



Arguments against oxo-biodegradable plastic and BPA responses

No.	Argument made against oxo-biodegradable plastic	BPA response
1	Isn't it just a gimmick?	No. Oxo-biodegradable plastic was invented not by marketers or salesmen but by the scientists who had developed plastic more than 50 years ago. They realised that the durability they had achieved would be a problem if the plastic escaped into the open environment. They discovered that if they added a carefully formulated masterbatch, the plastic would biodegrade much more quickly, leaving no microplastics or toxic residues.
2	It fragments into microplastics.	Conventional plastic will fragment into persistent microplastics on exposure to weathering, but oxo-biodegradable plastic is designed and proved to convert by oxidation and reduction of molecular weight into biodegradable materials which biodegrade without leaving persistent microplastics.
3	It generates nano-plastics.	When conventional plastic degrades, the fragments get smaller and smaller due to erosion until they are nano-plastics. Oxo-biodegradable plastic will have converted into biodegradable materials long before this happens. No evidence has been produced showing formation of nano-plastics from oxo-biodegradable plastics.
4	It merely breaks into smaller pieces rather than biodegrading.	See 1 above
5	It does not fully biodegrade.	Tests have been done by ISO17025 accredited laboratories showing complete biodegradation. No reason has been shown why biodegradation would stop before completion. See also 30 below.
6	Biodegradation has only been demonstrated in laboratories, not the real world.	Standards such as ASTM D6954 were written by scientists to replicate real world conditions in the laboratory, and evidence to the UK government shows that this is reliable (www.biodeg.org/wp-content/uploads/2021/02/Swift-evidence-to-BEIS.pdf). Biodegradation has also been proved in the real world in the French Oxomar study, (www.biodeg.org/wp-content/uploads/2021/07/Final-report-OXOMAR-10032021.pdf) and at Queen Mary University London, and in farm trials in Wales. (www.biodeg.org)

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7	Degradation will not occur in a cold climate.	Degradation may be slower in cold climates, but it will occur and will be much faster than conventional plastic in the same place.
8	It may not degrade in marine environments.	The French Oxomar marine study proves that it does.
9	It may not degrade in landfill.	Oxo-biodegradability is designed to deal with plastic which has escaped into the open environment. If it has been responsibly disposed of in landfill there is no need for biodegradation, but it has nevertheless been proved to biodegrade in landfill.
10	It risks contaminating recycling streams.	Oxo-biodegradable PE and PP can be safely recycled with conventional PE and PP without separation. (https://www.biodeg.org/subjects-of-interest/recycling-2/) Misconceptions by recyclers cannot be allowed to prevent the use of oxo-biodegradable plastic and therefore to perpetuate the accumulation of conventional plastic in the environment for decades.
11	It is incompatible with a circular economy.	Oxo-biodegradable plastic can be reused and recycled like conventional plastic. It is there as a safeguard in case collection fails (as it frequently does).
12	It cannot be recycled in conventional recycling systems.	See 9 above. This is a major disadvantage of the type of plastic marketed as “compostable,” some of which will inevitably get into recycling instead of composting.
13	It creates chemical leaching risks.	Oxo-biodegradable plastics are tested to ASTM D6954, which requires proof of no harmful residues. Harmful ingredients of plastic, such as PFAs, are in any event being banned.
14	It leaves toxic residues in the environment.	See 12 above. Oxo-biodegradable plastics are tested according to the OECD Standards to prove that they are not toxic.
15	Metal additives used in pro-oxidant systems may be harmful.	See 12 & 13 above. Oxo-biodegradable plastics are also tested to prove the absence of any metals above permitted levels. The most commonly used elements are iron and manganese.
16	It is unsuitable for long-term applications because it degrades.	It is intended for short-life products, and obviously not for durable applications. Recyclate containing oxo-biodegradable plastic can nevertheless be used to make long-life products because such products are always stabilised to prevent degradation, whether they contain oxo-biodegradable recyclate or not. See 9 above.

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17	Carrier bags made from oxo-biodegradable plastic cannot be reused.	Service and shelf life can be programmed, by formulating the masterbatch, for whatever is required, and bags can be reused many times.
18	There is no suitable waste-management route for oxo-	No special route is necessary (unlike plastics marketed as compostable). They can be disposed of in existing recycling and waste streams or in landfill or incinerators like ordinary plastic.
19	The technology encourages littering by making people think disposal is acceptable.	There is no reason why the product should be labelled as biodegradable. Even if it were, irresponsible people who throw a plastic bag out of a car window are not likely to bother to read the label before they do so.
20	It is a form of greenwashing.	Oxo-biodegradable claims are scientifically certified and distinguishable from vague biodegradability claims. It is however greenwashing to describe plastic as “compostable.” This is because EN13432 and ASTM D6400 require the plastic to convert into CO2 gas, not into compost.
21	There is scientific uncertainty regarding its environmental fate.	Nobody knows the ultimate fate of any item. However, oxo-biodegradability requires no special conditions in order to biodegrade. It requires only oxygen and bacteria, which are ubiquitous.
22	There is insufficient evidence to show environmental benefits.	Multiple studies demonstrate a much shorter dwell-time in the environment than conventional plastics, there is no accumulation, and no microplastics or other harmful residues.
23	Testing standards such as ASTM D6954 are not representative of real-world conditions.	ASTM D6954 has been in use for more than 20 years as a testing method for plastics which degrade in the Environment by a Combination of Oxidation and Biodegradation. See the evidence to the UK government of one of its authors. www.biodeg.org/wp-content/uploads/2021/02/Swift-evidence-to-BEIS.pdf He explains that accelerated ageing as a testing technique does not invalidate the results and would not otherwise have been allowed. This is confirmed by Oxomar. Because oxo-biodegradation is a two-stage process (oxidation, then biodegradation) Standards which describe oxidation as “pre-treatment” and do not allow for it, are not appropriate.
24	Environmental conditions are too variable to predict performance reliably.	Variability affects rate rather than whether degradation occurs, and for this reason timescale predictions can only be approximate. They must however always be compared with timescales for conventional plastic in the same place.

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25	Oxo-biodegradable plastic is effectively the same as oxo-degradable plastic.	Nobody puts additives into plastic and markets it as “oxo-degradable.” “Oxo-degradation” is defined by CEN (the European Standards authority) in TR15351 as “degradation identified as resulting from oxidative cleavage of macromolecules.” This describes ordinary plastic, (which does not contain an intentionally-added prodegradant catalyst). It will abiotically degrade by oxidation in the open environment and create microplastics, but does not become biodegradable except over a very long period of time. By contrast, “oxo-biodegradation is defined as “degradation resulting from oxidative and cell-mediated phenomena, either simultaneously or successively”. This means that the plastic (which does contain a prodegradant catalyst) degrades rapidly by oxidation until its molecular weight is low enough to be accessible to bacteria and fungi, who then recycle it back into nature.
26	Why not ban plastic altogether?	Plastic is the best material for protecting food and other goods from contamination and damage, and does not lose its strength when wet. Also oxo-biodegradable plastic has the best LCA for all materials used for packaging. See https://www.biodeg.org/subjects-of-interest/life-cycle-assessments/ and https://www.biodeg.org/subjects-of-interest/paper-bags/
27	Oxo-biodegradable plastics should be banned because the EU has banned “oxo-degradable” plastics.	This legislation applies to “oxo-degradable” plastic which does not biodegrade, but confused wording and guidance has led some people to believe that it also applies to “oxo-biodegradable” which does biodegrade. Further, this legislation was passed without any dossier from the European Chemicals Agency showing any cause for concern about oxo-biodegradable plastic, and never before has an ongoing ECHA investigation been circumvented by legislation. See www.biodeg.org/wp-content/uploads/2026/03/Oxo-biodegradable-Plastic-Compliance-with-SUP-Directive.pdf
28	Litter made from oxo-biodegradable plastic still harms wildlife.	Any plastic, and many other products, has the capacity to harm wildlife. Oxo-biodegradable technology was specifically developed to reduce the length of time for which wildlife are exposed, and it is tested, according to OECD Standards, for non-toxicity to plants, animals, fish, and earthworms.
29	The technology does not address the root cause of plastic pollution.	It is not a substitute for waste management, recycling or litter prevention. It is there to protect the environment if those policies fail. The fact that they are still failing so significantly - even in the developed world - is the reason why there is so much plastic pollution in the open environment and so much public concern about plastic.

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30	There is insufficient evidence from field conditions to support regulatory acceptance.	See 5 above
31	The technology may fail if exposed to atypical conditions (burial, sediment, submerged)	Most of the litter is exposed to air and sunlight on the surface of land or water. It does not need continuous exposure to light as it is not photodegradable plastic. A small proportion will get into the dark immediately or into anaerobic conditions before oxidation has commenced, but performance would then be no better and no worse than conventional plastic. Conventional plastic will persist for long periods and become bio-fouled, but oxo-biodegradable plastic is unlikely to be exposed for long enough for this to have a significant effect.
32	Isn't it better to keep plastic intact, so it can be collected?	Ordinary plastic will fragment quite quickly when exposed to sunlight but it does not biodegrade for very many years. Very little plastic discarded into the open environment is ever collected. Some PET bottles get collected because the material is quite valuable, but oxo-biodegradable technology is not used for PET.
33	It is too expensive	As the oxo-biodegradable masterbatch is added to normal polymer at only 1% the extra cost is minimal, and can even be zero. By contrast the type of plastic marketed as compostable can be 400% more expensive.
34	It will damage the machines	Oxobiodegradable plastic has been in commercial use for more than 20 years with no reports of any damage to machines.
35	It changes the optical and tensile properties	Oxobiodegradable plastic has been in commercial use now for more than 20 years with no reports of any change in optical or tensile properties.
36	It does not meet the EU standards for composting.	Oxobiodegradable plastic is not designed or marketed for composting. It is there as a fail-safe if plastic escapes waste-management and ends up in the open environment as litter.