



BEYOND PESTICIDES

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October 12, 2016

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. HS: Calcium sulfate –mined

These comments to the National Organic Standards Board (NOSB) on its Fall 2016 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.

In reviewing this substance, the NOSB must apply the criteria in the Organic Foods Production Act (OFPA), that its use—

- (i) would not be harmful to human health or the environment;
- (ii) is necessary to the production or handling of the agricultural product because of the unavailability of wholly natural substitute products; and
- (iii) is consistent with organic farming and handling.¹

We support renewing the listing of calcium sulfate with the annotation, *“For use only as a coagulant in bean curd (tofu and similar products).”*

What are the human health and ecological impacts?

As stated by one TAP reviewer,²

Calcium sulfate derived from natural sources impacts the environment in that mining operations are needed to obtain it. This involves quarrying or blasting, and the use of heavy equipment. In addition to the direct impact of the mining operations on the Earth, there is a negative impact caused by the generation of gypsum dust in the process. This dust can affect air quality, and can be a potential exposure hazard to humans and other animals. There are no other known negative effects of toxicity and/or persistence in the environment caused by production of calcium sulfate from these methods, as long as standard regulations for proper mining activities are followed.

¹ OFPA §6517(c)(1)(A). Further details at OFPA §6518(m).

² TAP references are to the 2001 TAP review of Calcium Sulfate performed by OMRI.

Calcium sulfate is an irritant to eyes and skin, and when inhaled. We have not seen any reports indicating that problems associated with Chinese gypsum in drywall are problems for food-grade calcium sulfate.

Is there a need?

Calcium sulfate has been used as a coagulant for tofu for over 2000 years in China. Although there are other coagulants that may be used, calcium sulfate is essential for traditional Chinese tofu. Other uses are allowed under this listing, and the need for them has not been established. They include: nutrient, yeast food, dough conditioner, firming agent, sequestrant, jelling agent, baking powder ingredient, carrier, pH buffer, and abrasive agent. One of the three TAP reviewers in 2001 recommended that calcium sulfate be approved only for use in making tofu.

Table 4
Reviewer 1 Commentary on Uses

Use/function	Products	Reviewer 1 Comments:	Alternatives
Firming agent	mainly canned fruits and vegetables	Not compatible, as the calcium sulfate would only be used to recreate texture lost during processing, or "improve" texture not had in the first place.	Grape leaves, cherry leaves, other fruit or oak leaves, for certain applications such as pickling. Salts already included on the National List.
Dough conditioner	Breads, crackers, other baked items	Not compatible or essential, as calcium sulfate is being used to improve a texture that could be otherwise achieved via alternative baking techniques. Not a necessary ingredient for any baked goods formulation.	Salt; skillful baking techniques.
Yeast food	Beer and other fermentation products	Not necessary, as there are a variety of organic ingredients which can be substrates for this purpose.	Organic foodstuffs as substrates
pH adjuster, flocculating agent, calcium source	Beer brewing, winemaking	1) As an aid in beer brewing, use of calcium sulfate purportedly increases yield when it is added to the mash tun. Supposedly it also increases yield by promoting proper gelatinization of the starch in the cooker mash, as well as protein degradation and starch conversion. Although the increase in yield is favorable to the brewer, it is not essential to the process. 2) Water adjustment is said by some brewers to often be necessary to provide a flavor and finish that is needed, particularly with top-fermented yeast. Calcium stimulates enzyme activity and improves protein digestion, stabilizes the alpha amylase, helps gelatinize starch and improves lauter runoff. While sulfates can impart off-flavors, so can chloride (salty) and carbonate (chalky). Calcium also extracts fine bittering principles of the hop and reduces wort color.	Various, depending on the process and product.
Coloring/bleaching agent	Cheeses, flours	Not compatible, as calcium sulfate is being used to alter a color without any other purpose. Not a necessary ingredient.	Food without colorants
Carrier for bleaching agent	Cereal flours	Not compatible, as color alteration is not a valid use for organic.	Unbleached flour
Jelling agent	fruit jellies	Not compatible, as other more suitable alternatives exist., and it is most often used with artificially sweetened jellies and preserves.	Pectins
Abrasive	Toothpaste, tooth powders	Not really applicable at this time for organic considerations. Alternatives exist.	Calcium carbonate

Is it consistent with principles of organic production and handling?

We ask the board to consider Table 4 from the TAP review (reproduced above). We agree that the use of calcium sulfate as a coagulant in tofu production is compatible with organic principles, but other uses should be considered individually. The information in this table might support the use of calcium sulfate in brewing, but not in other possible uses.

Conclusion

We have not seen sufficient evidence to support the use of calcium sulfate for all food uses. Therefore we support renewing the listing of calcium sulfate with the annotation, *“For use only as a coagulant in bean curd (tofu and similar products).”*

Thank you for your consideration of these comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Terry Shistar". The signature is fluid and cursive, with a long horizontal stroke at the end.

Terry Shistar, Ph.D.
Board of Directors