



Beyond the Buzzwords: Understanding Bio-Based, Biodegradable & Compostable Materials

Attendee Q&A

Questions Related to Biodegradability

1. **Q:** I hope there will be a definition of "biodegradable". most importantly, what does it degrade into? plant-accessible nutrients? or microplastics?

A: *Live Answered*

2. **Q:** Markus, Can you please give examples of the various types of plastics.

A: PCL and PBAT are biodegradable plastics made from fossil fuels; PLA, PBS, PHA are biodegradable plastics made from biological sources.

3. **Q:** Has nano plastic been in our ground water system? How is PFAS different from nano plastic?

A: No, nanoplastics have not been identified in groundwater. But that is likely not because they are not there, but because it is difficult to measure them. It is likely that some nanoplastics are present in groundwater, but I don't know of a study that has confirmed that yet.

PFAS is a chemical, not a particle, and PFAS is a toxic, whereas plastics by themselves are usually not toxic.

4. **Q:** Does salt water preserve better than fresh water?

A: *Live Answered*

5. **Q:** Why are aquatic environments not ideal for biodegradation?

A: *Live Answered*

Questions Related to Bio-based Plastics

6. **Q:** Does Braskem also utilize recycled plastics in production?

A: Yes, we have a number of increasingly sustainable plastics solutions including products with recycled content.

7. **Q:** How is bio-based PE labeled on packaging? Is it a #2/4 or is it a #7 "other"?

A: HDPE would be #2, LDPE is #4.

8. **Q:** What was the ASTM number used again?

A: ASTM6866

9. **Q:** When you say cradle to gate, are you including end-of-life management of the material?

A: Cradle to gate means to point of manufacture, so no.

10. **Q:** There is more to the LCA equation than carbon; i.e., water and land use, fertilizer and nitrogen and phosphorus run off and eutrophication.

A: That is correct. We evaluate our product in 17 impact categories.

11. **Q:** Are Bio-based plastics EPR friendly? Will the fees owed to states for bio-based items be less than traditional plastics?

A: There are several states that have included renewable content and/or lifecycle impacts within their eco-modulation fee structure as an incentive. It will be up to the PRO to develop the fee schedule and develop the incentives for these materials.

12. **Q:** When buying a product, how do we know that it is made of biobased plastic?

A: Sometimes the manufacturer includes claims on the packaging to let you know it is biobased plastic. Otherwise, it may be hard to distinguish

13. **Q:** Can you talk to specifics about recycling these bio-based plastics? Obviously, something made with sugar cane cannot be then turned into something that truly needs petroleum-based products.

A: Biobased polyethylene can be recycled just as fossil-based polyethylene can. Multiple recycling technologies including mechanical recycling can be used to recycle biobased polyethylene.

14. **Q:** Why not use agricultural "waste" as feedstock for bioplastics?

A: Braskem does use bio-circular feedstocks within its portfolio of solutions. Examples of bio-circular feedstocks include used cooking oil and technical corn oil. Sugarcane ethanol, which is used to produce Braskem's bio-based polyethylene, is a mature manufacturing process in Brazil and highly efficient and optimized. Sugarcane is harvested and crushed and then the juice is fermented into ethanol. The leftover bagasse is burned in high-efficiency boilers that produce steam. That steam is used to power the mill and the excess is returned back to Brazil's electrical grid.

15. **Q:** Please address the concerns that bioplastics such as PHA have been found to cause gut irritation. Also, don't bioplastics still contain additives such as bisphenols, phthalates, colorants, flame retardants, etc. that make them unsafe to add to soil? Another concern about bio-based plastics: don't they divert agricultural resources away from food production?

A: *I don't believe we have any medical experts on this panel.*

Braskem's regulatory statements are declared and publicly available but may vary depending on the grade. It is in whole no different than traditional PE when looking at it from a regulatory/compliance standpoint.

16. **Q:** The efficiency of creating plastic from sugarcane was interesting. My question refers to the 1ha to 77 tons of sugar cane slide... Over what time period is 77 tons of sugar cane harvested on that one hectare?

A: The first sugarcane crop can take 12-18 months from planting to harvest ready. After that it is about one year for the next several years

17. **Q:** If material is proven to breakdown and fully compost under BPI, will BPI certify products like Braskem's BioPP or BIOPE?

A: A lot of biobased plastics are not biodegradable or compostable. For example, Braskem's product is recyclable but not compostable or biodegradable. Its properties work like traditional fossil fuel plastic, it is just created from biological sources instead.

If a material meets the requirements for BPI certification, the item can be certified. BPI is focused on the end of life of a material, not its source material, although the vast majority of certified items are biobased.

18. **Q:** Is it fair to say that bio-based plastics are beneficial from the feedstock perspective but not really from the recycling perspective? The recyclers I have talked to do not want biodegradable plastics as they have additives that make reselling the feedstock more difficult.

A: Biobased, recyclable plastics such as the biobased polyethylene that Braskem offers can be recycled. Biodegradable plastics should not go into the "blue bin" to be mechanically recycled at a MRF as it contaminates the plastics stream.

Questions Related to Compostability & BPI Certification

19. **Q:** I've noticed that some products say 'compostable in commercial facilities only'. Why is that? What is different between a commercial compost facility and my backyard compost pile?

A: *Live Answered*

20. **Q:** Please clarify the parameters that define "industrial compost". Most certifications that claim to be degradable in industrial compost facilities assume/require excessively long retention times that are not actually available in most industrial compost facilities.

A: *Live Answered*

21. **Q:** Is there a temporal attribute to your definition of "Compostable?"

A: Yes, compostability is defined by an environment and a timeframe. For commercial compostability, that is 180 days and for home compostability, it's 350 days.

22. **Q:** Is there a compostable saran wrap that we commonly use in kitchen?

A: Yes, you can find BPI certified cling films in our online catalog:
<https://products.bpiworld.org/?type=product&keyword=cling%20wrap>

23. **Q:** Please comment on the actual amount of PFAS that is allowed in BPI-certified non-PFAS materials? I have read it is 70 ppb, which is 3-4x the amount of PFAS allowed in biosolids. [Also, I have not found anything in BPI that addresses PFAS-coated cardboard that allows high-concentration contact of food with the PFAS coating, even though the overall concentration of PFAS in the packaging is very low.]

A: BPI certification does not allow PFAS in certified products. Both the BPI Commercial and Home Certification Schemes state that organic fluorinated chemicals, such as per- and polyfluorinated substances (PFAS), cannot be present in formulations for BPI-Certified items. BPI's rules for fluorinated chemicals require:

1. Safety data sheets for all ingredients showing that the product formula does not contain fluorinated chemicals.
2. Test results from a BPI-Approved lab showing a maximum of 100ppm total organic fluorine as a screening test for the presence of PFAS.
3. A statement of no intentionally added fluorinated chemicals, signed by the manufacturer.

24. **Q:** How long has the PFAS ban been in place for BPI certification?

A: BPI's ban on PFAS was announced at the end of 2017 and the ban on intentionally-added PFAS in certified items took effect on December 31, 2019.

25. **Q:** Where in the manufacturing process is the verification conducted? How does the applicant demonstrate meeting the criteria?

A: *Live Answered*

26. **Q:** BPI: is it accurate that "home compostable" can require much longer retention than "industrial compostable"?

A: *Live Answered*

27. **Q:** I suspect consumers are still confused by the term "commercially compostable," when their locality collects organic waste at the curb, but does not employ an industrial composter or anaerobic digester.

A: *Live Answered*

28. **Q:** I've been seeing a lot of brown paper bags with the BPI logo lately... the criteria that says "must not be a better fit for recycling" caught my eye. These bags that I've seen also seem like they would be a fit for home composting but the BPI cert says its for commercial facilities. What's the story there?

A: Compostability is a good fit for wet or food-soiled paper, such as paper bags the paper bags that you mention, that could be recycled if clean and dry. The certified bags you've seen have only been tested and certified for commercial compostability, hence their being labeled that way.

29. **Q:** Does BPI address microplastics?

A: *Live Answered*

30. **Q:** BPI - what kind of costs does an industry pay for certification

A: Information about BPI certification is available on our website:
<https://bpiworld.org/certification>.

31. **Q:** What about compostable items certified outside of USA - such as TUV Austria; are these comparable - and/or listed also on your site? How to know if these are comparable?

A: Eco-Products lists certifications by product in our catalog. These include BPI and CMA and TUV, (also recognized in the US). These agencies certify based on adherence to applicable standards and additional criteria such as Eligibility, Fluorinated Compounds and Labeling Requirements.

32. **Q:** Is BPI aware of any national efforts to standardize labeling/regulation across the US?

A: The PACK Act (Packaging and Claims Knowledge Act) is a proposed federal bill that establishes uniform national standards for "recyclable," "compostable," and "reusable" claims on consumer packaging. It requires these claims to be backed by accredited third-party certification and preempts varying state regulations.

33. **Q:** Thank you, so is BPI is open to any initial resin as long as it can show full mineralization?

A: If a resin meets the requirements for BPI certification, one of which is biodegradation (mineralization), the item can be certified.

34. **Q:** Where can BPI compostable products be collected and disposed? Is it just for certain businesses/commercial, or can Residential/individuals participate. It is really confusing as a consumer.

A: BPI certifies for both commercial compostability and commercial & home compostability. The type of certification is indicated by the Certification Mark and labeling on the product. Commercially certified products can be collected and processed through commercial composting systems, while commercial & home compostable products can be both composted at home and collected and processed through commercial composting systems.

35. **Q:** Have you seen an impact on request for certifications due to EPR?

A: *Live Answered*

36. **Q:** For Sysco, is it only the food container products that your are teaching what is compostable or are they also composting, If they are composting, is it only the container or also food and is that the food they will distribute?

A: The food scraps are always the most important resource we attempt to divert from landfill and deliver to compost facilities. We capture the food scraps and the certified compostable packaging. Sysco is also works to donate uneaten food and packaged food that is not consumed can be recovered as well.

37. **Q:** Can consumers drop off commercially compostable products? If so where could that be?

A: Certainly, it would depend on what is available in your area. In the event there are no current options please reach out, and we can work on getting one set up!

General Questions

38. **Q:** Many of the efforts appear to be focused on the consumer and reducing green-washing. Do ECO or Braskem have thoughts on how to reduce contamination from traditional plastics, which are visually identical to certified-labelled products, once all those products arrive at the composter and are coated in organics?

A: Procurement and distribution are two of the most important steps in our process. If the generator can control purchases - only certified compostable food service wares - it greatly reduces the possibility of contamination reaching the compost facility. Staff training, bin monitoring, clear signage and several other controls are also effective additions. At Eco-Products we have a team of 5 Product and Zero Waste Specialists developed as a resource for our customers helping to develop effective diversion systems.

39. **Q:** Regarding incorporation of recycled content, how can reused material that is usually a mix of many sources be guaranteed to be free of toxic chemicals that are not safe for health/food uses?

A: Companies who wish to get a Letter of No Objection (LNO) from the FDA for their recycled content can do so. It is a regulatory mechanism that gives brand owners confidence that the recycled plastic content they want to use in their packaging is deemed safe. An LNO is not an approval or certification. Rather, it is FD's written opinion that it has no objection to a specific recycling process producing recycled plastic suitable for a specified food-contact use.