



April 5, 2021

Ms. Michelle Arsenault
National Organic Standards Board
USDA-AMS-NOP

Docket: AMS-NOP-20-0089

RE: Crops Subcommittee – Ammonia Extract (Discussion Document)

Dear Ms. Arsenault:

Thank you for this opportunity to provide comment on the National Organic Standards Board (NOSB) Crops Subcommittee's Discussion Document on Ammonia Extract.

The Organic Trade Association (OTA) is the membership-based business association for organic agriculture and products in North America. OTA is the leading voice for the organic trade in the United States, representing over 9,500 organic businesses across 50 states. Our members include growers, shippers, processors, certifiers, farmers' associations, distributors, importers, exporters, consultants, retailers and others. OTA's mission is to promote and protect organic with a unifying voice that serves and engages its diverse members from farm to marketplace.

Introduction

OTA appreciates the petitioner giving NOSB the opportunity to weigh-in on the acceptability of novel ammonia extract substances in organic agriculture prior to wide proliferation of this emerging category of products. NOSB plays a critical role in evaluating inputs within the framework established in OFPA.

The purpose of OTA's comments on this discussion document is to ensure that NOSB has complete technical information about products and manufacturing processes that may be implicated by the scope of the petition, and that NOSB's decision-making process is sound and in alignment with OFPA Criteria for the National List. We also provide information about the compatibility and necessity of the petitioned material to help inform NOSB's deliberation of the substance against OFPA Criteria. For comments on environmental impacts and soil health, please refer to The Organic Center.

Our comments identify several significant concerns regarding the compatibility of purified natural ammonia with organic principles, including but not limited to: mimics conventional synthetic Nitrogen fertilizers, requires the removal of carbon value of organic waste, and may be out of step with international norms. NOSB must take these concerns into account as it evaluates the use of the substance against the OFPA Criteria for the National List.

Background

Synthetic ammonia is prohibited in organic production. The prohibition of synthetic nitrogen fertilizers is a longstanding and strongly-held core principle of organic agriculture. Chemically derived ammonia from the Haber-Bosch process is already prohibited and is not subject of this petition. The subject of this petition is of ammonia that is isolated, captured, extracted, and/or concentrated from natural sources such as manure through physical, mechanical, and/or biological processes that are ultimately classified as *nonsynthetic*. These products represent an emerging category of commercial fertilizers intended for use as water-soluble and bio-available source of nitrogen that is largely in the development phase. The petitioner has elevated this emerging product category to NOSB for consideration prior to wide proliferation of these novel products. Unless specifically prohibited in the organic regulations, *nonsynthetic* substances will continue to be permitted for use in organic production.

The petition being considered by NOSB is to prohibit nonsynthetic forms of “ammonia extract” as inputs in organic crop production. “Ammonia extract” is described in the petition as “a fertilizer produced using a range of methods where the output contains ammonia (NH₃) and/or ammonium (NH₄⁺) that has been: 1) Produced through a biological or physical process; 2) Captured in a liquid form; 3) Concentrated and/or extracted; and 4) Packaged for application in a crop system.” Other names that may refer to the same substances include “Natural Ammonia,” “Captured Ammonia” and “Novel Ammonia Products.” The petitioner identifies concerns that these emerging types of ammonia fertilizers do not align with organic production principles, pose risks to the integrity of organic products, and increase the risk of fertilizer fraud. The petition also raises concerns about uncertainty and inconsistent determinations of material review organizations regarding the classification of ammonia extract technologies as nonsynthetic or synthetic.

The NOSB Crops Subcommittee presented a discussion document in fall 2020 to solicit stakeholder input on a series of questions about the ability to distinguish synthetic ammonia sources from non-synthetic sources through testing, the impacts on soil health, and other questions about the classification and other issues related to ammonia extract. A second discussion document is presented at this meeting (spring 2021) that builds on comments received from the last meeting on the topics of soil health and the potential for fraud. A third-party Technical Report was commissioned by NOSB and was publically released approximately one week after the spring 2021 NOSB meeting materials were posted.

Technical Information

The products and manufacturing processes described in the petition and in the technical report represent a wide range of substances that result in synthetic and nonsynthetic forms of ammonia and ammonium compounds. To properly evaluate the petitioned substance, it is important to ensure a complete understanding of the substances that would be classified as “Synthetic” and thus *already prohibited* and outside the scope of this petition, and which substances are classified as “Nonsynthetic,” currently allowed, and subject to prohibition under the petition.

The processes of anaerobically digesting or fermenting agricultural or biological feedstock are nonsynthetic, as these are naturally occurring biological processes. Substances that are derived from sewage waste are prohibited (per 205.105).

The Technical Report (TR) describes “ammonia stripping” and “ammonia concentration” as methods of manufacturing outputs from the original agricultural feedstock. These two processes are both being considered under the umbrella of the petitioned “ammonia extract” category of substances.

The physical and mechanical processes such as heating, pressurization, diffusion, evaporation, cooling, condensation, filtration, reverse-osmosis, etc. involved in “ammonia stripping” and “ammonia concentration” are nonsynthetic processes. However, each process results in a different direct output. The difference in composition of the direct outputs of “ammonia stripping” and “ammonia concentration” (prior to any post-treatment with stabilizers or additives) is important to note:

- The “ammonia stripping” process uses pressured air and/or heat to facilitate evaporation of ammonia from the original agricultural feedstock, followed by a cooling/condensation step to capture the ammonia-containing condensate. **The direct output of the “ammonia stripping” process is a pure ammonia gas (or when cooled and distilled, a pure aqueous ammonia condensate) isolated from the original agricultural feedstock.** Products produced by this method are considered *novel*; new products are only recently being approved and/or are still in development and not yet fully commercialized.
- The “ammonia concentration” process uses physical separation to remove solids from nitrogen-containing liquid waste mixture, and uses pressured air and/or heat to facilitate water evaporation thereby concentrating the liquid ammonia-containing waste solution. **The direct output of the “ammonia concentration” process is a liquid waste filtrate containing ammonia and ammonium compounds and other nutrients and organic compounds retained from the original agricultural feedstock.** Products produced by this method have been OMRI Listed for *nearly a decade* and are not considered to be new or novel.

The direct outputs of “ammonia stripping” and “ammonia concentration” may be further processed and/or treated with additives and stabilizers to formulate a final product. These processes and additives can influence the classification of the end product and may result in a synthetic (prohibited) substance.

For example:

- Stabilization of “ammonia stripping” outputs with strong acids such as sulfuric acid or nitric acid is *synthetic and prohibited*. The final output of the “ammonia stripping” processes described in the Technical Report involves the addition of a strong acid that results in a synthetic ammonium compound which is prohibited under current organic regulations.
- Stabilization of “ammonia stripping” outputs using nitrifying bacteria is *nonsynthetic and currently allowed* per commonly accepted material review policies, however this manufacturing process is not addressed in the Technical Report.
- pH adjustment of “ammonia concentration” outputs by organic acids such as citric acid is *nonsynthetic and currently allowed* per commonly accepted material review policies.

OFPA Criteria for the National List

NOSB plays a critical and unique role in the organic rulemaking process because it advises USDA on which production inputs should be allowed or prohibited in organic farming and processing. The Organic Foods Production Act (OFPA) establishes the evaluation framework for NOSB's open, balanced and transparent process for developing recommendations to amend the National List of Allowed and Prohibited Substances. Within this framework and with the support of public comments and third-party technical information, NOSB develops strong well-supported recommendations.

Current status and restrictions on fertilizers

- Synthetic substances are prohibited unless explicitly on the National Organic Program (NOP) National List of Allowed and Prohibited Substances.
- Nonsynthetic substances are allowed in organic production unless explicitly prohibited on the National Organic Program (NOP) National List of Allowed and Prohibited Substances.
- Liquid fertilizers with a nitrogen analysis greater than 3 percent must comply with additional recordkeeping and inspection requirements in accordance with [NOP Guidance on the Approval of Liquid Fertilizers for Used in Organic Production \(NOP 5012\)](#).
- Use of fertilizers must comply with soil fertility and crop nutrient management practice standards at §205.203.

Criteria to add a new prohibited nonsynthetic substance to the National List

OFPA states that the National List may provide for the prohibition of a nonsynthetic substance *only if* use of the substance “(i) would be harmful to human health or the environment; and (ii) is inconsistent with organic farming or handling, and the purposes of this chapter (§6517(c)(2)(a)).”

OFPA identifies seven criteria that NOSB must consider in its evaluation of substances. According to §6518(m), the NOSB *shall* consider:

1. “the potential of such substances for detrimental chemical interactions with other materials used in organic farming systems;
2. 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;
3. the probability of environmental contamination during manufacture, use, misuse or disposal of such substance;
4. the effect of the substance on human health;
5. the effects of the substance 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;
6. the alternatives to using the substance in terms of practices or other available materials; and
7. its compatibility with a system of sustainable agriculture”

Compatibility and Consistency with Organic Farming and Sustainable Agriculture

NOSB must evaluate whether the use of a substance is “inconsistent with organic farming and handling (§6517(c)(2)(a)(ii) and consider the substance’s “compatibility with a system of sustainable agriculture (§6518(m)(6)).”

Some elements of consistency can be explicitly evaluated if OFPA or the NOP regulations include provisions that specifically address the substance. For example, OFPA specifically identifies arsenic and lead salts as substances that crop producers are prohibited from using (§6508). Thus, these nonsynthetic substances are clearly inconsistent with organic farming and would be appropriate to include on the National List as prohibited nonsynthetic substances (which they are).

Other elements of consistency are much more subjective. There are two NOSB recommendations related to this issue that are helpful to identify points that may be considered within the scope of this criterion. These recommendations are also incorporated in to the NOSB Policy and Procedures Manual.

- 2001 NOSB Recommendation: Principles of Organic Production and Handling (**Appendix A-1**)
- 2004 NOSB Recommendation: Guidance on Compatibility with a System of Sustainable Agriculture and Consistency with Organic Farming and Handling (**Appendix A-2**)

Compatibility with Organic Principles

The following concerns regarding the compatibility of the petitioned material with organic principles are identified below with additional information to support a robust deliberation by NOSB on this petition. NOSB must take these concerns into account as it evaluates the use of the substance against the OFPA Criteria for the National List.

Purified natural ammonia and ammonium compounds mimic conventional synthetic N fertilizers

The prohibition of synthetic nitrogen fertilizers manufactured through the Haber-Bosch process is a longstanding and fundamental prohibition in organic agriculture. The proliferation of these fossil-fuel based synthetic fertilizers in conventional agriculture was a primary motivator of the modern organic agricultural movement. The principles of organic (as described in the 2001 NOSB Recommendation) seek to achieve agricultural and environmental goals through the “use of cultural, biological, and mechanical methods, as opposed to using synthetic materials to fulfill specific functions within the system.” Therefore, substances that mimic the chemistry and functionality of synthetic nitrogen fertilizers can understandably be considered as equally incompatible with traditional organic principles.

Objections to the compatibility of these substances with organic principles are serious enough to potentially lead to fragmentation of the organic market. Some companies have indicated they may be prepared to establish private standards that exclude products produced with this input from their supply chain. This is an indication that the substance could fail to align with the 2004 NOSB Recommendation which asks NOSB to consider whether the substance would “satisfy expectations of organic consumers regarding the authenticity and integrity of organic products.”

Nonsynthetic materials that mimic the functionality of synthetic nitrogen fertilizers have been prohibited by NOSB in the past. Sodium nitrate was prohibited in part for this same rationale (other environmental harms were also of consequence). As stated by NOSB in a past review to justify its recommendation to prohibit (emphasis added), the “use and dependence on sodium nitrate also can tend to producers to put off the need for strong soil-building practices, consistent with §205.203, since it behaves similarly to conventional synthetic nitrogen fertilizers¹.” This is evidence that the substance could fail to align with the 2004 NOSB Recommendation which asks NOSB to consider whether “use of the substance is consistent with other substances historically allowed or disallowed in organic production and handling.”

Manufacturing of purified ammonia and ammonium compounds requires the removal of carbon value of organic waste

Materials sourced from agricultural waste have been prohibited by NOSB in the past when the carbon value of the original source material is not retained in the final product. Ash from manure burning was prohibited in part for this same rationale. As stated by NOSB in a past review to justify its recommendation to prohibit (emphasis added), “burning [manure] is not an appropriate method to use to recycle organic wastes and would not be considered a proper method in a manuring program because burning removes the carbon from these wastes and thereby destroys the value of the materials for restoring soil organic content².” This is evidence that the substance could fail to align with the 2004 NOSB Recommendation which asks NOSB to consider whether “use of the substance is consistent with other substances historically allowed or disallowed in organic production and handling.”

Allowance of highly soluble ammonia fertilizers may be out of step with international norms

Highly soluble nitrogen sources can present barriers to international trade. For example, sodium nitrate is identified as a critical variance³ in the US-Canada Organic Equivalency Arrangement: U.S. agricultural products produced with the use of sodium nitrate shall not be sold or marketed as organic in Canada. For this reason, it is possible that ammonia extracts may face scrutiny during international trade negotiations and potentially be viewed as a critical variance. Further, this is an indication that the substance could fail to align with the 2004 NOSB Recommendation which asks NOSB to consider whether the substance would “be consistent with international organic regulations and guidelines.”

Allowance of high nitrogen liquid fertilizers creates an increased risk of fraud

Fraud cannot be tolerated in organic at any point in the value chain including the misrepresentation of agricultural inputs as compliant with the organic standards. Past evidence of fertilizer fraud in 2009 holds a prominent place in the organic sector’s history of fraud and led to NOP and certifiers strengthening its oversight of high nitrogen liquid fertilizers (HNFL). Under [NOP 5012 - Approval of Liquid Fertilizers for Use in Organic Production](#), all liquid fertilizers with a nitrogen analysis greater than 3 percent must comply with additional recordkeeping, traceability, in-out balance analysis, and onsite inspection requirements (announced and unannounced). There are over 200 HNLF products on OMRI and CDFA’s

¹ <https://www.ams.usda.gov/sites/default/files/media/Sodium%20Nitrate%20Final%20Rec.pdf>

² <https://www.ams.usda.gov/sites/default/files/media/CSSnst2017RvwOct2015.pdf>

³ <https://www.ams.usda.gov/services/organic-certification/international-trade/Canada>

brand name materials lists approved for use in organic production, demonstrating that a broad number of input manufacturers have implemented and successfully achieved compliance with the fraud prevention policies specified in NOP 5012. We support this risk-based approach to strengthening oversight.

OTA also strongly supports processes and systems that prevent fraud in agricultural inputs. In OTA's comments to NOP on the Strengthening Organic Enforcement Proposed Rule, we made recommendations to revise the definition of "fraud" to encompass agricultural input fraud, and fraud prevention plans should address potential risks of fraudulent inputs in an organic system. OTA's private sector [Organic Fraud Prevent Solutions](#) program recognizes the importance of input manufacturers in the fight against fraud, and therefore includes OMRI and WSDA-listed companies as eligible for the program alongside NOP-certified operations.

Consideration of other common Nitrogen-containing nonsynthetic fertility inputs

We have questions about how the scope of the petition will impact the evaluation of other common Nitrogen-containing nonsynthetic fertility inputs such as compost teas, manure teas, processed manures, and liquid fish products. These common nonsynthetic inputs contain some amount of ammonia and ammonium nitrogen, are produced through a biological or physical process, and may undergo some form of concentration and/or extraction. The composition of these common inputs retain organic matter and carbon value of the original agricultural feedstock, whereas purified ammonia from the "stripping" process does not, among other differences. We encourage NOSB to explore how technical differences implicate the evaluation of the petition against the OFPA Criteria for the National List.

Necessity for Organic Production

The OFPA Criteria for the National List requires NOSB to evaluate alternatives to substances under consideration when developing recommendations for amending the National List (§6518(m)(6)).

Manufacturers and distributors of ammonia extract fertilizers indicate these products are meant to facilitate precise and responsible application of nutrients, and are not intended to be the sole source of nutrient fertility in a farm system nor preclude other soil-health building practices. They emphasize that these products can be used when Phosphorus is limiting or when Nitrogen applications are restricted and should be part of the larger system of crop rotations, carbon rich nutrient sources (manures) and cover crops.

Initial outreach to OTA members reveals that many growers are not currently using these products and some may not want or need to use these products for reasons including: choosing not to use these products due to incompatibility with organic principles; alternative inputs and practices are sufficient for their soil fertility program. Our member outreach is ongoing.

Environmental Impact

The OFPA Criteria for the National List requires NOSB to evaluate several aspects of environmental impacts when developing recommendations for amending the National List, including contamination and toxicity to the environment, effects on biological and chemical interactions in the agroecosystem, and physiological effects of the substance on soil organisms (§6518(m)). OFPA authorizes NOSB to recommend prohibition of nonsynthetic substances that are harmful to the environment.

Please refer to comments submitted by The Organic Center for information to support NOSB's evaluation of environmental impacts and soil health.

Conclusion

OTA appreciates the petitioner giving NOSB the opportunity to weigh-in on these novel substances prior to wide proliferation of this emerging category of products. NOSB plays a critical role in evaluating inputs within the framework established in OFPA.

It is important that NOSB ensures it has complete technical information about products and manufacturing processes that may be implicated by the scope of the petition, and that NOSB's decision-making process is sound and in alignment with OFPA Criteria for the National List.

Our comments have identified several significant concerns regarding the compatibility of purified natural ammonia with organic principles, including but not limited to: mimics conventional synthetic Nitrogen fertilizers, requires the removal of carbon value of organic waste, and may be out of step with international norms. NOSB must take these concerns into account as it evaluates the use of the substance against the OFPA Criteria for the National List.

On behalf of our members across the supply chain and the country, OTA thanks the National Organic Standards Board for the opportunity to comment, and for your commitment to furthering organic agriculture.

Respectfully submitted,



Johanna Mirenda
Farm Policy Director
Organic Trade Association

cc: Laura Batcha
Executive Director/CEO
Organic Trade Association

NOSB PRINCIPLES OF ORGANIC PRODUCTION AND HANDLING

(NOSB Recommendation Adopted October 17, 2001)

1.1 Organic agriculture is an ecological production management system that promotes and enhances biodiversity, biological cycles, and soil biological activity. It emphasizes the use of management practices in preference to the use of off-farm inputs, taking into account that regional conditions require locally adapted systems. These goals are met, where possible, through the use of cultural, biological, and mechanical methods, as opposed to using synthetic materials to fulfill specific functions within the system.

1.2 An organic production system is designed to:

- 1.2.1 Optimize soil biological activity;
- 1.2.2 Maintain long-term fertility;
- 1.2.3 Minimize soil erosion;
- 1.2.4 Maintain or enhance the genetic and biological diversity of the production system and its surroundings;
- 1.2.5 Utilize production methods and breeds or varieties that are well adapted to the region;
- 1.2.6 Recycle materials of plant and animal origin in order to return nutrients to the land, thus minimizing the use of non-renewable resources;
- 1.2.7 Minimize pollution of soil, water, and air; and
- 1.2.8 Become established on an existing farm or field through a period of conversion (transition), during which no prohibited materials are applied and an organic plan is implemented.

1.3 The basis for organic livestock production is the development of a harmonious relationship between land, plants, and livestock, and respect for the physiological and behavioral needs of livestock. This is achieved by:

- 1.3.1 Providing good quality organically grown feed;
- 1.3.2 Maintaining appropriate stocking rates;
- 1.3.3 Designing husbandry systems adapted to the species' needs;
- 1.3.4 Promoting animal health and welfare while minimizing stress; and
- 1.3.5 Avoiding the routine use of chemical allopathic veterinary drugs, including antibiotics.

1.4 Organic handling practices are based on the following principles:

- 1.4.1 Organic processors and handlers implement organic good manufacturing and handling practices in order to maintain the integrity and quality of organic products through all stages of processing, handling, transport, and storage;
- 1.4.2 Organic products are not commingled with non-organic products, except when combining organic and non-organic ingredients in finished products which contain less than 100% organic ingredients;
- 1.4.3 Organic products and packaging materials used for organic products do not come in contact with prohibited materials;

- 1.4.4 Proper records, including accurate audit trails, are kept to verify that the integrity of organic products is maintained; and
 - 1.4.5 Organic processors and handlers use practices that minimize environmental degradation and consumption of non-renewable resources. Efforts are made to reduce packaging; use recycled materials; use cultural and biological pest management strategies; and minimize solid, liquid, and airborne emissions.
- 1.5 Organic production and handling systems strive to achieve agro-ecosystems that are ecologically, socially, and economically sustainable.
- 1.6 Organic products are defined by specific production and handling standards that are intrinsic to the identification and labeling of such products.
- 1.7 Organic standards require that each certified operator must complete, and submit for approval by a certifying agent, an organic plan detailing the management of the organic crop, livestock, wild harvest, processing, or handling system. The organic plan outlines the management practices and inputs that will be used by the operation to comply with organic standards.
- 1.8 Organic certification is a regulatory system which allows consumers to identify and reward operators who meet organic standards. It allows consumers to be confident that organic products are produced according to approved management plans in accordance with organic standards. Certification requires informed effort on the part of producers and handlers, and careful vigilance with consistent, transparent decision making on the part of certifying agents.
- 1.9 Organic production and handling operations must comply with all applicable local, state, and federal laws and address food safety concerns adequately.
- 1.10 Organic certification, production, and handling systems serve to educate consumers regarding the source, quality, and content of organic foods and products. Product labels must be truthful regarding product names, claims, and content.
- 1.11 Genetic engineering (recombinant and technology) is a synthetic process designed to control nature at the molecular level, with the potential for unforeseen consequences. As such, it is not compatible with the principles of organic agriculture (either production or handling). Genetically engineered/modified organisms (GE/GMOs) and products produced by or through the use of genetic engineering are prohibited.
- 1.12 Although organic standards prohibit the use of certain materials such as synthetic fertilizers, pesticides, and genetically engineered organisms, they cannot ensure that organic products are completely free of residues due to background levels in the environment.

NOSB GUIDANCE ON COMPATIBILITY WITH A SYSTEM OF SUSTAINABLE AGRICULTURE AND CONSISTENCY WITH ORGANIC FARMING AND HANDLING

(NOSB Recommendation Adopted April 29, 2004)

A significant responsibility of the NOSB is to determine the suitability of materials for use in organic production and handling. Among the criteria the Board must consider, OFPA requires the NOSB to determine the compatibility of a material with organic practices. The following questions were developed by the NOSB to assist in determining the compatibility of materials with organic practices. In order to determine if a substance, its use, and manufacture are compatible with a system of sustainable agriculture and consistent with organic farming and handling, and in consideration of the NOSB Principles of Organic Production and Handling, the following factors are to be considered:

- Does the substance promote plant and animal health by enhancing the soil's physical chemical, or biological properties?
- Does use of the substance encourage and enhance preventative techniques including cultural and biological methods for management of crop, livestock, and/or handling operations?
- Is the substance made from renewable resources? If the source of the product is non-renewable, are the materials used to produce the substance recyclable? Is the substance produced from recycled materials? Does use of the substance increase the efficiency of resources used by organic farms, complement the use of natural biological controls, or reduce the total amount of materials released into the environment?
- Does use of the substance have a positive influence on the health, natural behavior, and welfare of livestock?
- Does the substance satisfy expectations of organic consumers regarding the authenticity and integrity of organic products?
- Does the substance allow for an increase in the long-term viability of organic farm operations?
- Is there evidence that the substance is mined, manufactured, or produced through reliance on child labor or violations of applicable national labor regulations?
- If the substance is already on the National List, is the proposed use of the substance consistent with other listed uses of the substance?
- Is the use of the substance consistent with other substances historically allowed or disallowed in organic production and handling?
- Would approval of the substance be consistent with international organic regulations and guidelines, including Codex?
- Is there adequate information about the substance to make a reasonable determination on the substance's compliance with each of the other applicable criteria? If adequate information has not been provided, does an abundance of caution warrant rejection of the substance?
- Does use of the substance have a positive impact on biodiversity?