Formal Recommendation
From: National Organic Standards Board (NOSB)
To: the National Organic Program (NOP)

Date: October 16, 2012

Subject: Petitioned to add sulfuric acid to §205.601

Chair: Barry Flamm

The NOSB hereby recommends to the NOP the following:

Rulemaking Action: ☐ Petition Failed

Guidance Statement: ☐

Other: ☐

Statement of Recommendation: (Motion # 1) Passed

Motion to classify sulfuric acid as synthetic.

Rationale Supporting Recommendation (including consistency with OFPA and NOP):

The starting point for commercial sulfuric acid manufacturing is sulfur dioxide, which is a byproduct of industrial pollution control systems. The manufacturing process involves a two-step chemical reaction using oxygen, water, and a vanadium oxide catalyst.

Committee Vote:

Moved: John Foster

Seconded: Colehour Bondera

Yes: 15 No: 0 Abstain: 0 Absent: 0 Recuse: 0

Statement of Recommendation: (Motion # 2) Failed

Motion to add sulfuric acid as petitioned to §205.601 for stabilization of digested poultry manure to a pH under 4.5 but not below 3.5.

Rationale Supporting Recommendation (including consistency with OFPA and NOP):

Sulfuric acid, when used in livestock manure, is changed to sulfate, which is in this case is a synthetically derived plant nutrient. The Board concurs with the Crops Subcommittee votes in 2012 and 2006 which recommended denying the petition because of adverse environmental and health impacts, lack of essentiality, and incompatibility with organic principles, as supported by the checklist.

Committee Vote:

Moved: John Foster

Seconded: Harold Austin

Yes: 3 No: 12 Abstain: 0 Absent: 0 Recuse: 0

National Organic Standards Board
Crops Subcommittee
Petitioned Material Proposal
Sulfuric Acid

August 7, 2012

Introduction:
A petition was submitted requesting the addition of sulfuric acid to the National List (7 CFR §205.601) for stabilization of digested poultry manure to a pH under 4.5 but not below 3.5.

Background:
In 2006, a similar petition was submitted for use in digested livestock manure. The Crops Committee voted unanimously to reject the petition because "Sulfuric acid, when used in livestock manure, is changed to sulfate, which is in this case a synthetically derived plant nutrient. Additionally, it is an important air pollutant, e.g. acid rain. Other wholly natural materials can be used." After some discussion by the NOSB at the October 18, 2006 meeting, and at the request of the petitioner, the vote on the petition was deferred.

Discussion:
The listing of sulfuric acid is not the only hurdle that petitioners need to clear in order to use their products. OMRI so far restricts the use of byproducts of anaerobic digestion of animal manures --used for generating methane-- to the uses allowed for raw manure. They say that these byproducts do not meet the NOP temperature and moisture criteria for processed manure. (They also do not contain the beneficial aerobic organisms that are an important benefit to the soil from composted manure.) Additional action by the NOSB and/or NOP will be needed to allow the full use of anaerobically-digested waste. (OMRI Materials Review, Summer 2012)

The Crops Subcommittee agrees with the 2006 vote and recommends denying the petition because of adverse environmental and health impacts, lack of essentiality, and incompatibility with organic principles, as supported by the checklist.

Evaluation Criteria:

(Applicability noted for each category; Documentation attached)	**Criteria Satisfied? (see "B" below)**		
1. Impact on Humans and Environment	☐ Yes	☒ No	☐ N/A
2. Essential & Availability Criteria	☐ Yes	☒ No	☐ N/A
3. Compatibility & Consistency	☐ Yes	☒ No	☐ N/A
4. Commercial Supply is Fragile or Potentially Unavailable as Organic (only for § 205.606)	☐ Yes	☐ No	☒ N/A

Substance Fails Criteria Category: [1,2,3]

Subcommittee Comments:
Adverse environmental and health impacts, lack of essentiality, and incompatibility with organic principles, as supported by the TR and checklist.

Recommended Subcommittee Action & Vote, including classification recommendation (state actual motion):

Classification Motion:
Sulfuric Acid is synthetic.

Motion by: Colehour Bondera Seconded by: Nick Maravell
Yes__**6**___ No__**0**__ Abstain__**0**__ Recuse__**0**__ Absent__**2**_

Listing Motion:
To list on §205.601, sulfuric acid for stabilization of digested poultry manure to a pH under 4.5 but not below 3.5.

Motion by: Harold Austin Second: Barry Flamm
Yes__**0**___ No__**6**__ Abstain__**0**__ Recuse__**0**__ Absent__**2**_

Crops	☒	**Agricultural**	☐	**Allowed**[1]	☐
Livestock	☐	**Non-synthetic**	☐	**Prohibited**[2]	☐
Handling	☐	**Synthetic**	☒	**Rejected**[3]	☒
No restriction	☐	**Commercial unavailable as organic**	☐	**Deferred**[4]	☐

[1]Substance voted to be added as “allowed” on National List to § 205. 601(h) 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:

Approved by Subcommittee Chair to Transmit to NOSB

Jay Feldman, Subcommittee Chair August 7, 2012

NOSB Evaluation Criteria for Substances Added To the National List

Category 1. Adverse impacts on humans or the environment? Substance: Sulfuric Acid

Question	Yes	No	N/A[1]	Documentation (TAP; petition; regulatory agency; other)
1. Are there adverse effects on environment from manufacture, use, or disposal? [§205.600 b.2]			X	
2. Is there environmental contamination during manufacture, use, misuse, or disposal? [§6518 m.3]	X			One of the primary sources of human sourced sulfuric acid in the environment is its manufacture. (TR, lines 187-191) According to the TRI, in 1996, releases of sulfuric acid to the air from 7 14 large processing facilities totaled 8,929,868 kg (19,690,359 pounds) (TR196 1998). (ATSDR, 1998. Toxicological Profile for Sulfur Trioxide and Sulfuric Acid. http://www.atsdr.cdc.gov/toxprofiles/tp117.pdf.)
3. Is the substance harmful to the environment? [§6517c(1)(A)(i);6517(c)(2)(A)i]	X			Sulfuric acid can kill organisms. Air borne sulfuric acid can cause pulmonary edema (TR lines 187-200 & lines 234-242 & lines 296-297) If sulfuric acid comes in contact with bodies of water the bioavailability of heavy metals increases. (Ostiguy). The International Agency for Cancer Research (IARC) has determined that there is sufficient evidence that occupational exposure to strong-inorganic-acid mists containing sulfuric acid is carcinogenic to humans (IARC 1992, 1997). (TR lines 313-316)
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			Sulfuric acid can interact with other chemicals used if it comes in contact with the other materials. (TR lines 187-191) Sulfuric acid, when used as a pH adjustor for livestock manure, is changed to sulfate, which is plant nutrient. (TR lines 226-227) Sulfuric acid is corrosive..
6. Are there adverse biological and chemical interactions in agro-ecosystem? [§6518 m.5]		X		Sulfuric acid, when used in livestock manure, is changed to sulfate. (TR lines 226-227)..
7. Are there detrimental physiological effects on soil organisms, crops, or livestock? [§6518 m.5]		X		Sulfuric acid is corrosive and, at high concentrations, can kill organisms. No detrimental physiological effects on soil organisms, crops or livestock are expected for this usage. Detrimental impacts from manufacture, misuse, disposal. (TR lines 178-229)
8. Is there a toxic or other adverse action of the material or its breakdown products?[§6518 m.2]	X			Sulfuric acid is corrosive; it can harm eyes, skin, and respiratory and gastrointestinal tracts. (TR lines 294-308.) . The International Agency for Cancer Research (IARC) has determined that there is sufficient evidence that occupational exposure to strong-inorganic-acid mists containing sulfuric acid is carcinogenic to humans

				(IARC 1992, 1997). (TR lines 313-316)). (ATSDR, 1998. Toxicological Profile for Sulfur Trioxide and Sulfuric Acid. http://www.atsdr.cdc.gov/toxprofiles/tp117.pdf.)
9. Is there undesirable persistence or concentration of the material or breakdown products in environment?[§6518 m.2]	X			Sulfuric acid is not persistent. Its breakdown products are sulfate ions. It can persist in the environment if the soil is unable to neutralize it. (TR lines 330-341)..
10. Is there any harmful effect on human health? [§6517 c (1)(A)(i) ; 6517 c(2)(A)i; §6518 m.4]	X			Skin, eye respiratory and gastrointestinal tract irritation; EPA Category I toxicity; aerosol is a suspected human carcinogen (ACGIH); H_2SO_4 mist is a human carcinogen (IARC); protective clothing, eyewear & breathing protection are needed (TR lines 294-325). Sulfuric acid exposure also occurs when it is manufactured… The National Occupational Exposure Survey (NOES), conducted by NIOSH from 1981 to 1983, estimated that 56,103 and 775,348 U.S. workers may be exposed to sulfur trioxide and sulfuric acid, respectively (NOES 1990)."
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	

[1]If 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 _ Sulfuric Acid _

Question	Yes	No	N/A[1]	Documentation (TR; petition; regulatory agency; other)
1. Is there a natural source of the substance? [§205.600 b.1]			X	
2. Is there an organic substitute? [§205.600 b.1]			X	
3. Is the substance essential for handling of organically produced agricultural products? [§205.600 b.6]			X	
4. Is there a wholly natural substitute product? [§6517 c (1)(A)(ii)]	X			At present, the quantity of carbon material required to induce a significant pH decline is economically prohibitive. However, if the production of acid can be optimized, possibly by using suitable lactic acid bacteria, it would offer an effective and safe means to prevent ammonia production. (TR367-369) A variety of natural absorbents can be used to reduce ammonia production; some of the most commonly employed are peat and clinoptilolite (a naturally occurring alumino-silicate mineral with high cation exchange capacities). The advantages associated with the use of either clinoptilolite or peat are that they are nonhazardous and act as good soil conditioners when spread with manure. (TR371-374)
5. Is the substance used in handling, not synthetic, but not organically produced? [§6517 c (1)(B)(iii)]			X	
6. Is there any alternative substances? [§6518 m.6]	X			Unreacted carbon, citric acid, lactic acid bacteria or materials such as clay, peat, and clinoptilote. (TR lines 356-387).
7. Is there another practice that would make the substance unnecessary? [§6518 m.6]	X			Composting animal manure can also be used. Stabilization of animal manures can also be accomplish with unreacted carbon, lactic acid bacteria or materials such as clay, peat, and clinoptilote.(TR lines 356-387) Other types of approved composted materials and dehydrated manure can be used.). Hall and Sullivan (2001) provide a review of alternative soil amendments to agricultural fertilizers and manure, including several that can be considered wholly natural, such as various plant byproducts (e.g., composted leaves), rock and mineral powders (e.g., granite dust), and seaweed products. (TR382-387) As specified under NOP §205.203(b): “The producer must manage crop nutrients and soil fertility through rotations, cover crops, and the application of plant and animal materials.” Thus, the need to use manure (whether composted, non-composted, or chemically-treated) or plant materials could be replaced through crop rotation and

				use of cover crops. (TR 409-412)

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

Category 3. Is the substance compatible with organic production practices?

Substance __Sulfuric Acid __

Question	Yes	No	N/A[1]	Documentation (TR; 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			Sulfuric acid is the primary agent of acid rain, it is an air pollutant TR lines 46-50) Sulfuric acid, when used in livestock manure, is changed to sulfate, which is in this case a synthetically derived plant nutrient.TR lines 226-227). It has been allowed in similar uses for materials presently on the National List.
3. Is the substance compatible with a system of sustainable agriculture? [§6518 m.7]	X			Sulfuric acid is the primary agent of acid rain, it is an air pollutant TR lines 46-50) Sulfuric acid, when used in livestock manure, is changed to sulfate, which is in this case a synthetically derived plant nutrient. TR lines 226-227) It has been allowed in similar uses for materials presently on the National List.
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: a. copper and sulfur compounds;	X			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		

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

2006 recommendation: “Describe why material was rejected: Sulfuric acid, when used in animal manure, is changed to sulfate, which is in this case a synthetically derived plant nutrient. Additionally, it is an important air pollutant, e.g., acid rain. Other wholly natural materials can be used. (See Category 2, questions 4, 6, and 7.”