



In Response to the “SPC Position against Biodegradability Additives for Petroleum Based Plastics”

The Sustainable Packaging Coalition’s position against enhancing the biodegradability of plastics is detrimental to the sustainable management of plastics after use.

Introduction:

The Sustainable Packaging Coalition (SPC) claims to take a material neutral, lifecycle oriented approach to packaging sustainability with a goal of enabling and encouraging a more sustainable economy for all materials. They also claim to have evaluated the use of additives that accelerate the biodegradation of plastics. However, their conclusions and information make it apparent that the only “evaluation” that was conducted was input from organizations that have a competitive interest to these technologies and will directly benefit from the falsities presented. The study was elementary at best and does not include the critical information to accurately evaluate the impact of a material or technology. The position of the SPC lacks credibility, accuracy and directly promotes misinformation to an industry already confused by green-washing and clever marketing.

Sustainability will only be achieved by evaluating the facts, educating the industry and making changes that are effective in real world situations. Unfortunately, many of the “trendy” ideas regarding sustainability are more environmentally damaging than our current methods and materials. This is exacerbated by organizations that promote themselves as sustainability experts and spread misinformation to promote a specific agenda. Often these ideas have a “feel good” aspect, so it is simple to sway opinion. Sustainability however is not achieved by following emotional response or by doing what seems to be right. Sustainability decisions must be based on facts, results and the current infrastructure.

Let’s take a factual look at the opinions presented by the SPC:

1. The truth on Compostability:

The SPC states that compostability of plastics results in the creation of soil enriching bio-material. The truth however is that the compost requirements as they relate to plastics under ASTM D6400 require the plastic to convert through biodegradation more than 90% to carbon dioxide – a greenhouse gas. This means there is nothing remaining in the soil – no nutrients, no carbon, and no dirt. Plastics provide no value to compost. Food and plant waste on the other hand biodegrade in compost leaving a large fraction of the original mass as nutrient rich soil. This is why composting of food and plant waste is very important to sustainability. If food waste were required to pass the same requirements as plastic, there would be no soil remaining and the plant matter would convert into air.

The SPC states that compostability is superior to biodegradability because of the remaining nutrients in the soil. However as shown above, compost regulations, ASTM D6400, for plastic prevent the conversion of plastic into nutrient rich soil. Biodegradability is simply the ability of living organisms to break down materials; it is the critical process in nature to recycle all organic matter into a form useable for supporting life. By natural design, biodegradation takes complex materials and breaks them down to simple forms such as soil, air and water. This process is used to remove toxins from the environment and return them to a beneficial form for nutrient renewal and reuse.

The SPC states that biodegradation must occur in the managed and controlled environment of an industrial compost facility to beneficially complete the natural biological cycle. This position implies that the natural biodegradation that occurs over the entire planet and has continued for millions of years is inadequate and non-beneficial. It lacks the understanding that biodegradation in all environments is a critical part of natural detoxification and the recycling of nutrients. It overlooks the fact that composting is simply biodegradation in a



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specific environment, and that industrial composting is a synthetic environment that would never occur in nature. As such, plastics that are compostable are often not biodegradable in nature.

The SPC purposefully did not disclose the fact that most all compostable plastics are disposed of in a landfill where they often remain for hundreds of years. They did not reveal that most compost facilities do not want compostable plastic in their system and some outright ban it. They did not share that a recent test showed that 5 out of 7 compost facilities cannot properly compost BPI certified compostable plastics because the lab testing does not relate to the real world operation of compost facilities. And, they did not identify the reality that marketing a product as compostable, when it has little if any chance of ever being put into an appropriate compost facility is deliberate greenwashing, as outlined in the FTC guidelines.

The FTC is very specific regarding marketing of both biodegradable and compostable plastics and has recently cited companies using unqualified claims. An unqualified claim of biodegradability or compostability is not allowed. Any claims of this nature should include qualifiers to identify the environment and biodegradation performance of the plastic.

The SPC did correctly identify one aspect regarding biodegradable plastics in their final statement that the marketing of biodegradable plastics may be detrimental to their efforts to advance compostable packaging. However, this brings to question the ultimate goal of the SPC; is it to advance sustainability or to simply increase the use of compostable packaging? If we, as a society, are going to truly make an effort to live on this planet sustainably we will need to approach sustainability differently. We must be open to accept that no single solution will solve all our issues. Sustainability requires the evaluation of the specific application as well as the customary end-of-life environment, and then implementing solutions that have the greatest environmental benefit.

It is irresponsible for companies to claim sustainable directives by supporting an ideology of sustainability that has no current infrastructure or that will not have a significant environmental advantage anytime in the near future.

2. The truth on Recyclability:

The SPC states that petroleum plastics are ideal for energy recovery and recycling and that biodegradability prevents this option. In truth, the most beneficial end-of-life option for plastics depends on the use, form and type of plastic and biodegradability does not prevent recycling.

The facts show that some plastics are ideal for recycling, although they are limited to being recycled 3-4 times before the plastic is so degraded that it is rendered useless. These plastics include PET beverage bottles and rigid HDPE packaging. Most plastic products, such as flexible packaging, stretch wrap, durable goods, small items and multi-layer films are not valuable for recycling. Studies show that these products are not in a form useable by recyclers, they are comprised of different non-compatible plastics, they contain contaminants or they are simply not easily recovered. To attempt recycling these types of items is often more damaging to the environment than landfilling the plastic and manufacturing new materials.

Most all plastics will eventually be disposed of either through incineration or landfilling. Recycling simply is a method to delay the inevitable disposal of plastics. While recycling can be a part of overall sustainability, it is disingenuous to promote that plastics can be indefinitely recycled and overtly disregard this truth. Companies should not be misleading the market and consumers by marketing that a company's packaging is recyclable when the facts prove those products are not being recycled. Additionally, basing sustainability on a hope that sometime in the future an item will be recycled is not a sustainable approach. The FTC Green Guidelines provide instruction on the correct use of marketing claims regarding recyclability.



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The SPC makes a blanket statement that biodegradable additives may negatively impact the recyclability of plastics; in truth some biodegradable additives have been proven to not affect the recyclability of plastics. This general statement shows a lack of understanding regarding the various technologies available for biodegradable additives and lumps the various types of additives together. The science behind these additives show that some technologies such as oxo-degradable additives may be a cause for concern, other additives are completely benign as proven by studies completed at Georgia Tech.

What the SPC deliberately does not admit is the fact that compostable plastics are known to cause severe issues with plastic recycling due to their low melt temperatures and incompatible chemistries. They hide that APR and NAPCOR have made public positions against compostable plastics. And, they do not assist the industry with understanding that both APR and NAPCOR have a fundamental mission to protect and advance the recycling industry. These organizations are not based on advancing sustainability; they exist to protect their specific industry. Any option that provides a beneficial option to recycling specific items will be opposed by these industries because if society realizes that there are other options and that recycling is not the best solution for every item, this will affect the growth of the recycling industry.

3. The truth about Greenhouse Gas Emissions:

The SPC states that compostable plastics are most often bio-based and have a carbon neutral lifecycle. This statement is false on several levels; many compostable plastics are derived from fossil fuels and have the same carbon emission as traditional plastics upon biodegradation; and bio-based plastics use a large amount of fossil resources in the production of the plastic – sometimes even more than traditional plastics. This position taken by the SPC overlooks years of research and also lifecycle analysis reports of bioplastic manufacturers. There is not a single commercial plastic that uses no fossil resources in its lifecycle.

The SPC states that biodegradable additives are used to biodegrade fossil based plastics resulting in the release of fossil carbon in the atmosphere. In reality, biodegradable additives are used to enhance the biodegradation of biobased plastics as well. They incorrectly link the source of the material with the end-of-life, when the truth is that the largest growth in the bio-plastics sector is the production of traditional plastics from bio-based sources. This is seen with the bio-based polyethylene (which is the same as traditional polyethylene just made from sugar cane instead of fossil fuels). This growth is not to create compostable plastics but to continue the use of traditional plastics, but manufactured from biobased sources. This negates the argument that the carbon released would be fossil based. Ultimately, all plastics will be biobased, but this does not mean they will be compostable or biodegradable. The source of the plastic is unrelated to the best end-of-life option.

The SPC also states that landfills operate with limited gas capture efficiency, when the EPA itself has estimated that landfill gas capture systems are up to 90% efficient. The EPA requires landfills to manage their methane to prevent escape to the atmosphere. Today nearly 80% of municipal waste is disposed of in landfills that prevent the escape of methane to the atmosphere. Over half of these landfills actively use the methane for energy production and fuel. Landfill energy is classified as a renewable energy source and included in regulatory directives as part of a sustainable energy system.

The SPC also states that traditional plastics will remain forever in a landfill and sequester the carbon. It is proven that all plastics will eventually biodegrade, including those placed within a landfill. This means that traditional plastics will slowly release methane long after the landfill has stopped collecting and controlling the gases. This means that the methane will be released directly to the atmosphere with no possibility of capture or conversion to energy.



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While the SPC opinion is that landfills are the least desirable end-of-life option, they fail to acknowledge that the vast majority of all our waste is currently disposed of in landfills. Current options for landfill diversion are not proving effective and we will continue to landfill materials for decades to come. After nearly 40 years of recycling initiatives, less than 10% of plastics are recycled, and the amount of plastics composted is so small it isn't even reported. This is a clear indication that these alternatives are not working. It is completely ineffective and unsustainable to bury our heads in the sand and ignore the primary disposal method. A sustainable approach must include methods to create benefit with materials disposed of in a landfill.

4. The truth about Fragmented “MicroLitter” and Contribution to Pollution:

The SPC states that most additives are designed to fragment petroleum based plastics into small pieces. This is only true for oxo-degradable type additives and not biodegradable additives. Biodegradable additives do not cause an initial fragmentation and instead allow for the natural process of biodegradation. This does not leave micro-fragments in the environment. To state that biodegradable additives leave micro-fragments illustrates the uneducated opinion of SPC and is a scare tactic used by organizations that compete with these technologies.

The SPC argues that biodegradable additives are marketed as a solution for littering; again the SPC is referring to oxo-degradable additives and not biodegradable additives. Biodegradable additives are primarily developed to accelerate the biodegradation of plastics in the landfill. These additives are appropriately marketed as “Landfill Biodegradable”. The only sustainable solution for littered plastic is the prevention of littering. Plastics should not be littered, thrown in waterways or in any other way left in the open environment regardless of their ability to biodegrade. There is no such thing as a litter friendly plastic!

The SPC states that consumers are more likely to litter products labeled as biodegradable. The facts show that consumers do not understand the difference between the terms compostable and biodegradable. This means that if consumers are more likely to litter biodegradable products, the same is true of compostable products. The practice of labeling products as “landfill biodegradable” instills the responsible disposal of plastics by presenting a clear and concise message for the consumer. Compostable plastics should be labeled in the same manner to educate consumers that these plastics will only biodegrade effectively if disposed of in one of the few industrial compost facilities that operate in a way that can assure the breakdown of those plastics, and that there are no industrial compost facilities within the United States that readily accept compostable plastics unless in small amounts comingled with food or yard waste.

Conclusion

The SPC position is simply an opinion paper based on limited information provided to uneducated individuals; it lacks scientific and factual data to support the deceptive and misleading points. However, opinions and industry positions do not alter the facts. The facts are simple:

1. Over 90% of our plastics are disposed of in landfills and many companies product packaging is closer to 100% disposed of in a landfill.
2. Landfills are an important source of renewable energy.
3. Controlled biodegradation of plastics in landfills increases the energy production of the landfill.
4. Certain biodegradable plastics are recyclable and do not affect the recycle stream.
5. Composting of plastics to ASTM D6400 requires the conversion of plastic to carbon dioxide.
6. Composting of industrial compostable plastics does not create nutrient rich soil.
7. Many plastics cannot be recycled effectively or efficiently.
8. Plastics are useless after 3-4 times of recycling.
9. Littering should not occur on land, waterways or oceans regardless of the biodegradability.



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10. Sustainability must address our current common disposal of plastics rather than options that rely on infrastructures and processes that do not exist.

There are more sustainable options for plastics that involve biodegradation, energy and landfills. This option takes into consideration the recent United Nations Conference on Climate Change’s focus on renewable energy and addresses the issue of Extended Producer Responsibility. The facts show that a vast majority of our plastic waste is currently being disposed of in landfills. When materials biodegrade in a landfill, methane is produced. Currently a majority of the landfills in the US are capturing this methane, and over half are converting it directly to fuel and energy. These facilities are not the old landfills of the past but are modern landfills that are Landfill Gas to Energy sites. There are nearly 1000 of these sites in the US and in the 50 states.

This valuable resource, Landfill Gas-to-Energy, is considered the most economical form of green energy available today, even when considering the costs of hydro, solar and wind. Once converted, landfill gas is utilized in many ways: to generate electricity, heat, or steam; as an alternative vehicle fuel; or sold on the energy market as a renewable “green” power or gas. All States in the U.S. (including California) utilize gas to energy as part of their green initiatives and companies like Mars, Dart, Toyota, Frito Lay, SC Johnson, Tyson Foods, Kimberly-Clark, Coca-Cola, Anheuser Busch, and Waste Management just to name a few, are already harnessing this energy resource.

Designing plastic products and packaging so they create a value in their customary disposal must be a priority. Today, we have the ability to make plastic waste naturally biodegrade in landfills and to recover the energy value through natural processes. The recycling industry and the compostable plastics industry will continue to rail against this, but it’s time to rely on facts and scientific data instead of environmental folklore, myths and emotions that simply coddle inaccurate perceptions. Today, and in the foreseeable future, the majority of our plastic waste will continue to go into landfills and the biodegradation of this waste is a critical factor in our society’s renewable energy portfolio. The demonization of landfills, biodegradable materials and technologies that address these issues is counterproductive.

The SPC as an organization could be a catalyst for true change and steer society towards sustainability by simply utilizing factual data and educating the industry. It is unfortunate that an organization such as the Sustainable Packaging Coalition does not look to advance sustainability based on results and facts, but rather pushes “trendy” positions that reflect the interests of specific commercial industries. As a supplier of both compostable plastics and biodegradable additives and an environmentally based company, ENSO Plastics has the unique position of supporting sustainability rather than specific technologies. ENSO Plastics has reached out to the SPC to share the extensive research and expertise in the area of waste management and biodegradable plastics and we are hopeful to work with them on this important topic.

The actual data and facts regarding recycling, composting, landfilling, biodegradability and the sustainable management of plastic waste has been compiled in a recent paper “Plastics: Establishing the path to zero waste”. A free copy of this publication can be downloaded at:

http://www.ensoplastics.com/download/Plastics_EstablishingthePathtoZeroWaste.pdf

Or the official publication can be purchased at:

Printed book: <http://www.amazon.com/Plastics-Establishing-pragmatic-sustainable-management/dp/1518754325>

Kindle: <http://www.amazon.com/dp/B0175AQ24K>