

**National Organic Standards Board
Crops Subcommittee
Discussion Document: Compost
February 13, 2024**

Introduction:

Compost and the process by which it is produced are defined in the organic regulations at §205.2 Terms Defined. Additionally, §205.203(c) of the soil fertility and crop nutrient management practice standard outlines further requirements for processing and applying plant and animal materials under the organic regulations. The section emphasizes that an organic producer “must manage plant and animal materials to maintain or improve soil organic matter content in a manner that does not contribute to contamination of crops, soil, or water by plant nutrients, pathogenic organisms, heavy metals, or residues of prohibited substances”. The National List § 205.601 provides for one synthetic exception to plant and animal material composition of organic compost, with a listing for newspaper as a compost feedstock.

Certain types of compost and manure-based inputs commonly used in organic farming were not directly addressed in the rule, such that additional information and rule clarification was needed. Two different task forces were commissioned to make recommendations on compost, vermicompost, processed manures, and compost tea. In April 2002 the Compost Task Force Recommendation was presented to the NOSB and subsequently accepted as a recommendation to the NOP. In October 2004, a separate report and recommendation was presented to the NOSB by the Compost Tea Task Force. That document was also accepted by the NOSB, and the Crops Committee was directed by the Board to determine the necessary work that needed to be done to clarify these documents to the public. In October 2006, the Crops Subcommittee produced a document titled: Crops Subcommittee Recommendation for Guidance Use of Compost, Vermicompost, Processed Manure, and Compost teas, which was accepted by the NOSB. The NOP responded to those recommendations with Guidance document NOP 5021 with the stated purpose of clarifying “allowed practices for composition, production, and use of compost and vermicompost in organic crop production”. In December of 2016, the NOP published information regarding alternative compost methods in NOP 5034-1 Materials for Crop Production.

Given the efforts to address climate change through waste reduction and recycling, and to continuously improve and provide clarity of the organic standards and rules, the NOSB and NOP have been discussing ways to update organic definitions and regulations regarding organic compost production. These discussions led to an official work agenda request to the NOP in September of 2023. Concurrently, in August of 2023, the Biodegradable Product Institute (BPI) submitted a petition for rulemaking directly to the United States Department of Agriculture (USDA), requesting that AMS change the definition of compost and add a definition of “compost feedstock” to the federal organic regulations at § 205.2. Further, the petition seeks amendments to § 205.203, see Appendix A. In October of 2023, the NOP issued a [Memorandum to the National Organic Standards Board](#) requesting a recommendation on the topic of compost in organic agriculture.

This discussion document intends to provide a forum for the NOSB, NOP, and the stakeholder community to gain insight into the current state of organic compost production, towards updating the regulations and addressing the issues raised by the petition via the public process of stakeholder engagement through oral and written comments.

Background

1. Compost is defined in the regulations at §205.2:

Compost. The product of a managed process through which microorganisms break down plant and animal materials into more available forms suitable for application to the soil. Compost must be produced through a process that combines plant and animal materials with an initial C:N ratio of between 25:1 and 40:1. Producers using an in-vessel or static aerated pile system must maintain the composting materials at a temperature between 131 °F and 170 °F for 3 days. Producers using a windrow system must maintain the composting materials at a temperature between 131 °F and 170 °F for 15 days, during which time, the materials must be turned a minimum of five times.

2. Compost appears at §205.203 the Soil Fertility and Crop Nutrient Management Practice Standard

(2) Composted plant and animal materials produced through a process that:

(i) Established an initial C:N ratio of between 25:1 and 40:1; and

(ii) Maintained a temperature of between 131 °F and 170 °F for 3 days using an in-vessel or static aerated pile system; or

(iii) Maintained a temperature of between 131 °F and 170 °F for 15 days using a windrow composting system, during which period, the materials must be turned a minimum of five times.

3. Compost Feedstocks are referenced on the National List § 205.601 “Synthetic substances allowed for use in organic crop production” [Bold emphasis added below]

*In accordance with restrictions specified in this section, the following synthetic substances may be used in organic crop production: **Provided, That, use of such substances do not contribute to contamination of crops, soil, or water.** Substances allowed by this section, except disinfectants and sanitizers in paragraph (a) and those substances in [paragraphs \(c\), \(j\), \(k\), \(l\), and \(o\)](#) of this section, may only be used when the provisions set forth in [§ 205.206\(a\)](#) through [\(d\)](#) prove insufficient to prevent or control the target pest.*

(c) As compost feedstocks—Newspapers or other recycled paper, without glossy or colored inks.

4. Nonsynthetic (natural) is defined in the regulations at §205.2

Nonsynthetic (natural). A substance that is derived from mineral, plant, or animal matter and does not undergo a synthetic process as defined in section 6502(21) of the Act ([7 U.S.C. 6502\(21\)](#)). For the purposes of this part, nonsynthetic is used as a synonym for natural as the term is used in the Act.

5. (UREC) is defined in the regulations at §205.2

Unavoidable residual environmental contamination (UREC). Background levels of naturally occurring or synthetic chemicals that are present in the soil or present in organically produced agricultural products that are below established tolerances.

6. [NOP Program Handbook](#) related Guidance:

NOP 5006: Processed Animal Manure in Organic Crop Production

NOP 5021: Compost and Vermicompost in Organic Crop Production

NOP 5034-1: Materials for Organic Crop Production

***Note: 5034-1 lists Compost: nonsynthetic (natural) material for Organic Crop Production

NOP 2602: Recordkeeping of Certified Operations

NOP 2610: Sampling Procedures for Residue Testing PM 11-4: Evaluation of Materials Used in Organic Crop, Livestock, and Handling Operations

*NOP 5016: Allowance of Green Waste in Organic Production Systems (*removed in 2016*)

7. Information regarding “Inspection and testing of agricultural products to be sold or labeled as “100 percent organic,” “organic” or “made with organic (specified ingredients or found group(s))” can be found at [§205.670](#)

8. [NOP Preamble on Residue Testing](#) [*Bold emphasis added*]

*In addition, we intend to establish levels of unavoidable residual environmental contamination (UREC) for crop-and site-specific agricultural commodities to be sold, labeled, or represented as "100 percent organic," "organic," or "made with..." These levels will represent limits at which USDA may take compliance action to suspend the use of a contaminated area for organic agricultural production. Currently, USDA is seeking scientifically sound principles and measures by which it can establish UREC levels to most effectively address issues of unavoidable residual environmental contamination with respect to this rule. However, in the interim, UREC will be defined as the Food and Drug Administration's (FDA) action levels for poisonous or deleterious substances in human food or animal feed. UREC levels will be initially set for persistent prohibited substances (aldrin, dieldrin, chlordane, DDE, etc.) in the environment. They may become more inclusive of prohibited residues as additional information becomes available. Unavoidable residual environmental contamination levels will be based on the unavoidability of the chemical substances and **do not represent permissible levels of contamination where it is avoidable.***

Relationship to other regulations:

1. EPA indicates where Compost is regulated and establishes a Process to Further reduce Pathogens (PFRP)
 - a. [EPA](#): “Composting policies and regulations are set at the state and local government level.”
 - b. [Process to Further Reduce Pathogens \(PFRP\) is based on USEPA 40 CFR Part 503](#)

Appendix B to Part 503—Pathogen Treatment Processes

A. Processes To Significantly Reduce Pathogens (PSRP)

[excerpted]

“4. Composting—Using either the within-vessel, static aerated pile, or windrow composting methods, the temperature of the sewage sludge is raised to 40 degrees Celsius or higher and remains at 40 degrees Celsius or higher for five days. For four hours during the five days, the temperature in the compost pile exceeds 55 degrees Celsius.”

[.....]

B. Processes to Further Reduce Pathogens (PFRP)

1. Composting—Using either the within-vessel composting method or the static aerated pile composting method, the temperature of the sewage sludge is maintained at 55 degrees Celsius or higher for three days. Using the windrow composting method, the temperature of the sewage sludge is maintained at 55 degrees or higher for 15 days or longer. During the period when the compost is maintained at 55 degrees or higher, there shall be a minimum of five turnings of the windrow.

[.....]

2. [FDA’s regulations](#) in response to the Food Safety Modernization Act (FSMA) place requirements on producers of fresh produce who use composted biological soil amendments of animal origin.
3. [The Leafy Greens Marketing Agreement](#), a private industry verification of the requirements in the FSMA for compost, aimed at reducing foodborne illnesses.
4. [National Resources Conservation Service](#) provides farmers with technical assistance and cost-sharing of infrastructure investments related to composting of manure, livestock mortalities, and processing offal (317) – establishing a compost site/facility
 - a. Makes general recommendations on time and temperature, etc.
 - b. “C:N Ratio. – Developing a composting recipe is a balancing act as both the C:N ratio and the moisture content of the individual materials need to be within acceptable ranges. The recommended initial C:N ratio of 20:1 to 40:1 for rapid composting is consistent with the nutrient needs of the bacteria and fungi in the compost pile. The composting process relies on the balance of carbon- and nitrogen-containing materials. If carbon is present in excessive amounts relative to nitrogen so that the C:N ratio is above the optimal range, the composting process slows. For composting animal mortalities, C:N ratios as low as 14:1 may be effective and practical. Lower C:N ratios may lead to increased odor and ammonia loss.”
 - c. “For processing compost in either a static aerated pile or in-vessel compost system, the temperature of the compost is required to be maintained between 131°F and 170°F for 3 days”
 - d. “For windrow system the temperature of the compost is required to be between 131°F and 170°F for 15 days with a minimum of 5 turnings of the compost to ensure the windrow is mixed and evenly composted”

5. Federal Trade Commission – [Green Guides](#) provides guidelines for ensuring the accuracy of product claims of “Compostable” and “Degradable”:
 - a. Green Guide is not a regulation, indicates when FTC may find labelling claims to be deceptive
 - b. Can take action to prohibit deceptive claims if the FTC chooses
 - c. Compostable:
 1. “Marketers who claim a product is compostable need competent and reliable scientific evidence that all materials in the product or package will break down into — or become part of — usable compost safely and in about the same time as the materials with which it is composted.”
 2. “Marketers should qualify compostable claims if the product can’t be composted at home safely or in a timely way. Marketers also should qualify a claim that a product can be composted in a municipal or institutional facility if the facilities aren’t available to a substantial majority of consumers.”
 - d. Degradable:
 1. “Marketers may make an unqualified degradable claim only if they can prove that the “entire product or package will completely break down and return to nature within a reasonably short period of time after customary disposal.” The “reasonably short period of time” for complete decomposition of solid waste products? One year.”
 2. “Items destined for landfills, incinerators, or recycling facilities will not degrade within a year, so unqualified biodegradable claims for them shouldn’t be made.”

Subcommittee Review:

The Crops Subcommittee is seeking information in all areas of regulations surrounding compost making. This discussion document seeks to lay a foundation for future NOSB recommendations to update the organic definitions and regulations, taking into consideration the changes in the compost industry, regulatory emphasis on food safety, and the Petition to the USDA by BPI.

The Subcommittee discussed possible avenues for managing the National List, when considering the implications of classifying materials as synthetic in the context of naturally occurring biological processes for compost feedstocks.

In general, the CS sees the presence of newspaper as a compost feedstock on the National List as an indicator that when synthetic inputs enter into naturally occurring biological processes like composting and fermentation, the product does not automatically result in an allowed substance.

By that logic, the path for making determinations about allowed compost feedstocks beyond plant and animal material is through the National List process for making synthetic allowances is the common practice in organic.

Currently it is the view of the Subcommittee that any synthetic feedstocks must be included on the National List, or it is assumed that it is not allowed. This has been practiced in compost as demonstrated by the investment in depackaging and sorting by the industry and the evaluation by Material Review Organizations (MROs) or during OSP review for certification.

However, the Subcommittee also recognizes that myriad traces of synthetic substances do enter the waste stream and end up as components of otherwise allowed feedstocks to compost (e.g. fruit stickers, pesticide residues in yard waste, antibiotics in livestock manure, etc.). Composters, in general, work

diligently to remove these contaminants from their process at the point of collection, mixing, and screening of the final product, but their systems cannot remove 100% of the contaminants every time. In the current evaluation of compost used in organic production, the presence of these ‘contaminants’ does not automatically render the compost prohibited for use, and there is lack of clarity around what level of contamination is acceptable in compost used in organic production.

The Subcommittee is currently in discovery mode. This discussion document is an opportunity to engage the expertise of the community towards the goal of updating the regulations while addressing the issues raised by BPI in its petition.

Questions/Information Requests:

1. Time and Temperatures at § 205.203(c)

(ii) Maintained a temperature of between 131 °F and 170 °F for 3 days using an in-vessel or static aerated pile system; or

(iii) Maintained a temperature of between 131 °F and 170 °F for 15 days using a windrow composting system, during which period, the materials must be turned a minimum of five times.

- a. Comment on this suggested language update and additional method for **§ 205.21(c)**:
 - ii) forced aeration compost/aerated static pile construction*
 - iii) windrow/passively aerated composting systems*
 - iv) contained and in-vessel composting method*
- b. Are there other alternative methods in composting that should be specifically outlined?
- c. Recommend specific language updates to temperature and turn intervals for each.
- d. Provide perspective on the “15 days” requirement for windrows. Should the regulations reflect a window of time to complete PFRP? i.e. should the language stipulate the completion of windrow turnings in 15 days or should organic establish a time range or a time limit for the completion of PFRP?

2. Carbon to Nitrogen Ratios at § 205.2 and § 205.203 refer to a *C:N ratio of between 25:1 and 40:1*.

Please suggest an update to the range of C:N ratios allowed in organic compost; include a rationale for how it complies with organic principles. Should this range be stipulated as formulated in the recipe stage (via testing or generally available information about feedstocks?) or final composition via a testing requirement?

3. How should the Subcommittee weigh the distinction between UREC and ‘Contamination’, as described in the NOP Preamble and testing requirements, against the current realities of contamination inherent in the rapidly growing organic compost industry? How should compliance verification for organic compost orient around the requirements at [§ 205.670](#)?

4. Contamination. Currently, organic compost operations, MROs, and inspectors are treating all material that is not of plant or animal origin as contamination. Every effort is made by composters to remove contamination from feedstocks before the composting process.

- a. Describe the effort to remove contamination from compost feedstock; i.e. Education to public? Desorting/depackaging machines?
- b. It is widely acknowledged that some level of pesticides, heavy metals, PFAS, glass, plastic, etc. enters the composting process. When and how should organic draw the line on contamination?

5. The BPI petition requests amending the definition of ‘compost’ eliminating the reference to “plant and animal materials,” replacing the phrase with “compost feedstocks” and adding a definition for “compost feedstocks” which includes synthetic substances that meet certain [ASTM International](#) standards. What do organic stakeholders think of this approach to compost feedstock evaluation? Should a definition for “compost feedstocks” rely on ASTM standards for allowance determinations?
6. The BPI petition also introduces the concept of ‘de minimus’ into final compost product evaluation. Should the organic system embrace the concept of ‘de minimis’ traces of prohibited substances as a platform to acknowledge where and when the organic system cannot control/eliminate contamination?
7. Should the National List include broad classes of substances (e.g. newspaper and other recycled paper) or individual substances (e.g. specific compostable polymers) or both?
- Compostable paper
 - Compostable plastic
 - Stickers
 - Food waste bags
- 8. Testing/Research**
- a. [The Organic Materials Review](#) Institute (OMRI) requires organic compost producers to provide lab analyses that report certain heavy metal content (As, Cd and Pb) and pathogen levels (fecal coliform and salmonella). Are there other testing requirements by MROs and certifiers?
 - b. Should inspections be required for all compost operations producing organic compost?
 - c. Given that compost labs are routinely performing a wide variety of tests on both feedstocks to develop recipes for compost and tests to establish the constituents of finished compost, how should organic regulations use residue testing to ensure final product quality? Should we prioritize the tests which are most pressing from a contamination perspective and representative of issues concerning organic systems of agriculture? What are those most pressing issues?
 - d. Certifiers have the authority to test compost for contamination at 205.670. How can this testing authority be used to address contamination concerns in compost?
 - e. Provide data on practical experience, research and testing on the following:
 - i. Persistence of contaminants (pesticides, antibiotics, heavy metals, plastic, pathogens, etc.) through composting process, expense of testing, broad based testing, availability/accessibility of testing laboratories for smaller producers;
 - ii. Breakdown of paper products in compost;
 - iii. Breakdown of “compostable” plastic products in compost
 - iv. Operations who have succeeded at accepting food waste with compostable packaging, or discussions that have occurred around diversifying food waste collections systems that could allow food waste to be collected with compostable packaging.
9. Organic regulations often rely on external agencies to determine the framework for its authority. Please describe the path for regulatory authority in the packaging industry and whether organic regulations should or can establish an authority over compostability/biodegradable packaging claims.

Motion to accept the discussion document on Compost

Motion by: Nate Lewis

Seconded by: Jerry D’Amore

Yes: 7 No: 0 Abstain: 0 Recuse: 0 Absent: 2

