laboratories have proven repeatedly that EPI-based polyolefins, after oxidative degradation has occurred, are biodegradable using biometric methodology as described in ASTM D5538. Such testing has shown that biodegradation of EPI's TDPA-based oxo-biodegradable polyethylene reaches a level of 60%. Albeit too slow to qualify as compostable, biodegradation continues beyond this point. Most post-consumer plastics are not being composted.

A third party study commissioned by a Government Agency of the Province of Quebec in Canada showed that carrier bags made from EPI oxo-biodegradable PE, are entirely compatible with conventional plastics recycling at a mixture levels of up to 50%. In contrast, when the conventional recycled plastics stream was mixed with hydro-biodegradable plastics, it completely ruined the utility of the normal recycled plastics stream.

Bioplastics are denser than polyolefins, problematic in recycling, possess poor water and oxygen barrier properties, require thicker material, have higher packaging weight and are more expensive.

This is an inferior option when compared to oxo-biodegradable plastics in many single use applications where they are not disposed of in composting.

In response to TBIA honorary president Phietoon Trivijitkasem's comment in the above mentioned article, "Oxo-biodegradable is very unsafe for open waste dumps or the unsealed landfill systems that are commonly used in Thailand."

Oxo-biodegradable bags are beneficial in the unmanaged landfill (the "garbage dump") as oxo-biodegradable plastics reduce the amount of environmentally harmful methane that enters the atmosphere from garbage dumps.

In an unmanaged landfill, refuse continually piles up and there is no coverage or capping of the waste material. Therefore, the refuse in the landfill degrades aerobically as there is oxygen available. However, at lower depths within the landfill, oxygen is depleted causing *anaerobic* biodegradation which leads to methane generation. In managed landfills, the methane is captured and flared (converted to CO₂), or used for energy, which is a positive alternative to unmanaged landfills where the methane escapes directly into the atmosphere. With methane being 24 times more potent as a greenhouse gas than CO₂, this is certainly a serious environmental concern.

As in the managed landfill, the degradation of Oxo-biodegradable plastics (OBP) in the unmanaged landfill avoids entombment of the organic matter (food wastes, paper products, etc.) disposed of in bags and exposes the bag contents to the available oxygen. The organic matter has the opportunity to aerobically biodegrade (producing CO₂) and reduces the amount of organic material that would eventually anaerobically biodegrade (producing methane). Hence, methane escaping to the atmosphere is significantly reduced through the use of OBP.

Finally, we would also like to question the independence and neutrality of Thai Bioplastics Industry Association (TBIA). Do they represent the whole biodegradable plastic industry or do they only represent hydro-biodegradable plastics? If latter, then they are biased to be trusted with the responsibility of evaluating oxo-biodegradable plastics fairly.

Yours truly,

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