

NOSB COMMITTEE RECOMMENDATION

Form NOPLIST1. Committee Transmittal to NOSB

For NOSB Meeting: <u>May 2009</u>	Substance: <u>Sulfurous acid</u>
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Committee: Crops Livestock Handling Petition is for: To include sulfurous acid
on the National List § 205. 601(j)

A. Evaluation Criteria (Applicability noted for each category; Documentation attached)	Criteria Satisfied? (see B below)
1. Impact on Humans and Environment	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>
2. Essential & Availability Criteria	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>
3. Compatibility & Consistency	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>
4. Commercial Supply is Fragile or Potentially Unavailable as Organic (only for 606)	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>

B. Substance Fails Criteria Category: _____ Comments: _____

C. Proposed Annotation (if any): On-farm generation of substance utilizing 99% purity elemental sulfur per §205.601(j)(2) only.

Basis for annotation: To meet criteria above: Other regulatory criteria: _____ Citation: _____

D. Recommended Committee Action & Vote (State Actual Motion): _____

Motion by: Tina Ellor Seconded: Gerry Davis Yes: 4 No: 0 Absent: _____ Abstain: 1

Crops	<input checked="" type="checkbox"/>	Agricultural		Allowed ¹
Livestock		Non-Synthetic		Prohibited ²
Handling		Synthetic	<input checked="" type="checkbox"/>	Rejected ³
No restriction		Commercially Un-Available as Organic ¹		Deferred ⁴

- 1) Substance voted to be added as "allowed" on National List to § 205. _____ with Annotation (if any) _____
- 2) Substance to be added as "prohibited" on National List to § 205. _____ with Annotation (if any) _____
 Describe why a prohibited substance: _____
- 3) Substance was rejected by vote for amending National List to § 205. _____ Describe why material was rejected: _____
- 4) Substance was recommended to be deferred because _____
 _____ If follow-up needed, who will follow up _____

E. Approved by Committee Chair to transmit to NOSB:

Tina Ellor _____ Date March 20, 2009 _____
 Committee Chair

NOSB EVALUATION CRITERIA FOR SUBSTANCES ADDED TO THE NATIONAL LIST

Category 1. Adverse impacts on humans or the environment?

Substance - Sulfurous acid

Question	Yes	No	N/A¹	Documentation (TAP; petition; regulatory agency; other)
1. Are there adverse effects on environment from manufacture, use, or disposal? [§205.600 b.2]		X		See question 2
2. Is there environmental contamination during manufacture, use, misuse, or disposal? [§6518 m.3]	X			Burning of elemental sulfur in on farm SO ₂ generators has been tested for air emissions, resulting in .0042 lb(1.9g)SO ₂ per hour of operation For comparison, estimates of daily emissions from active volcanoes worldwide produce from 20 tons to 10 million tons per day of SO ₂ . (2003 Petition). Excessive dosages (misuse) of material could over acidify soil environment and produce detrimental effects on soil ecology.
3. Is the substance harmful to the environment? [§6517c(1)(A)(i);6517(c)(2)(A)i]		X		See question 2.
4. Does the substance contain List 1, 2, or 3 inerts? [§6517 c (1)(B)(ii); 205.601(m)2]		X		
5. Is there potential for detrimental chemical interaction with other materials used? [§6518 m.1]		X		
6. Are there adverse biological and chemical interactions in agro-ecosystem? [§6518 m.5]		X		Conditional upon use rate. Excess use rate(misuse) could over acidify and cause adverse impact on the soil environment. (petition)
7. Are there detrimental physiological effects on soil organisms, crops, or livestock? [§6518 m.5]		X		At intended use rates, the material would be expected to produce a net beneficial effect on soil organisms and crops. (petition)
8. Is there a toxic or other adverse action of the material or its breakdown products? [§6518 m.2]		X		At intended use rates, no. Excess bisulfite ion effects could be encountered with improper application rate. (petition)
9. Is there undesirable persistence or concentration of the material or breakdown products in environment?[§6518 m.2]		X		
10. Is there any harmful effect on human health? [§6517 c (1)(A)(i) ; 6517 c(2)(A)i; §6518 m.4]	X			Ingestion, inhalation, or eye contact
11. Is there an adverse effect on human health as defined by applicable Federal regulations? [205.600 b.3]			X	
12. Is the substance GRAS when used according to FDA's good manufacturing practices? [§205.600 b.5]			X	
13. Does the substance contain residues of heavy metals or other contaminants in excess of FDA tolerances? [§205.600 b.5]			X	

¹If the substance under review is for crops or livestock production, all of the questions from 205.600 (b) are N/A—not applicable.

Category 2. Is the Substance Essential for Organic Production? Substance - Sulfurous acid

Question	Yes	No	N/A ¹	Documentation (TAP; petition; regulatory agency; other)
1. Is the substance formulated or manufactured by a chemical process? [6502 (21)]	X			Substance is formed by burning of elemental sulfur in on-farm generation equipment to produce SO ₂ and inject into irrigation water. Addition of SO ₂ to irrigation water forms <u>sulfurous acid</u> . <u>Sulfurous acid</u> is a short lived, unstable molecule and thus cannot (with current knowledge) be successfully manufactured and formulated off site and shipped to the farm, hence the need for on-farm generation.
2. Is the substance formulated or manufactured by a process that chemically changes a substance extracted from naturally occurring plant, animal, or mineral, sources? [6502 (21)]		X		Substance can be produced from naturally occurring mined sulfur, but currently no elemental sulfur is being produced from mined sources. Due to air pollution abatement laws beginning in the 1970's that limited sulfur content of fuels, recovered sulfur from oil and natural gas production quickly supplanted sulfur from mined sources. (J.Ober-USGS open file report #02-298)
3. Is the substance created by naturally occurring biological processes? [6502 (21)]		X		
4. Is there a natural source of the substance? [§205.600 b.1]			X	
5. Is there an organic substitute? [§205.600 b.1]			X	
6. Is the substance essential for handling of organically produced agricultural products? [§205.600 b.6]			X	
7. Is there a wholly natural substitute product? [§6517 c (1)(A)(ii)]		X		
8. Is the substance used in handling, not synthetic, but not organically produced? [§6517 c (1)(B)(iii)]		X		
9. Is there any alternative substances? [§6518 m.6]	X			Soil application of elemental sulfur. Application of large quantities of organic acids produced by fermentation, such as citric acid or natural vinegar.
10. Is there another practice that would make the substance unnecessary? [§6518 m.6]		X		

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Category 3. Is the substance compatible with organic production practices? Substance - Sulfurous acid

Question	Yes	No	N/A ¹	Documentation (TAP; petition; regulatory agency; other)
1. Is the substance compatible with organic handling? [§205.600 b.2]			X	
2. Is the substance consistent with organic farming and handling? [§6517 c (1)(A)(iii); 6517 c (2)(A)(ii)]	X			Rainwater is naturally amended with atmospheric SO ₂ derived from volcanic sources, typically maintaining it at a mildly acidic pH (by the presence of sulfurous acid). Substance can be produced on farm using organically approved elemental sulfur to produce SO ₂ leading to sulfurous acid upon addition to irrigation. Oxidation (burning) of the sulfur accomplishes the same result as oxidation of soil applied sulfur by Thiobacillus bacteria native to soils, yet in an incremental, controlled fashion that eliminates the potential negative effects of annual or semi-annual direct soil applications of larger amounts of sulfur. Such large broadcast applications of sulfur are understood to have negative effects on the soil ecology.
3. Is the substance compatible with a system of sustainable agriculture? [§6518 m.7]	X			Use of this material to amend alkaline irrigation waters encountered in arid regions of the U.S. would be beneficial to the long term sustainability of farm soils in those regions.
4. Is the nutritional quality of the food maintained with the substance? [§205.600 b.3]			X	
5. Is the primary use as a preservative? [§205.600 b.4]			X	
6. Is the primary use to recreate or improve flavors, colors, textures, or nutritive values lost in processing (except when required by law, e.g., vitamin D in milk)? [205.600 b.4]			X	
7. Is the substance used in production, and does it contain an active synthetic ingredient in the following categories:	X			
a. copper and sulfur compounds;				
b. toxins derived from bacteria;		X		
c. pheromones, soaps, horticultural oils, fish emulsions, treated seed, vitamins and minerals?		X		
d. livestock parasiticides and medicines?		X		
e. production aids including netting, tree wraps and seals, insect traps, sticky barriers, row covers, and equipment cleaners?	X			

¹If the substance under review is for crops or livestock production, all of the questions from 205.600 (b) are N/A—not applicable.

Category 4. Is the commercial supply of an agricultural substance as organic, fragile or potentially unavailable? [§6610, 6518, 6519, 205.2, 205.105 (d), 205.600 (c) 205.2, 205.105 (d), 205.600 (c)]

Substance - _____

Question	Yes	No	N/A	Comments on Information Provided (sufficient, plausible, reasonable, thorough, complete, unknown)
1. Is the comparative description provided as to why the non-organic form of the material /substance is necessary for use in organic handling?				
2. Does the current and historical industry information, research, or evidence provided explain how or why the material /substance cannot be obtained organically in the appropriate form to fulfill an essential function in a system of organic handling?				
3. Does the current and historical industry information, research, or evidence provided explain how or why the material /substance cannot be obtained organically in the appropriate quality to fulfill an essential function in a system of organic handling?				
4. Does the current and historical industry information, research, or evidence provided explain how or why the material /substance cannot be obtained organically in the appropriate quantity to fulfill an essential function in a system of organic handling?				
5. Does the industry information provided on material / substance non-availability as organic, include (but not limited to) the following:				
a. Regions of production (including factors such as climate and number of regions);				
b. Number of suppliers and amount produced;				
c. Current and historical supplies related to weather events such as hurricanes, floods, and droughts that may temporarily halt production or destroy crops or supplies;				
d. Trade-related issues such as evidence of hoarding, war, trade barriers, or civil unrest that may				

temporarily restrict supplies; or				
e. Are there other issues which may present a challenge to a consistent supply?				