

**National Organic Standards Board
Crops Subcommittee
Petitioned Material Proposal
Synthetic Compostable Polymers
Fall 2025**

Summary of Petition:

On August 30, 2023, the Biodegradable Products Institute (BPI) petitioned USDA to amend the definition section of the organic regulations to allow for the inclusion of synthetic compost feedstocks in compost used on organic farms that meet the requirements of three ASTM standards: ASTM D6400-21, D6868-21, or D8410-21. The petition does not differentiate between the specific synthetic substances used to manufacture the various types of compostable products but rather seeks to gain broad allowance for all compostable synthetic substances, provided they meet the ASTM standard requirements.

BPI's position, as outlined in their petition and supplemental memorandum, emphasizes:

- **Circular economy goals:** Diverting certified compostables from landfills into compost streams to reduce waste and recover resources.
- **ASTM certification as a safeguard:** Presenting ASTM standards as the recognized benchmark for compostability, already used by industry and municipalities.
- **Urgency:** Aligning USDA organic regulations with California's compostable labeling law before those provisions take effect on January 1, 2026, so as to avoid market disruption. *Note: This deadline was recently extended to June 30, 2027.*
- **Opposition to National List review:** Arguing that the Organic Foods Production Act of 1990 (OFPA) classifies compost as non-synthetic and that listing feedstocks is inconsistent with congressional intent.

Subcommittee Review:

In October 2023, the National Organic Program (NOP) [requested via memo](#) for the NOSB to evaluate the BPI petition for rulemaking, as well as other compost-related issues that the Board requested to work on. Since that time, the NOSB has conducted a thorough review of the existing regulations surrounding compost feedstocks and provided NOP with recommendations pertaining to definitions and practice standards. The Board also voted unanimously to clarify that synthetic compost feedstocks should be evaluated against National List criteria and must be added to the National List, through notice and comment rulemaking, before being allowed to be used as feedstocks in organic compost.

The NOSB also ordered and received a limited scope [Technical Report \(TR\)](#) in 2025 to support the review of synthetic compost feedstocks that meet three ASTM standards to assist in the evaluation of these substances against the National List criteria. While BPI has not petitioned the NOSB to evaluate compostable materials for inclusion on the National List, the NOSB's position (described above) is that any synthetic compost feedstocks be added to the National List through a 2/3 vote by the NOSB, followed by notice and comment rulemaking by USDA prior to being included in compost used on organic farms. The following review of synthetic compostable materials aims to provide clarity around whether or not these synthetic substances meet National List criteria (7 U.S.C. §6517(c)(1) and §6518(m)) and will support NOP as it evaluates BPI's petition for rulemaking. In this document, the Subcommittee uses the term "compostable materials" or "compostables" to refer to the wide variety of

materials described in the BPI petition and the 2025 TR that meet ASTM compostability specifications and are marketed and sold with the intent to be composted (e.g., bioplastic packaging materials).

Note: Given the breadth of the petition and the NOP memorandum to the NOSB, an appendix is provided at the end of this proposal summarizing the NOSB's work completed on this topic. Through the previous board recommendations and with this current proposal, there is a total of 3 complete proposals from the NOSB to the NOP in response to the NOP memo to the board.

Key findings from the 2025 TR:

- **Human health:** Undisclosed additives, including plasticizers and PFAS, are common in compostables and may persist through composting (2025 TR, lines 214-225, 259-267, 459, 555-556).
- **Environmental uncertainty:** Proprietary formulations, evolving materials, and variable field performance make comprehensive assessment extremely challenging [2025 TR, lines 1085-1087, 1230-1237]. Some products disintegrate but do not fully biodegrade or mineralize, creating microplastics [2025 TR, lines 1069-1080].
- **ASTM limitations:** Standards are voluntary, updated independently of regulations [lines 821-826, 837, 1920-1921], and focus on labeling and lab-simulated composting—not contaminant control or field performance [lines 845-847, 1003-1004].

Public Comment Themes

Majority position:

- Opposition to broad synthetic feedstock allowances; preference for case-by-case review.
- Concern over contamination with PFAS, microplastics, and other residues.

Minority position:

- View compostables as tools for waste diversion and as goal for circular economy.
- Advocate ASTM certification as adequate protection.
- Stress urgency due to emerging dynamics in multiple states.

Operational reality:

- Compostable synthetics are difficult to distinguish from non-compostables, making them impossible to separate as contamination or allowed synthetics.
- Composters are currently screening all plastics, whether made of compostable or traditional polyethylene polymers, out entirely to avoid contamination which demonstrates a lack of necessity as compost feedstocks.

The Subcommittee is not recommending the inclusion of synthetic compostable materials because they fail National List criteria. Specifically, as indicated in the TR and public comments, there appears to be higher levels of contamination in compost when compostable materials are included as feedstocks. There are numerous chemical compounds used to create compostable materials, and evaluating the entire spectrum of compostable materials against National List criteria and based on adherence to ASTM standards leaves too large a gap in scientific data to determine whether or not these synthetic substances meet National List criteria. CS would be open to evaluating each particular synthetic substance on a case-by-case basis through the petition process.

Compostable materials are largely removed from the waste stream prior to the composting process because they cannot be differentiated from other non-compostable plastic materials. Composters are largely removing these synthetic substances indicates that they are not necessary for the composting process, and it is unclear whether or not accepting compostable materials increases the rate at which consumers participate in compost collection programs.

This topic elevated the issues related to plastic contamination in compost. One of the contributors to this contamination is fruit stickers. Fruit stickers are ubiquitously used on fresh fruits and vegetables, and, as a result, are often present in food waste. Compost facilities take measures to remove plastic from incoming compost feedstocks and screen finished compost to remove large particles. However, fruit stickers are difficult to completely remove from incoming waste streams and cannot always be screened out of finished compost. As a result, compost produced from food waste often contains contamination from fruit stickers, despite the reasonable and required precautions of composters to remove contamination from their compost. The NOSB is not recommending a formal position on fruit stickers at this time. The NOSB heard a report on the possibility of compostable fruit stickers and sees this as a horizon issue for the organic community to consider through the NOSB work agenda request process or petition process.

Lastly, the broad categorical allowances for compostable materials proposed in the BPI petition included standards that relate solely to materials made up of “fiber.” Many of these substances are already allowed in organic compost through the allowance of paper without glossy paper or colored inks as a compost feedstock listed at 7 CFR 205.601(c). The technical report and public comments indicated that the current annotation for paper does not adequately address modern paper manufacturing concerns, but that paper remains a necessary compost feedstock in organic composting operations, particularly as yard waste collection bags. The Subcommittee welcomes input on developing a new work agenda request related to updating the annotation for paper, so it can align with other allowances for paper on the National List and addresses potential contamination concerns from paper when used as a feedstock in organic compost.

Category 1: Classification

1. For CROP use: Is the substance ____ **Non-synthetic** or ____x____ **Synthetic**?

Is the substance formulated or manufactured by a process that chemically changes a substance extracted from naturally occurring plant, animal, or mineral sources? [OFPA § 6502(21)] If so, describe, using [NOP 5033-1](#) as a guide.

Despite the fact that compostable materials encompass a vast universe of specific substances, some of which are derived from natural materials, they all undergo a process that chemically changes the substances. Therefore, they are classified as synthetic.

2. Reference to appropriate [OFPA](#) category:

Is the substance used in production, and does it contain an active synthetic ingredient in the following categories: [§ 6517(c)(1)(B)(i)]; copper and sulfur compounds; toxins derived from bacteria; pheromones, soaps, horticultural oils, fish emulsions, treated seed, vitamins and minerals; livestock parasiticides and medicines and production aids including netting, tree wraps and seals, insect traps, sticky barriers, row covers, and equipment cleansers; or (ii) is used in production and contains synthetic inert ingredients that are not classified by the Administrator of the Environmental Protection Agency as inerts of toxicological concern?

No.

Category 2: Adverse Impacts

1. What is the potential for the substance to have detrimental chemical interactions with other materials used in organic farming systems? [§ 6518(m)(1)]

Compostable materials tend to have an indirect interaction with other materials used in organic farming. Since these synthetic substances undergo the transformative process of composting and they are designed to be mostly or entirely consumed by the microorganisms present in compost piles, they do not interact directly with other materials used in organic farming systems. However, the technical report (TR) indicates that many bioplastics contain undisclosed synthetic additives such as polymers, fillers, and plasticizers [2025 TR, lines 213–216], including glycerol, sorbitol, polyethylene glycol (PEG), acetyltributylcitrate (ATBC), and tributyl citrate (TBC). Residual PFAS [2025 TR, lines 260–267, 459, 465–475, 555–556] and microplastic particles could persist in compost, altering soil chemistry or interacting with nutrients and other inputs. Several public comments raised concerns about synthetic residues altering soil nutrient dynamics and interacting with other allowed inputs. Without full additive disclosure and toxicity data, compatibility with organic production systems cannot be confirmed.

2. What is the toxicity and mode of action of the substance and of its breakdown products or any contaminants, and their persistence and areas of concentration in the environment? [§ 6518(m)(2)]

Compostable materials are, by definition, meant to be consumed by the organisms that drive the composting process. The ASTM standards that govern labeling of materials as “compostable” evaluate whether these synthetic substances contribute to the composting process, biodegrade during the composting process, and does not contaminate soil, air, or water [2025 TR, lines 105-107]. One particular group of contaminants, per- and polyfluoroalkyl substances (PFAS), are of grave concern to organic stakeholders, and NOSB requested information specific to the potential for compostable feedstocks to introduce or increase the presence of PFAS in finished compost. BPI maintains its own certification program that builds upon the requirements set forth in the ASTM standards D6400, D6868 and D8410. BPI requires that all compostable materials bearing their logo not include any PFAS in the manufacturing process and test below 100 ppm total organic fluorine. However, since organic farmers do not apply compostable substances directly to their soil, but rather apply the compost that may include compostable substances as feedstocks, NOSB requested information related to the potential for PFAS to be present in composts stemming from various waste streams. The TR indicates that composts made with compostable materials have higher levels of PFAS than composts made without compostable materials [2025 TR, lines 555-556, 565]. The TR also indicated, however, that PFAS is present in all composts. NOSB should consider additional work on reducing the contamination of organic approved composts with PFAS.

Ideally compostable materials break down into carbon dioxide, mineral salts, water, and biomass [2025 TR, lines 1228-1230]. ASTM standards aim to provide guidelines to ensure each particular substance used as a compostable material achieves or comes close to achieving the ideal breakdown of the substance [2025 TR, line 726]. However, there appears to be a tremendous diversity of individual synthetic substances within this broad category, many of which also include additives, and conclusive research into the behavior of these substances in the field is lacking [2025 TR, lines 1230-1231].

Public comments overwhelmingly opposed introducing materials with such persistent contaminants into organic compost streams, citing OFPA's prohibition against contaminating soil, crops, or water with residues of prohibited synthetic substances (7 U.S.C. 6511). Inconsistent degradation in real-world composting can also leave behind microplastics, increasing long-term environmental loading [2025 TR, lines 986–1080]. Additionally, public commenters also expressed skepticism towards NOSB and USDA relying on a standard created by industry, trade groups or non-profit organizations, despite the fact that ASTM standards are already referenced in the USDA organic regulations.

3. Describe the probability of environmental contamination during manufacture, use, misuse or disposal of such substance? [§ 6518(m)(3)]

The TR describes the impact on the environment from five of the most predominant synthetic substances used in compostable materials: polylactic acid (PLA), polyhydroxyalkanoates (PHA), polybutylene succinate (PBS), polybutylene adipate terephthalate (PBAT), and starch blends [2025 TR, lines 1273-1846]. The research suggests that some of these substances have fairly benign effects on the environment during their breakdown, while others are more toxic. Due to the wide variety of substances, mixtures, and formulations used in the manufacture of compostable materials, it is impossible to conclusively determine that any substances meeting ASTM standards D6400, D6868 and D8410 have no or low probability of causing environmental harm. It would be the preference of the Subcommittee to evaluate specific compostable materials on a case-by-case basis through the typical petition process.

Public commenters cited proprietary formulas and lack of transparency as significant obstacles to assessing contamination risk. OFPA (§ 6518) requires the Board to consider the cumulative effects of substances on the environment; given proprietary variability, risk cannot be ruled out.

4. Discuss the effect of the substance on human health. [§ 6517(c)(1)(A)(i); § 6517(c)(2)(A)(i); § 6518(m)(4)].

As discussed above, compost containing compostable materials have higher levels of PFAS despite the limits set by BPI on products registered under their program. Higher levels of PFAS in air, soil, and water can lead to human health concerns, and certain plasticizers which may be included in compostable material formulations are known to have human health concerns [2025 TR, lines 1829-1830]. PFAS contamination from compostables [2025 TR, lines 260–267, 555–556] poses human health risks through crop uptake and water contamination. Documented impacts include cancers, thyroid disease, and immune suppression [2025 TR, lines 277–280]. Additives such as ATBC and TBC also present potential toxicological concerns [2025 TR, lines 213–224]. Multiple public comments emphasized that even low-level contamination conflicts with OFPA's mandate to protect human health in organic production. Given PFAS's persistence and bioaccumulative nature, allowing such materials in feedstocks is inconsistent with § 6517(c) requirements. Specific data connecting compostable materials with PFAS or plasticizer-related human health concerns was outside the focus questions answered in the TR.

5. Discuss any effects the substance may have on biological and chemical interactions in the agroecosystem, including the physiological effects of the substance on soil organisms (including the salt index and solubility of the soil), crops and livestock. [§ 6518(m)(5)]

The TR cites a study that evaluated compost quality differences between composts containing bioplastics and composts not containing any bioplastics. It noted that the concentration of bioplastics in

the compost was low (1%), likely due to the fact that most compostable plastics are removed before composting. The TR cites a second study looking at impacts of PLA on earthworms, and did not find any adverse effects from PLA on earthworm activity. The TR also cites a third study evaluating composts made with compostable bags and did not see any impact on mustard seed germination [2025 TR, lines 2161-2206]. The TR cites a fourth study that found reduced microbial biodiversity in compost during the thermophilic stage with PLA present [2025 TR, line 1387]. Persistent microplastics and additive residues may alter microbial community structure, enzyme activity, or nutrient cycling over time. Based on this limited amount of research, there does not appear to be clear adverse environmental impacts from compost containing these types of synthetic substances. However, it is difficult to conclude that all compost containing any of the compostable synthetic substances allowed under ASTM standards D6400, D6868 and D8410 would also not have deleterious effects on soil organisms and crops.

Public comments noted that the diversity of compostable materials allowed under ASTM standards makes broad assurances of ecological safety impossible. OFPA requires substances to be compatible with organic systems and not disrupt soil biology (§ 6518(m)(5)).

6. Are there any adverse impacts on biodiversity? (§ 205.200)

As mentioned above, due to the vast universe of synthetic substances included in compostable materials which meet ASTM standards D6400, D6868 and D8410, it is difficult to conclude whether these synthetic substances used as compost feedstocks do or do not have adverse impacts on biodiversity. One study indicated that PLA had a negative impact on microorganism biodiversity in the thermophilic stage of composting [2025 TR, line 1387]. Public comments stressed that synthetic compostable feedstocks could undermine biodiversity goals and conflict with OFPA's requirement that organic production maintain or enhance biodiversity (§ 205.200).

The lack of conclusive evidence related to impacts on biodiversity further underscores the need to evaluate each compostable synthetic substance individually to National List criteria rather than within a large class of synthetic substances meeting the ASTM performance standards.

Category 3: Alternatives/Compatibility

1. Are there alternatives to using the substance? Evaluate alternative practices as well as non-synthetic and synthetic available materials. [§ 6518(m)(6)]

Many commercial composts are available to organic producers. These composts do not include compostable materials as feedstocks. Some composting operations do accept compostable materials, but they are largely removed prior to the composting process, as there is often non-compostable plastic contamination as well, and it is impossible to quickly differentiate between the two types of synthetic substances.

Commenters originating from compost makers have not expressed the need to source additional feedstock; they are more expressing the need for uncontaminated feedstocks.

It does not appear that compostable materials are necessary for the continued availability of organic compliant compost.

2. In balancing the responses to the criteria above, is the substance compatible with a system of sustainable agriculture? [§ 6518(m)(7)]

The TR identifies significant risks associated with these materials, including PFAS contamination [2025 TR, lines 260–267, 459, 555–556], proprietary additive formulations that are rarely disclosed [2025 TR, lines 213–216], and inconsistent degradation under real-world composting conditions [2025 TR, lines 987–1080]. Public comments overwhelmingly opposed introducing synthetic compostable polymers into organic compost feedstocks due to contamination risks, loss of farmer and consumer trust, and challenges in distinguishing compostable from conventional plastics at facilities. While landfill diversion is an important environmental goal, it must be balanced against OFPA’s prohibition on contamination (7 U.S.C. 6511) and requirement that inputs maintain or enhance soil, crop, and environmental health (7 U.S.C. 6518(m)(4)–(7)). It does not appear that all compostable materials which meet ASTM standards D6400, D6868 and D8410 are compatible with a system of sustainable agriculture.

The Crops Subcommittee, through the TR and public comments, conclude that the class of materials referred to is too vast (from a chemical composition standpoint), lacks regulatory coherence for functional references, and contains the potential for human and environmental impacts. These synthetic substances should be evaluated on a case-by-case basis through the petition process for allowance on the National List. A broad allowance for compostable materials as compost feedstocks is not compatible with a system of sustainable organic agriculture.

Conclusion

After evaluating the petition against the statutory criteria in the Organic Foods Production Act (7 U.S.C. 6517(c)(1) and 6518(m)), reviewing the April 2025 technical report, and considering extensive stakeholder input from 2023–2025, the Crops Subcommittee finds that granting a broad allowance for ASTM-certified compostable synthetics as compost feedstocks is inconsistent with the requirements and intent of the organic standards.

The weight of evidence shows incompatibility with:

- **Human health risks** from persistent contaminants such as PFAS, undisclosed synthetic additives, and microplastics, which may accumulate in soils and enter the food chain.
- **Environmental uncertainty** due to the sheer diversity of materials, proprietary formulations, and inconsistent degradation in real-world composting conditions.
- **Regulatory limitations** of ASTM standards, which are voluntary, periodically revised without regulatory synchronization, and lack contaminant control measures.
- **Lack of essentiality**, as existing plant/animal-based feedstocks and currently listed synthetics can meet composting needs without introducing additional risks.
- **Operational challenges**, with composters reporting difficulty in distinguishing compostable synthetics from prohibited plastics, leading to frequent removal from feedstock streams.

While the Subcommittee recognizes the potential benefits of compostable materials in broader waste diversion and circular economy initiatives, these considerations cannot override OFPA’s mandate to protect the integrity of organic soil as per the regulatory mandate of § 205.203 through rigorous review of synthetic substances. The Subcommittee recommends **denial of the petition in its current form** and reiterates support for previous proposals on the compost issue by the NOSB. The Crops Subcommittee and the full Board continue to encourage the organic industry at large to make use of the petition process to the NOSB for inclusion on the National List.

Definition Motion:

Motion to define Compostable Materials as *Compostable Materials*. Materials meeting compostability specifications ASTM D6400-21, D6868-21, or D8410-21 used for making compost.

Motion by: Nate Lewis

Seconded by: Amy Bruch

Yes: 5 No: 0 Abstain: 0 Absent: 2 Recuse: 0

Classification Motion:

Motion to classify Compostable Materials as synthetic.

Motion by: Nate Lewis

Seconded by: Corie Pierce

Yes: 5 No: 0 Abstain: 0 Absent: 2 Recuse: 0

National List Motion:

Motion to add Compostable Materials at 205.601(c) – as compost feedstocks:

Motion by: Nate Lewis

Seconded by: Brian Caldwell

Yes: 0 No: 5 Abstain: 0 Absent: 2 Recuse: 0

Appendix

NOSB Summary of the complete review, response, and recommendations to NOP related to the BPI petition (contained within 3 deliverables listed below)

1. [Fall 2024 Final Recommendation: Compost Definition and Practice Standard Update \(October 24, 2024\)](#) (1 of 3)
 - NOSB Passed a proposal clarifying the compost definition at § 205.2 to cross-reference permitted feedstocks in § 205.601(c).
 - Updated § 205.203 to improve pathogen reduction and nutrient management language.
 - Requested a technical report (TR) of synthetic compostables meeting ASTM D6400, D6868, and D8410 to evaluate human health, environmental impact, and compatibility.
 - Reaffirmed that ASTM standards alone are insufficient regulatory safeguards due to voluntary status, continuous updates without regulatory synchronization, and lack of contaminant control.
2. [Spring 2025 Final Recommendation: Compost, Feedstocks, and the National List \(May 1, 2025\)](#) (2 of 3)
 - Passed a proposal confirming that synthetic compost feedstocks – regardless of ASTM certification – must be individually petitioned for National List inclusion.
 - Public comments reinforced that compostable synthetics are difficult to distinguish from non-compostables and are frequently screened out by composters.
 - Public comments overwhelming expressed support for the Board's position that the NL review process is how these classes of synthetic materials should be evaluated.

- Addressed petitioner's reference to UREC (Unavoidable Residual Environmental Contamination) by clarifying that unavoidable background contaminants differ from intentional synthetic feedstock additions, which require full National List review.
 - Rejected petitioner's "de minimis" allowance concept, stating that even trace synthetic additions must undergo case-by-case review and approval via the National List to comply with OFPA.
3. Fall 2025 Proposal: Synthetic Compostable Polymers (3 of 3)
- Final proposal in the series, closing NOSB's direct work on the BPI petition.
 - Incorporates TR data to reach a final determination on compostables.
 - Confirms path forward: deny broad class-based allowance, and allow case-by-case petition review.