



# OXO-BIODEGRADABLE PLASTICS ASSOCIATION

A not-for-profit Association

Website [www.biodeg.org](http://www.biodeg.org) E-mail [info@biodeg.org](mailto:info@biodeg.org)

## POSITION-PAPER ON LANDFILL

1. The main benefit of oxo-biodegradability is not for plastic waste which is sent to landfill, but for plastic waste which gets out into the environment, where it will accumulate for many decades on land and in the oceans.
2. Some plastic waste will of course be collected and sent to landfill, and oxo-biodegradable<sup>1</sup> plastic can be safely sent to landfill as it will not biodegrade in anaerobic conditions and will not therefore emit methane, which is a dangerous greenhouse gas.
3. This is not true of bio-based “compostable” plastics, nor of plastics with “enzymatic” additives, which should not therefore be sent to landfill at all.
4. The European Union has required<sup>2</sup> a massive reduction in the amount of biodegradable material going to landfill, and plastics which biodegrade in landfill (which oxo-biodegradable plastics do not) are therefore unacceptable in Europe.
5. It is likely that sending plastics to landfill will be banned altogether in Europe. In its Green Paper published on 7th March 2013<sup>3</sup> the European Commission says "From a resource efficiency perspective, it is particularly important to prevent landfilling of plastic waste. Any landfilling of plastic is an obvious waste of resources which should be avoided in favour of recycling, or of energy recovery as the next best option.
6. Art 5 of the landfill Directive says:

### ***Waste and treatment not acceptable in landfills***

*1. Member States shall set up a national strategy for the implementation of the reduction of biodegradable waste going to landfills .....*

*2. This strategy shall ensure that:*

*(b) not later than [2009] biodegradable municipal waste going to landfills must be reduced to 50 % of the total amount (by weight) of biodegradable municipal waste produced in 1995 .....*

*(c) not later than [2016] biodegradable municipal waste going to landfills must be reduced to 35 % of the total amount (by weight) of biodegradable municipal waste produced in 1995 .....*

7. The aims of the Directive are stated in the following recitals at the beginning of the document:

<sup>1</sup> made from a by-product of oil in the same way as ordinary plastic, but with a pro-degradant additive which breaks the molecular chains and causes the material to degrade then biodegrade.

<sup>2</sup> EU Landfill Directive 1999/31/EC

<sup>3</sup> (COM(2013) 123 final)

*(3) the prevention, recycling and recovery of waste should be encouraged as should the use of recovered materials and energy so as to safeguard natural resources and obviate wasteful use of land.*

Oxo-biodegradable plastics, like their traditional counterparts, can be re-used during their useful life and/or recycled and incinerated with high energy-recovery.

8. The most valuable asset for a landfill-operator is space. Plastic bags are extremely compact, and plastic grocery bags and all plastic retail bags together take up less than 1% of space in landfills - a tiny amount. However, conventional plastic bags take up more space than necessary because they trap air, they do not disintegrate rapidly, and thus inhibit the decomposition of their contents in the landfill.
9. Oxo-biodegradable plastics will disintegrate in the surface layers of a landfill so long as oxygen is present. Oxygen levels will vary according to factors such as how loose or compressed the waste was when it was buried, how much u/v light is available, and how much further waste material or earth is added to the landfill over what period of time. A fragmented oxo-biodegradable bag will settle more easily than an ordinary plastic bag with trapped contents, and will occupy less space.

*(4) further consideration should be given to the issues of incineration of municipal and non-hazardous waste, composting, biomethanisation, and the processing of dredging sludges;*

10. Oxo-biodegradable plastics can be incinerated with high energy recovery.

*(12) protective measures [should] be taken against any threat to the environment in the short as well as in the long-term perspective, and more especially against the pollution of groundwater by leachate infiltration into the soil.*

11. Oxo-biodegradable plastics do not cause harmful leachate infiltration, and oxo-biodegradable additives approved by the OPA have been certified non ecotoxic.

*(16) measures should be taken to reduce the production of methane gas from landfills, inter alia, in order to reduce global warming, through the reduction of the landfill of biodegradable waste and the requirements to introduce landfill gas control;*

12. In the depths of a landfill, in the absence of air, Hydro-biodegradable (“compostable”) plastics generate methane, which is a powerful greenhouse gas. Methane is also highly combustible and is a cause of fire and explosions.
13. The Report on “The impacts of degradable plastic bags in Australia” prepared by ExcelPlas/ Nolan-ITU on 11 September 2003 for the Australian Government noted at 7.3 that: “[hydro] degradable polymers with starch content have higher impacts upon greenhouse due to methane emissions during landfill degradation and N<sub>2</sub>O emissions from fertilizing crops.” Methane is 23 times more potent for global warming<sup>4</sup> than CO<sub>2</sub>.

---

<sup>4</sup> IPCC (Inter-Governmental Panel on Climate Change) Report page 47

14. Decomposition deep in a landfill is not therefore desirable. Whilst oxo-biodegradable plastics fragment and biodegrade in the upper layers of the landfill (see above) and emit CO<sub>2</sub> at a low rate there in the presence of oxygen, they are completely inert deeper in the landfill in the absence of oxygen.
15. Article 2 (m) of the Landfill Directive defines “biodegradable waste” as “*any waste that is capable of undergoing anaerobic or aerobic decomposition, such as food and garden waste and paper and cardboard.*” However, the reason stated in recital 16 above for reducing the landfill of biodegradable waste does not apply to oxo-biodegradable plastics because, as indicated in para. 13 above, they are completely inert in anaerobic conditions - unlike food and garden waste, paper, cardboard, and hydro-biodegradable plastics, which all emit methane.
16. It is an important factor that an oxo-biodegradable plastic bag is much lighter than a paper, cotton, or jute bag, and is even lighter than a hydro-biodegradable bag.<sup>5</sup> As municipalities and waste-management companies have to pay to put trash in landfills, and as charges are based on weight, it costs much more to put paper, cotton, jute or hydro-biodegradable plastic bags in a landfill than ordinary or oxo-biodegradable plastic bags.
17. Plastic should not be sent to landfill at all. After collection it should be recycled<sup>6</sup>, or incinerated for energy-recovery. However, the recycling option for a normal plastic waste stream is not practicable for hydro-biodegradable<sup>7</sup> (or “compostable”) plastics, which have to be treated separately and at high cost. Also, hydro-biodegradable plastics have a lower calorific value when incinerated.

---

<sup>5</sup> depending on the type of plastic, hydro-biodegradables are between 40% and 150% thicker and heavier than oxo-biodegradables for the same strength.

<sup>6</sup> See OPA Position Paper on Recycling <http://www.biodeg.org/recycling.htm>

<sup>7</sup> Usually made from corn starch or other agricultural derivatives