



September 30, 2021

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

Docket: AMS-NOP-21-0038

RE: Crops Subcommittee – Ammonia Extract (Proposal)

Dear Ms. Arsenault:

Thank you for this opportunity to provide comment on the National Organic Standards Board (NOSB) Crops Subcommittee’s Proposal 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.

Summary of Organic Trade Association Positions

NOSB Crops Subcommittee Motions	OTA Position
#1. Motion to <u>prohibit</u> at §205.602: Stripped Ammonia – created by separating, isolating and/or capturing ammonia or ammonium from an agricultural feedstock or other natural source using methods such as, but not limited to, steam stripping, pressurized air, heat, condensation, and/or distillation.	Support Prohibition (Not compatible)
#2. Motion to <u>prohibit</u> at §205.602: Concentrated Ammonia – contains greater than 3% ammoniacal nitrogen and the total nitrogen content is predominately (i.e., >50%) in the ammonia or ammonium form.	Support Prohibition (Not compatible, and more complicated)
#3. Motion to <u>add practice standard</u> at §205.203(f): Nitrogen products with a C:N ratio of 3:1 or less , including those that are components of a blended fertilizer formulation, are limited to a cumulative total use of 20% of crop needs.	Important Topic but Still Needs Work. Keep on NOSB Work Plan.

Please see below for more detailed comments on Ammonia Extract.

Separate comments have been filed on the proposal for Sodium Nitrate. OTA is supporting the Subcommittee proposal to reinstate the listing of sodium nitrate for the purpose of clarifying its regulatory status.

I. Introduction

Ammonia extract has been petitioned for inclusion on the National List as a prohibited nonsynthetic input in organic crop production. It is critical to first note that synthetic ammonia fertilizers are already 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 petition challenges the allowance of nonsynthetic ammonia products that are isolated, captured, extracted, and/or concentrated from natural sources such as manure through physical, mechanical, and/or biological processes. More details about the technical characteristics of these products are available in Section II of this comment.

Nonsynthetic ammonia extracts, for the most part, represent an emerging category of commercial fertilizers intended for use as water-soluble and bio-available sources of nitrogen. The petitioner has elevated this emerging product category to NOSB for consideration prior to wide proliferation of these novel 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. Unless specifically prohibited in the organic regulations, ammonia extracts that are nonsynthetic are permitted for use in organic production.

NOSB plays a critical role in evaluating inputs within the framework established in the Organic Foods Production Act (OFPA) for making recommendations to the Secretary for proposed amendments to the National List of Allowed and Prohibited Substances. Based on OFPA, a nonsynthetic material such as ammonia extract may be recommended for prohibition *only if* use of the substance would be harmful to human health or the environment and is inconsistent with organic farming or handling. More details about the OFPA criteria are provided in Section III of this comment.

Summary of NOSB Crops Subcommittee's 2021 Proposals

The NOSB Crops Subcommittee presents proposals regarding the prohibition of ammonia extracts. The proposal defines the two common manufacturing methods for ammonia extracts (*stripped ammonia* and *concentrated ammonia*) and proposes to list them individually on the National List at §205.602, nonsynthetic substances prohibited for use in organic crop production, under a new sub-section for prohibited ammonia fertilizers. If both definitions are passed, NOSB suggests that NOP could combine them into a single listing during rulemaking.

According to the Subcommittee's proposal, an abundance of caution warrants prohibition of these materials. They acknowledge this is a complex issue and are taking a conservative approach to the questions about impact on soil and crop health. The Subcommittee identifies a lack of consistent/conclusive research showing positive benefit to environment, soil health, and biodiversity and some research indicates their negative effects on soil health. In terms of consistency with organic farming principles, the Subcommittee concludes that ammonia extract does not positively contribute to soil or plant health over the long term, and does not encourage or enhance preventive

techniques for crop management. The long-time concern for use of highly soluble plant nutrients is also a driving factor of the Subcommittee’s proposal.

The Subcommittee is also proposing an amendment to the NOP regulations, at §205.203 (soil fertility and crop nutrient management practice standard), that takes a broader approach to limiting all nitrogen products used in organic production systems. The proposal is that nitrogen products with a Carbon to Nitrogen (C:N) ratio of 3:1 or less are limited to a cumulative total use of 20% of crop needs. The purpose is to limit the use of materials likely to deliver bio-available nitrogen to plants and set a precedent to limit the potential overuse of the materials.

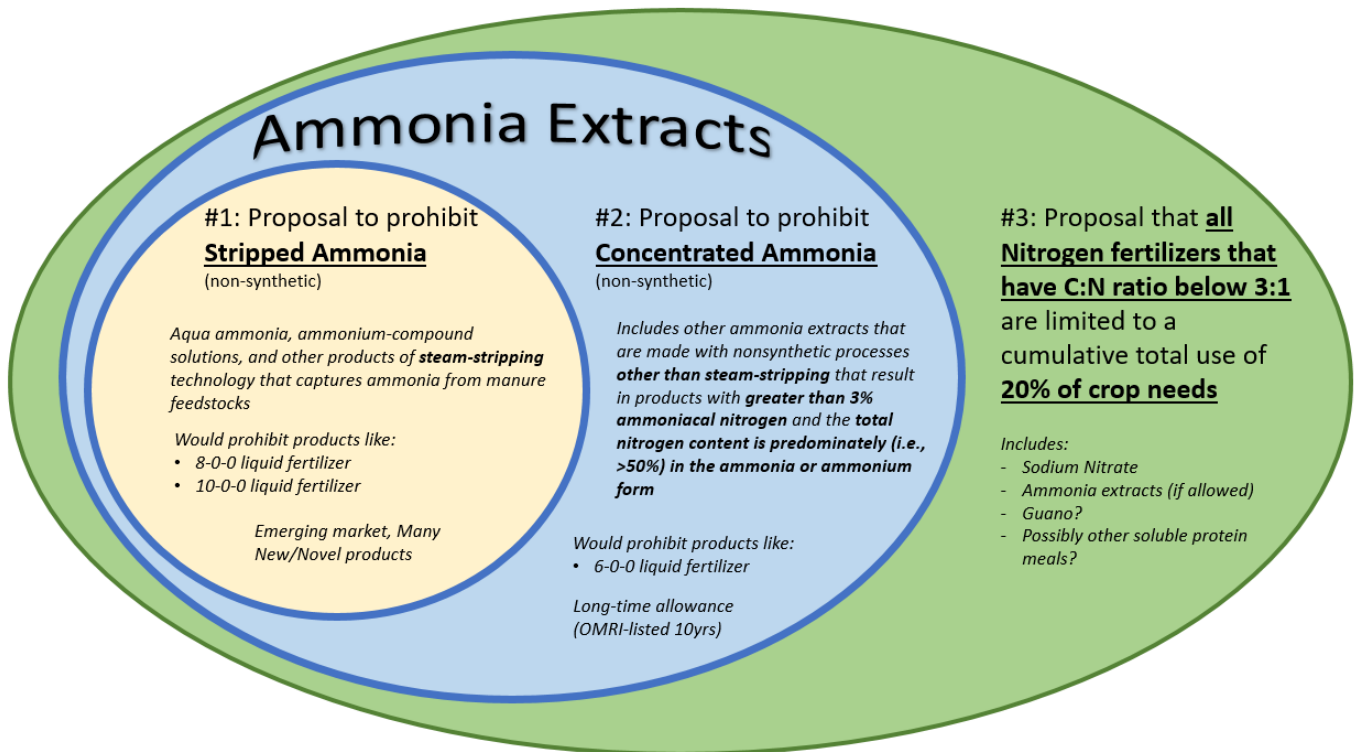


Fig 1: OTA’s Summary of 3 NOSB Motions for Ammonia Extract

II. Technical Background

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 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](#) was presented at the spring 2021 meeting that builds on comments received from the prior meeting on the topics of soil health and the potential for fraud. A third-party [Technical Report](#) was commissioned by NOSB and was also publicly released in spring 2021. NOSB indicated at the spring 2021 meeting that they are wrestling with technical aspects of this category substance as well as a fundamental question of whether these substances are compatible with organic principles and a system of sustainable agriculture. NOSB also acknowledged concerns about the definition of ammonia extract as presented in the petition being overbroad and expressed its intent to narrow the definition to avoid implicating non-target materials like compost tea or fish emulsion. A [proposal](#) consisting of one classification motion and three national list motions is presented for vote at the fall 2021 NOSB Meeting.

Manufacturing Processes of Ammonia Extracts

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. The Technical Report 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. If the ammonia extract material is ultimately classified as “nonsynthetic” per [NOP 5033](#) and [NOP 5033-1](#) by an accredited certifier or material review organization, the material would be impacted by the petition. If “synthetic,” it is already prohibited and would need to be petitioned to §205.601 in order to allow.

Conventional manure is a common starting material for ammonia extracts described in the petition, technical report, and public comments. 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 physical and mechanical processes such as heating, pressurization, diffusion, evaporation, cooling, condensation, distilling, filtration, reverse-osmosis, etc. involved in “ammonia stripping” and/or “ammonia concentration” are also nonsynthetic processes. Use of processing aids, extractants, stabilizers, pH adjusters or other additives are subject to review and can influence the classification of the end product.

In general, ammonia extracts from “**ammonia stripping**” (steam stripping, distillation, etc.) are made using pressured air and/or heat, or other thermo-mechanical derivations of the steam-stripping technology,

to facilitate evaporation of ammonia gas from an agricultural feedstock followed by a cooling/condensation step that captures the ammonia gas as a purified ammonia-containing condensate. Resulting products encompass a wide variation of “purified” forms of aqua ammonia or ammonium-compound solutions, and may or may not may retain traces of carbon from original agricultural feedstock. Products produced by ammonia stripping are considered novel; new products are only recently being commercialized or are still in development.

Ammonia extracts from “**ammonia concentration**” in general are made using solids-filtration and pressured air and/or heat to facilitate evaporation of water from an agricultural feedstock (solids removed) thereby concentrating the liquid ammonia-containing waste solution. Resulting products are concentrated nitrogen-containing liquid waste filtrates that contain ammonia and ammonium compounds, other nutrients and organic compounds retained from the original agricultural feedstock. Products produced by this method are not considered new or novel, as at least one product has been on the OMRI List of approved brand name materials for nearly a decade (See Impacted Products below).

Technical difference between stripped and concentrated ammonia extracts will vary depending on the particular products being compared. In general, based on information in the petition, technical report, and in public comments, concentrated ammonia products may have lower ammoniacal nitrogen levels than stripped ammonia products and may have more carbon and other secondary nutrients.

Impacted Products

To the best of our knowledge using information from the petition and publicly-available comments from past NOSB meetings, the following products may be included within the scope of the petition on ammonia extracts. To be clear, the National List must only refer to *generic* materials and the exact impact on brand name products will be determined by the material review organizations responsible for evaluating compliance of brand name products in accordance with final regulations.

Table 1: Impacted Products on OMRI and CDFA Lists

<p>OMRI: The following products are OMRI-Listed in the category of “Fertilizers with High Ammonical Nitrogen.” *The last two products have been identified by the manufacturer in past public comments as <u>concentrated ammonia</u> and <u>not stripped</u>.</p>		<p>CDFA: The following products appear on the CDFA list of approved materials and were identified in past public comments as being implicated by the petition. This list is not exhaustive of CDFA listed products that might be implicated.</p>	
<u>Product Name</u>	<u>Year Listed</u>	<u>Product Name</u>	<u>Year Listed</u>
EarthWise Organics Thriva N 7-0-0	2021	Phytamin Pure 5-0-0	2020
BenVireo TerraPreme 8-0-0	2021	Phytamin Premier 5-0-0 (DER;MR)	2020
Farmilizer 10-0-0	2021		
TerraPreme Liquid 8-0-0	2020		
BioStar Organics Perfect Blend SuperSix Plus 6-0-0 Liquid Organic Fertilizer*	2012		
BioStar Organics SuperSix Liquid Organic Fertilizer*	2019		

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. (See Appendix A for full text)

III. NOSB's Decision-Making Framework (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.

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 (*See 12 Questions below & the NOSB Principles of Organic Production in Appendix B*)

NOSB Guidance on Compatibility with a System of Sustainable Agriculture and Consistency with Organic Farming and Handling

(Ref: NOSB Recommendation, Adopted April 29, 2004 and incorporated in to the [NOSB Policy and Procedures Manual](#))

The OFPA Criteria for the National List requires NOSB to evaluate whether the substance is compatible with a system of sustainable agriculture and consistent with organic farming practices (OFPA §6517(c)(2)(a)(ii); §6518(m)(6)). The following 12 questions were developed by NOSB to assist in determining the compatibility of materials with organic practices.

- 1) Does the substance promote plant and animal health by enhancing the soil's physical chemical, or biological properties?
- 2) Does use of the substance encourage and enhance preventative techniques including cultural and biological methods for management of crop, livestock, and/or handling operations?
- 3) 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?
- 4) Does use of the substance have a positive influence on the health, natural behavior, and welfare of livestock?
- 5) Does the substance satisfy expectations of organic consumers regarding the authenticity and integrity of organic products?
- 6) Does the substance allow for an increase in the long-term viability of organic farm operations?
- 7) Is there evidence that the substance is mined, manufactured, or produced through reliance on child labor or violations of applicable national labor regulations?
- 8) If the substance is already on the National List, is the proposed use of the substance consistent with other listed uses of the substance?
- 9) Is the use of the substance consistent with other substances historically allowed or disallowed in organic production and handling?
- 10) Would approval of the substance be consistent with international organic regulations and guidelines, including Codex?
- 11) 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?
- 12) Does use of the substance have a positive impact on biodiversity?

IV. Organic Trade Association Positions

1. Stripped Ammonia

NOSB is considering a motion to add stripped ammonia as a prohibited substance at §205.602: “Stripped Ammonia – created by separating, isolating and/or capturing ammonia or ammonium from an agricultural feedstock or other natural source using methods such as, but not limited to, steam stripping, pressurized air, heat, condensation, and/or distillation.”

Compatibility with Organic Principles

The OFPA Criteria for the National List requires NOSB to evaluate whether the substance is compatible with a system of sustainable agriculture and consistent with organic farming practices (§6517(c)(2)(a)(ii); §6518(m)(6)). Using the OFPA criteria and the NOSB’s own guidance for assessing compatibility with organic principles, OTA finds that stripped ammonia is not compatible with organic principles. The driving factors of this conclusion are concerns about inconsistency with historically allowed substance and international standards, moving organic regulations away from promoting soil health and preventive management practices, eroding consumer trust and expectations of organic integrity, and threatening long-term viability of the organic sector.

a) Consistency with Historically Allowed Substances and International Standards
(NOSB 2004 Questions 9 & 10)

The NOP regulations reflect a long history of prohibition or restriction of highly soluble crop nutrients and soil amendments. Section 205.203 specifically references mined substances of high solubility, and the National List of Prohibited Substances either previously or currently lists Calcium chloride, Potassium chloride, and Sodium nitrate.

Although not explicitly written into the NOP regulations, organic production systems have had special concern for nitrogen inputs – fertilizers that deliver significant levels of plant-available nitrogen – as a main point of differentiation from conventional agriculture. The prohibition of synthetic nitrogen fertilizers manufactured through the Haber-Bosch process is a long-standing 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. Purified natural ammonia and ammonium compounds mimic these conventional synthetic nitrogen fertilizers, and therefore embody similar concerns regarding compatibility with organic farming principles.

Nonsynthetic materials that mimic the functionality of synthetic nitrogen fertilizers have been a concern for NOSB in the past. Sodium nitrate was recommended for prohibition 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, 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.”

Highly soluble nitrogen sources are out of step with international norms and can present barriers to international trade. For example, sodium nitrate is identified as a critical variance² in the U.S.-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.

b) Promoting Soil Health and Preventive Management Practices

(Ref: OFPA 6518(m)(7) & NOSB 2004 Question 2 & NOSB 2001 Principle 1.1)

The unrestricted allowance of ammonia extract fertilizers is a practice that we believe will move the organic regulations **farther away from, not closer to**, the principles of fostering physical, chemical, biological systems of soil as the basis of soil and plant fertility, and emphasizing preventive management practices in crop operations. The regulations at §205.200 require organic operations to maintain or improve the natural resources of the operation, including soil and water quality, and §205.203 & §205.205 require producers to manage soil fertility and crop nutrients with cultural and preventive practices including crop rotations, cover crops, the application of compost and manure soil amendments, and tillage. In the absence of more explicit standards that prevent farmers from over-using highly soluble nitrogen inputs, there is a risk that the allowance of these materials could be used as a means of avoiding or deprioritizing these key organic management practices that improve soil health outcomes. Of course, not all operations would do this, but it does point to the need for a more comprehensive standards development process to address the role of appropriate (compatible) soluble nutrient inputs across organic crop production systems. Such safeguards may be accomplished through further work within the NOSB’s subsequent proposal on a new practice standard.

c) Expectations of Consumers for Organic Integrity

(Ref: NOSB 2004 Question 5)

The allowance of ammonia extract fertilizers threatens consumer trust and expectations of organic integrity. The environmental benefits of farming practices that improve water quality and soil health are a motivating factor when shoppers choose Organic, along with health, nutrition, and avoidance of harmful chemicals and artificial ingredients. Soil, water and climate health are all motivators that have begun to climb appreciably in the last 3 years, particularly as widespread climate disasters have taken a more prominent place in the news.

Objections to the compatibility of these substances with organic principles are serious enough to potentially lead to fragmentation of the organic market. If organic shoppers do not correlate these values with the Organic label, it will drive proliferation of soil health (“regenerative”) add-on labels that we already see in the marketplace. Some companies have indicated they may be prepared to establish private standards that exclude products produced with ammonia extracts from their supply chain.

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

² <https://www.ams.usda.gov/services/organic-certification/international-trade/Canada>

d) *Protecting Long-term Viability of Organic Sector*
(Ref: NOSB 2004 Question 6)

For organic farming to remain viable, organic integrity and consumer confidence must be upheld by strong standards. The organic sector is already threatened by a stagnant standards development process that is not keeping up with industry needs or consumer expectations, and the resulting proliferation of add-on labels and market fragmentation. We have sincere concerns that allowing a controversial material such as stripped ammonia would exacerbate issues that already fragment the organic market and may cause long-term harm to organic integrity. We believe that the allowance of stripped ammonia will not protect long-term viability of the organic sector.

e) *Resource Efficiency and Innovation*
(Ref: NOSB 2004 Question 3 & NOSB 2001 Principle 1.2.6)

Ammonia extracts made from renewable resources, e.g. manure, are compatible with organic principles of using renewable resources and recycled materials. Ammonia extracts also allow for precision nutrient applications by isolating Nitrogen from Phosphorus, allowing each nutrient to be applied independently to the areas where it is needed, avoiding over or under-applications of either nutrient. By stabilizing nitrogen early in the manure life cycle, ammonia extract products prevent nitrogen loss from erosion and ammonia volatilization. We do not discount or dismiss the very valuable resource efficiency attributes of ammonia extract products.

When taking all of the factors of compatibility with organic principles into account, the positive attributes of ammonia extracts in terms of resource efficiencies do not outweigh the other concerns regarding compatibility with organic principles, particularly: consistency with historically allowed substances and international standards, promoting soil health and preventive management practices, consumer expectations of organic integrity, and protecting long-term viability of the organic sector. Resource efficiency is incredibly important, and fostering the cycling of resources is a foundational aspect of the organic regulations. However, it is not the organic farm's responsibility to recycle the waste streams of the conventional livestock farming industry, especially when the use of such recycled waste streams has the potential to conflict with organic farming practices and principles. The organic regulations already require organic livestock operators to manage manure in a manner that optimizes recycling of nutrients and does not put soil or water quality at risk (§205.239(e)). OTA is committed to exploring and supporting other means and innovations to improve resource efficiency of organic farm inputs without compromising organic principles.

a) *Fraud Prevention*

The potential for fraud is not directly referenced in the NOSB's compatibility criteria but must be considered to ensure that organic integrity is maintained. 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 (HNLF). 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 HNFLF products on OMRI and CDFA's 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 and expand 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 Prevention 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.

Necessity for Production and Availability of Suitable Alternative Materials and Practices

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)).

Many growers are not currently using these products and some may not want or need to use these products; alternative inputs and practices are sufficient for their soil fertility program. We recognize that stripped ammonia products represent an emerging product category and for the most part are not widely used, although there may be a few products in commercial use within recent years. As described in the Technical Background section of these comments (See Section II Impacted Products), products with high ammoniacal nitrogen (other than ammonia concentrates) appear to have only been OMRI or CDFA listed since last year (2020).

Other growers do see ammonia extracts as a potential helpful tool in narrow limited scenarios when plant-available nitrogen supplementation might be needed. For example: in cold soils when carbon-based fertilizers are not breaking down; after large rain events that remove all of the available nitrogen from the soil; as a supplement to a regular fertility program for high nitrogen requiring crops, like broccoli; as a rescue treatment for any reason where nitrogen is low; and for specialty organic crops like blueberry, which don't utilize nitrate to any great degree and grow better on a fertility program that provides ammoniacal nitrogen. 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.

Overall, our concerns about incompatibility with organic principles outweigh the potential need for using this particular fertility tool. This is an extremely difficult position as we do not take lightly the significance of removing farmer tools. OTA is committed to exploring and supporting solutions that can help organic farmers' ability to overcome these production challenges with tools that are compatible with organic principles.

Environmental and Human Health Impacts

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.

Scope of Impact

We agree with the Subcommittee's assertion that the effectiveness of a prohibition or limitation is dependent on an exact definition of ammonia extracts and that unintended consequences must be avoided. Based on the Subcommittee's proposed annotation language for "stripped ammonia" at §205.602, along with the classification motion language, the body of the proposal, the technical report, previous discussion document, and the petition, we believe we can understand the scope of "stripped ammonia" materials intended to be prohibited by this proposal.

As written in the Subcommittee's motion to classify stripped ammonia as nonsynthetic, "Stripped ammonia is intended to encompass a wide variation of novel thermo-mechanical derivations of **steam stripping technology** that result in **ammonia-containing condensate, aqua ammonia, ammonium-compound solutions**, or any products thereof, such as further isolation of ammonium compounds into a solid by precipitation or solvent evaporation, and/or treatment with nitrifying bacteria."

We understand the intent is to prohibit products made using ammonia stripping (steam stripping) technology to recover and purify ammonia from an agricultural feedstock. The products listed in Section II of this comment are examples of the recently-approved products that we understand may be impacted (note there are products in Section II that are identified as *not stripped* and therefore we wouldn't expect to be prohibited).

We understand the intent is *not to prohibit* traditional manure products or other agricultural feedstocks that are processed only by physical filtering or removal of water. We also expect this would *not prohibit* long-time allowed inputs such as compost teas, liquid fish products, or manure slurries because only traditional means of physical filtering and/or removal of water are used and novel ammonia stripping (steam stripping) methods are not used.

Conclusion

OTA supports the NOSB's proposal to prohibit stripped ammonia primarily on the basis of incompatibility with organic principles. We recognize that the assessment of compatibility is subjective. However this criteria is still grounded in law and in the NOSB's legal decision-making framework. OFPA

criteria at §6517(c)(2)(a) (which references inconsistency) are specific to non-synthetic materials and §6518(m) (which addresses compatibility) apply to any substance both synthetic or non-synthetic.

Material review organizations such as OMRI confirm that they are able to understand, implement, and enforce the language of the proposed listing as presented in the Subcommittee’s motion. We support further clarifications (non-substantive) to be included in NOSB’s final recommendation as needed to ensure consistent implementation based our understanding of the scope of impact described above.

2. Concentrated Ammonia

NOSB is considering a motion to add concentrated ammonia as a prohibited substance at §205.602: “Concentrated Ammonia – contains greater than 3% ammoniacal nitrogen and the total nitrogen content is predominately (i.e., >50%) in the ammonia or ammonium form.”

Compatibility with Organic Principles

Concentrated ammonia products, as defined by the proposed listing motion, represent inputs that deliver significant levels of plant-available nitrogen which are not compatible with organic principles for the same reasons described previously for stripped ammonia. Despite technical differences that may exist between the manufacturing processes and outputs of stripped versus concentrated ammonia, there is no difference in the conclusion that these materials are not compatible with organic principles. The driving factors of this conclusion, as with stripped ammonia, are concerns about inconsistency with historically allowed substance and international standards, moving organic regulations away from promoting soil health and preventive management practices, eroding consumer trust and expectations of organic integrity, and threatening long-term viability of the organic sector.

Complications that arise from classifying long-time allowed substance as “incompatible”

Products produced by the ammonia concentration method have been OMRI Listed for nearly a decade and are not considered to be new or novel, yet the organic sector is just now identifying and addressing these materials as a result of a petition. We encourage ongoing conversation to identify the learning opportunities from this situation and implement solutions to prevent similar situations in the future. If the organic regulations had included a comprehensive standard regarding the role of highly soluble nutrients in organic farming systems, could this situation have been avoided? Perhaps, and we believe such standards can be developed through further work within the next proposal on new practice standard.

The NOP framework also needs to be evaluated for improvements to the feedback loops between certifiers, material reviewers, and NOP when a material review decision is questioned or a concern is raised. Stripped ammonia was brought to NOP’s attention in 2018 before any products were approved by material review organizations, but no action was taken to require NOSB’s evaluation (see Appendix C of the Petition); now at least 6 products – and counting – are approved (See Section II of this comment). NOP intervention could have ensured timely review of these substances prior to commercial proliferation.

The inherent structure of the National List allows all nonsynthetic materials unless specific action is taken to prohibit individual generic materials, and the National List reserves a section for the “exceptions” -- nonsynthetic that are prohibited. The development of the National List included proactive review of certain types³ of nonsynthetic materials, resulting in several listings of prohibited naturals. We need an ongoing mechanism for proactively identifying and reviewing incompatible nonsynthetic substances, instead of waiting for individual petitions.

Necessity for Production and Availability of Suitable Alternative Materials and Practices

As described previously for stripped ammonia, our concerns about incompatibility of high ammoniacal nitrogen inputs with organic principles outweigh the potential need of these tools. This is an extremely difficult position as we do not take lightly the significance of removing farmer tools. OTA is committed to exploring and supporting solutions that can help organic farmers’ ability to overcome these production challenges with tools that are compatible with organic principles.

Environmental and Human Health Impacts

As described previously for stripped ammonia, please refer to comments submitted by The Organic Center for information to support NOSB’s evaluation of environmental impacts and soil health.

Scope of Impact

As we understand it, this proposal for prohibiting “concentrated ammonia” would expand the scope of prohibited products (from the stripped ammonia proposal) to other nonsynthetic ammoniacal-nitrogen-containing inputs that may not already be covered (prohibited) by the proposal on stripped ammonia. This proposal would prohibit ammonia fertilizers (including those made without stripping technology) that exceed the numerical thresholds in the listing. The definition provided in the NOSB Subcommittee’s motion effectively serves as a “quantitative backstop” to prohibiting fertilizers that might not already be prohibited by process-based definition of stripped ammonia. The quantitative definition is beneficial because it has been difficult to define concentration (by its process) without implicating other items outside scope of petition. Water evaporation and solids filtration are very common processes with dozens of other nonsynthetic plant and animal materials.

It is absolutely critical that this quantitative definition not prohibit other common Nitrogen-containing nonsynthetic fertility inputs that are outside the intended scope of the petition and this proposal, 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 through traditional processes such as

³ OFPA §6518(k)(4) Special review of botanical pesticides - The Board shall, prior to the establishment of the National List, review all botanical pesticides used in agricultural production and consider whether any such botanical pesticide should be included in the list of prohibited natural substances.

physical filtering or removal of water. If a product is made using these traditional means (i.e. not stripped) and does not exceed the numerical thresholds, it would not be prohibited by this proposal.

<i>Example of non-target material:</i>	<i>Total N %</i>	<i>Ammonical N%</i>	<i>Outcome under Concentrated Ammonia Proposal</i>
High Nitrogen Liquid Fish Fertilizer	4%	Between 1-1.5%	Not prohibited but still subject to HNLF requirements
Manure Slurry	1%	Less than 0.5%	Not prohibited
Blended Fertilizer with Soluble Protein	12%	Less than 1%	Not prohibited
Compost Tea	Less than 1%	Less than 1%	Not prohibited

Also, it is important to ensure a common understanding about the status of stripped and concentrated ammonia if NOSB passes both the stripped and concentrated ammonia proposals and NOP combines into a single listing at §205.602. Our understanding is that stripped ammonia products would be prohibited full stop, and stripped ammonia products would *not* be allowed *even if* they are formulated below the numeric thresholds identified in the concentrated ammonia listing. Products that contain less than 3% Ammonical nitrogen would be allowed -- unless they are made by stripping in which case they'd be prohibited by the prohibition on stripped ammonia.

Conclusion

OTA supports the NOSB's proposal to prohibit concentrated ammonia primarily on the basis of incompatibility with organic principles.

By looking at the classification language, the body of the proposal, the technical report, and the petition, we believe we can understand the scope of "concentrated ammonia" materials intended to be prohibited by this proposal. Material review organizations such as OMRI confirm that they are able to understand, implement, and enforce the language of the proposed listing as presented in the Subcommittee's motion. We support further clarifications (non-substantive) to be included in NOSB's final recommendation as needed to ensure consistent implementation based our understanding of the scope of impact described above. We also support the further development of best practices (such as updating NOP Guidance [5034](#) & NOP [5034-1](#)) for sound and sensible implementation of this proposal, especially for common non-target materials that don't readily have ammoniacal N analysis data available such as on-farm manure.

It is critical that the proposed language does not implicate any non-target materials outside the intended scope of the petition. If substantive edits are needed to ensure confidence, we support the Subcommittee in continuing to work on the language.

3. Practice Standard

NOSB is considering a motion to add a new practice standard to §205.203(f): “Nitrogen products with a C:N ratio of 3:1 or less, including those that are components of a blended fertilizer formulation, are limited to a cumulative total use of 20% of crop needs.”

The development of practice standards regarding the use of highly soluble plant-available nutrients is an extremely important topic for NOSB consideration and focus. We agree that we need to be thinking about highly soluble nutrients in a comprehensive manner given the long-standing concern in the NOP regulations with these materials and the emergence of inputs other than mined minerals that deliver highly soluble nutrients. This entire issue of nutrient solubility in relation to the National List must be clarified in the future for growers across production systems to have clear standards. We can’t continue to create a standard via the National List and annotations. Many concerns regarding the use of highly soluble plant-available nutrients previously mention in regard to stripped and concentrated ammonia could be addressed through the development of practice standards.

The particular language in this proposed practice standard is not ready for implementation.

Outlined below are the question that we have about the language, enforceability, and effectiveness of the proposal to advance organic standards.

We have questions about whether certifiers, inspectors, operators have the information and tools to understand, demonstrate, and verify compliance with this language.

- What is the definition of a “nitrogen product”? Which products are subject to verification?
- How are C:N ratio expected to be confirmed? This information is not readily available. Are labs required or may operators use third-party references? Which references appropriate?
- We need a stronger and more confident understanding of materials that would get restricted, especially for materials are on the “borderline” of 3:1 (guano, protein meals, protein hydrolysates, etc.)
- Is the calculation method clear? The 20% restriction has been a challenge to verify in the past of sodium nitrate. This language will expand and increase complexity of this verification practice to all operators even if they aren’t using sodium nitrate.
- What is the purpose of ingredient-level verification in final blended products that are above 3:1?

We also have questions about whether NOSB has enough technical information to inform a recommendation on this topic. Important areas of information may include:

- Difference between plant-availability and water-solubility of nutrients
- Definition of “highly soluble” substances
- Science-based and data-driven thresholds to distinguish target materials (e.g. is 3:1 the right line to draw?)
- Understanding of how highly soluble and plant-available nutrients are used across different soil types, crop types, and crop growth rates
- Understanding of international organic standard schemes related to use of highly soluble plant nutrients
- Research on environmental impacts of highly soluble nutrients in organic systems

We also have questions about applicability of this practice standard across crop production systems. As proposed, this practice standard would appear at §205.203. However, this section of the regulations is apparently not universal (e.g. NOP has said some provisions are not applicable to container-based production systems), so there is a risk this would only apply to operations that plant in the ground and create an uneven playing field. NOP needs to comment directly to this question before NOSB recommendations are developed so that intended outcomes can be realistically understood. Furthermore, the ongoing absence of standards specific to container and greenhouse production is extremely problematic. The wide variation and significant inconsistencies in certifiers' implementation of the crop production standards is resulting in an un-level playing field among operators and confusion among consumers.

OTA support sending back to subcommittee for further work and keeping this topic on the work plan. The language presented in the Subcommittee's third motion needs additional work but we strongly encourage this topic to stay on the NOSB work plan. This topic represents an extremely important area of work that is critical to advancing the organic standards.

V. Conclusion

OTA supports the NOSB's proposal to prohibit stripped ammonia and concentrated ammonia primarily on the basis of incompatibility with organic principles. The driving factors of this conclusion are concerns about inconsistency with historically allowed substance and international standards, moving organic regulations away from promoting soil health and preventive management practices, eroding consumer trust and expectations of organic integrity, and threatening long-term viability of the organic sector. We also recognize the additional complications that arise from classifying long-time allowed concentrated ammonia products as incompatible with organic production principles.

We believe that many concerns regarding the use of highly soluble plant-available nutrients can be addressed through the development of practice standards. The concepts and language presented in the Subcommittee's third motion need additional work but we strongly encourage this topic to stay on the NOSB work plan. This topic represents an extremely important area of work that is critical to advancing the organic standards.

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 Miranda
Farm Policy Director
Organic Trade Association

cc: Laura Batcha
Executive Director/CEO
Organic Trade Association

Appendix A

§205.203 Soil fertility and crop nutrient management practice standard.

- (a) The producer must select and implement tillage and cultivation practices that maintain or improve the physical, chemical, and biological condition of soil and minimize soil erosion.
- (b) The producer must manage crop nutrients and soil fertility through rotations, cover crops, and the application of plant and animal materials.
- (c) The 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. Animal and plant materials include:
- (1) Raw animal manure, which must be composted unless it is:
 - (i) Applied to land used for a crop not intended for human consumption;
 - (ii) Incorporated into the soil not less than 120 days prior to the harvest of a product whose edible portion has direct contact with the soil surface or soil particles; or
 - (iii) Incorporated into the soil not less than 90 days prior to the harvest of a product whose edible portion does not have direct contact with the soil surface or soil particles;
 - (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) Uncomposted plant materials.
- (d) A producer may manage crop nutrients and soil fertility 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 by applying:
- (1) A crop nutrient or soil amendment included on the National List of synthetic substances allowed for use in organic crop production;
 - (2) A mined substance of low solubility;
 - (3) A mined substance of high solubility: *Provided*, That, the substance is used in compliance with the conditions established on the National List of nonsynthetic materials prohibited for crop production;
 - (4) Ash obtained from the burning of a plant or animal material, except as prohibited in [paragraph \(e\)](#) of this section: *Provided*, That, the material burned has not been treated or combined with a prohibited substance or the ash is not included on the National List of nonsynthetic substances prohibited for use in organic crop production; and
 - (5) A plant or animal material that has been chemically altered by a manufacturing process: *Provided*, That, the material is included on the National List of synthetic substances allowed for use in organic crop production established in [§ 205.601](#).
- (e) The producer must not use:
- (1) Any fertilizer or composted plant and animal material that contains a synthetic substance not included on the National List of synthetic substances allowed for use in organic crop production;
 - (2) Sewage sludge (biosolids) as defined in [40 CFR part 503](#); and
 - (3) Burning as a means of disposal for crop residues produced on the operation: *Except*, That, burning may be used to suppress the spread of disease or to stimulate seed germination.

Appendix B

NOSB Principles of Organic Production

(Ref: 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.