

April 5, 2021

Michelle Arsenault
National Organic Standards Board
USDA-AMS-NOP
1400 Independent Ave., SW
Room 2648-S, Mail Stop 0268
Washington, D.C. 20250-0268

Re: Meeting of the National Organic Standards Board
Docket # AMS-NOP-20-0089

Dear National Organic Standards Board Members:

The following comments are submitted to you on behalf of The Cornucopia Institute, whose mission is, in part, to support economic justice for family-scale farming.

Ammonia Extracts—petitioned

The Cornucopia Institute champions the stewardship of soil in organic agriculture. We support the prohibition of ammonia extracts for use in organic crop production. The National Organic Coalition and Beyond Pesticides have offered thorough reviews of the research and we defer to their comments in this instance.

Whether synthetic or non-synthetic, ammonia extracts are incompatible with organic production because they cause harm to the soil and do not “foster soil fertility, primarily through the management of the organic content of the soil through proper tillage, crop rotation, and manuring...” as OFPA requires (7 USC § 6513).

Cornucopia has additional concerns about the intended purposes of this specific petition. It has come to our attention that the petitioner may have included a business competitor’s product in the petition to prohibit. Based on Cornucopia’s preliminary findings, this product, made by Perfect Blend/BioStar, appears not to meet the definition of an extract (it has also been approved for use by OMRI since 2012).

We recommend more review of this specific product prior to its potential inclusion on §205.602.

Handling Subcommittee—Carrageenan

Cornucopia opposes the re-listing of carrageenan in §205.605(a) due to concerns about human health impact. Even a cursory search of the research literature since the 2016 limited scope Technical Review (TR) shows that the science surrounding carrageenan has evolved significantly since that time. A new TR considering both the human health impacts *and* the legitimate environmental impact concerns raised by the subcommittee is warranted.

While carrageenan is a very common food additive in processed foods, it predictably causes inflammation in thousands of cell-based and animal experiments. Dr. Tobacman's work in the field remains relevant, and studies by other scientists continue to show that carrageenan can be problematic for human health.

The subcommittee discussion concerning carrageenan does not appear to take into account the evolving research or the increasing awareness and concern of consumers in the marketplace. Carrageenan is routinely consumed in the typical Western diet. An average individual is predicted to consume as much as 2 to 4 grams/day; an industry-sponsored study suggested there was average daily intake of 1.08 to 7.2g/day in a 132lb person.¹ Evidence suggests that carrageenan has actually *increased* in Western diets since carrageenan was last reviewed by the NOSB.

The following is a snapshot of research published since 2017 regarding the human-health effects of carrageenan:

- Research published in early 2017 showed that carrageenan disrupts normal gut function, promotes intestinal inflammation, and consequently could compromise consumer health.² More research was recommended.
- Also in 2017, further research into the effect of carrageenan on the human intestine found basis for concern. Specifically, carrageenan may trigger or magnify an inflammatory response in the human intestine. The researchers determined that more study was needed because it seemed consumption of carrageenan was a risk factor, but did not seem to be the sole cause involved in the development of IBD or in disease recurrence after treatment.³ The researchers also highlighted the prevalence of carrageenan in pediatric diets as a cause for concern.
- A randomized, double-blind, placebo-controlled, multicenter, clinical trial published in 2017 showed that people with colitis should avoid carrageenan. Patients who received carrageenan-containing capsules relapsed, and none of the patients who received placebo-containing capsules relapsed in their colitis disease. Laboratory tests showed increases in inflammatory biomarkers in those trial participants who received carrageenan.⁴
- A review of carrageenan safety research in 2019 came to three conclusions. First, they concluded that there isn't enough information about current consumption rates. Second, the link between carrageenan's properties, its impact on digestion, and the colon microbiome and inflammation are yet to be fully resolved. Third, there is not enough

¹ See Sumit Bhattacharyya, et al. Jan 1, 2017. "A Randomized Trial of the Effects of the No-carrageenan Diet on Ulcerative Colitis Disease Activity." 181 – 192. DOI: 10.3233/NHA-170023.

<https://content.iospress.com/articles/nutrition-and-healthy-aging/nha170023>

² Lulu Fahoum, et al. January 25, 2017. "Digestive fate of dietary carrageenan: Evidence of interference with digestive proteolysis and disruption of gut epithelial function." Mol Nutr Food Res, 61(3). doi: 10.1002/mnfr.201600545. <https://pubmed.ncbi.nlm.nih.gov/27718308/>

³ John Vincent Martino, Johan Van LimbergenI, and Leah E. Cahill. May 1, 2017. "The Role of Carrageenan and Carboxymethylcellulose in the Development of Intestinal Inflammation." Front. Pediatr., 1(5):96. doi:10.3389/fped.2017.00096. <https://pubmed.ncbi.nlm.nih.gov/28507982/>

⁴ Sumit Bhattacharyya, et al. Jan 1, 2017. "A Randomized Trial of the Effects of the No-carrageenan Diet on Ulcerative Colitis Disease Activity." 181 – 192. DOI: 10.3233/NHA-170023.

<https://content.iospress.com/articles/nutrition-and-healthy-aging/nha170023>

research on carrageenan's effect on predisposed populations, such as elderly people or IBD patients. Essentially, carrageenan has not been definitively determined as "safe" and more research needs to be done.⁵

- Research into inflammation and carrageenan in 2020 found that inflammatory properties of carrageenan are related to carrageenan's modification of the intestinal microbiome. In addition they found that carrageenan can exacerbate chronic inflammation (which could explain why people with existing chronic conditions improve with a carrageenan-free diet).⁶

Current research backs up the experience of countless individuals who experience health problems when consuming carrageenan. Note that if you look at the *source* of studies in favor of carrageenan, they are often conducted by people or institutions funded by the industry. While it can be difficult to track down affiliations, it is important to consider the source of research and information.

The GRAS (Generally Regarded as Safe) status of carrageenan further complicates matters for individuals seeking to avoid ingesting carrageenan. When used as a processing aid or included in ingredients used in the final product (e.g. when carrageenan is in the cream used to make ice cream), carrageenan is not listed on the ingredient panel. Banning its use in organic food would give consumers affected by carrageenan a safe harbor.

Handling Subcommittee—Fish oil annotation

Cornucopia is in full agreement with Beyond Pesticide's comments on this issue area. The use of oceanic fish in organic handling is problematic. The proposed annotations would fail to cure the issues in the industry because they are not sufficient to protect marine ecosystems and/or because they would be difficult or impossible to enforce.

Crops Subcommittee—Proposal: Biodegradable biobased mulch film annotation change

Cornucopia *does not support an annotation change* to loosen restrictions on bioplastic film. As stated in previous comments, Cornucopia urges the NOSB and the NOP to use the *precautionary principle* with all forms of biodegradable biobased mulch films (BBMF).

BBMF technology has only been in the marketplace for a short time. We do not know with certainty how the soil microbiome, watersheds, or other biological systems will be impacted by their use. What we do know about the impacts of BBMF is concerning, especially with respect to microplastics in the environment.

⁵ Shlomit David, et al. 2019. "Revisiting the carrageenan controversy: do we really understand the digestive fate and safety of carrageenan in our foods?" *Food Funct.*, 10, 1763. DOI: 10.1039/C9FO00018F.
<https://pubs.rsc.org/en/content/articlelanding/fo/2018/c7fo01721a#!divAbstract>

⁶ Ye Mi, et al. March 15, 2020. "Native κ -carrageenan induced-colitis is related to host intestinal microecology." *International Journal of Biological Macromolecules*, 147: 284-294. DOI: 10.1016/j.ijbiomac.2020.01.072.
<https://www.sciencedirect.com/science/article/abs/pii/S0141813019390828>

As reiterated in Cornucopia's previous comments,⁷ there is ample research showing that microplastics cause significant harm to the environment and possibly human health. Plastic mulches like those in the current discussion, packaging, and sewage sludge are three major sources of soil microplastics.⁸ Because microplastics may pose a threat to soil fertility, food security, and human health, BBMFs are incompatible with organic production and *will likely remain incompatible in the future*.

While not opposed to further research into the viability of BBMF, ultimately, the use of plastics as production aids in organic production should be limited.

⁷ See The Cornucopia Institute's Fall 2020 comments on this topic for a summary of some of the prevailing research.

⁸ Wang J, et al. November 15, 2019. "Microplastics as contaminants in the soil environment: A mini-review." *Science of The Total Environment*, 691: 848-857.

<https://www.sciencedirect.com/science/article/abs/pii/S0048969719333236>