



# BEYOND PESTICIDES

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Ms. Michelle Arsenault  
National Organic Standards Board  
USDA-AMS-NOP  
1400 Independence Ave. SW.,  
Room 2648-S, Mail Stop 0268  
Washington, DC 20250-0268

## Re. MS: Research Priorities

These comments to the National Organic Standards Board (NOSB) on its Fall 2017 agenda are submitted on behalf of Beyond Pesticides. Founded in 1981 as a national, grassroots, membership organization that represents community-based organizations and a range of people seeking to bridge the interests of consumers, farmers and farmworkers, Beyond Pesticides advances improved protections from pesticides and alternative pest management strategies that reduce or eliminate a reliance on pesticides. Our membership and network span the 50 states and the world.

Beyond Pesticides supports all of the research priorities identified by the subcommittees except for the celery powder proposal for which we would like to see research into alternatives. We suggest adding a priority on marine materials.

## Celery Powder

Our opposition to celery powder on §205.606 is based not only on the hazards associated with nonorganic production of celery, but also on the hazards of nitrites in food. Cultured celery powder is a way of adding "natural" nitrites. The quotation marks are appropriate since it is not possible to achieve the high levels of nitrate needed through organic celery production, though this research priority would seek to find a way to increase those nitrate levels.

Given the known health effects of nitrates, we have not seen a good reason for keeping celery powder on the National List. ATSDR/CDC lists, for example, methemoglobinemia, hypotension, risk of pregnancy complications, a number of reproductive effects, and cancer, among others. Regarding cancer, ATSDR says:

Some study results have raised concern about the cancer-causing potential of nitrates and nitrites used as preservatives and color-enhancing agents in meats [Norat et al. 2005; Tricker and Preussmann 1991]. Nitrates can react with amino acids to form nitrosamines, which have been reported to cause cancer in animals [Bruning-Fann and Kaneene 1993]. Elevated risk of non-Hodgkin's lymphoma [Ward et al. 1996] and

cancers of the esophagus, nasopharynx, bladder, colon, prostate and thyroid have been reported [Cantor 1997; Eichholzer and Gutzwiller 1998; Barrett et al. 1998; Ward et al. 2010].

An increased incidence of stomach cancer was observed in one group of workers with occupational exposures to nitrate fertilizer; however, the weight of evidence for gastric cancer causation is mixed [Van Loon et al. 1998; Xu et al. 1992]. Epidemiological investigations and human toxicological studies have not shown an unequivocal relationship between nitrate intake and the risk of cancer [Alexander et al. 2010; Mensinga et al. 2003].

The International Agency for Research on Cancer (IARC) classifies nitrates and nitrites as "probably carcinogenic to humans" (Group 2A) under certain conditions (i.e. ingested nitrate or nitrite under conditions that result in endogenous nitrosation) which could lead to the formation of known carcinogens such as N-nitroso compounds [IARC 2010].<sup>1</sup>

Finally, recent work demonstrates serious hormonal impacts of nitrate exposure.<sup>2</sup>

OFPA §6510(a)(2)-(3) makes it illegal to:

- (2) add any ingredient known to contain levels of nitrates, heavy metals, or toxic residues in excess of those permitted by the applicable organic certification program;
- (3) add any sulfites, except in the production of wine, nitrates, or nitrites;

The regulations at §205.301(f)(5) state that organic products must not "Contain sulfites, nitrates, or nitrites added during the production or handling process, Except, that, wine containing added sulfites may be labeled "made with organic grapes."

Celery powder is used in such a way that it adds significant nitrite, in light of the following.

Celery powder prepared from celery juice has been shown to have a nitrate content of approximately 2.75%. When using juice powder added at 0.2%, 0.35%, or 0.4% (on a total formulation basis), and assuming 100% nitrate-to-nitrite conversion, ingoing nitrite concentrations of approximately 69, 120, and 139 ppm (based on meat block), respectively, could be expected. As the amount of celery juice powder in the formulation increases, higher amounts of generated nitrite can be expected. . . From these results it was determined an uncured product with nitrite replaced with a source containing naturally occurring nitrate could result in a product with higher levels of residual nitrite than one in which nitrite was originally and intentionally added.<sup>3</sup>

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<sup>1</sup> <http://www.atsdr.cdc.gov/csem/csem.asp?csem=28&po=10>.

<sup>2</sup> Guillette, L. J., & Edwards, T. M. (2005). Is nitrate an ecologically relevant endocrine disruptor in vertebrates?. *Integrative and Comparative Biology*, 45(1), 19-27.

Guillette, L. J. (2006). Endocrine disrupting contaminants-beyond the dogma. *Environmental Health Perspectives*, 114, 9.

<sup>3</sup> [Ingredients in Meat Products: Properties, Functionality and Applications](#). pp. 398–399.

The concentrations above should be compared to the limit of 10 ppm in drinking water and the European Commission's (EC) Scientific Committee for Food (SCF) Acceptable Daily Intake (ADI) for the nitrate ion of 3.65 mg/kg body weight (equivalent to 219 mg/day for a 60 kg person).

Thus, instead of seeking a way to grow celery organically with more nitrates, the NOSB should seek an alternative to nitrates/nitrites in processed meats.

## **Marine Materials**

The various marine algae (seaweeds) used in organic products and production come from a large number of different species. The harvesting of some of these species for food, feed, or agricultural inputs has a negative impact on the populations of marine algae and the ecosystems they support. A great deal is known about the negative impacts of the harvest of rockweed (*Ascophyllum nodosum*), which can be found in the intertidal zone. Less is known about impacts of the harvest and cultivation of other species.

In our comments on marine algae, we suggest that all seaweed used in organic products and production be subject to the criteria for wild-crafting, that they be “harvested from a designated area that has had no prohibited substance, as set forth in §205.105, applied to it for a period of 3 years immediately preceding harvest and harvested in a manner that ensures that such harvesting or gathering will not be destructive to the environment and will sustain the growth and production of the population of the species.” However, it appears that the knowledge of the ecology of these species necessary to determine which practices are destructive to the environment is not available for all of these species.

Therefore, we ask that the NOSB add to its list of research priorities research into the ecology of marine algae used in organic products and production that can lead to appropriate limitations on their harvest and culture.

Thank you for your consideration of these comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Terry Shistar".

Terry Shistar, Ph.D.  
Board of Directors