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

Date: October 16, 2012

Subject: Petition to add Oxidized Lignite/Humic Acid to the National List §205.601(j)(3)

Chair: Barry Flamm

The NOSB hereby recommends to the NOP the following:

Rulemaking Action: ☑

Guidance Statement: ☐

Other: ☐

Statement of Recommendation:

Motion to classify "Humic acids – naturally occurring deposits, water, alkali and hydrogen peroxide extracts only, as synthetic.

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

Humic acids – naturally occurring deposits, water, alkali and hydrogen peroxide extracts only, are produced through an oxidation reaction of lignite with hydrogen peroxide. While the exact manufacturing process is claimed to be confidential business information, the Technical Review finds the process to be synthetic.

Committee Vote:

Moved: Zea Sonnabend

Seconded: Jay Feldman

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

Statement of Recommendation: ó a 2ű٨2ý I Hú

Motion to change the listing in [7 CFR 205.601(j)(3)] to: "Humic acids – naturally occurring deposits, water, alkali and hydrogen peroxide extracts only, to expire in 2017."

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

In reviewing the information in the TER it was apparent that a substance named oxidized lignite could occur through natural processes in the field or through using super-heated water or ozone in a lab (TER lines 258 - 263). However since the manufacturing process in this petition is redacted as Confidential Business Information, it is not clear how to propose listing this substance to distinguish it from these other methods of production. Therefore the motion that is being proposed is to add Hydrogen Peroxide extraction to the annotation for humic acids already on the National List. Included in the motion is that this new clause will expire in 2017, to enable all the humic acids to be re-reviewed together at their normal sunset date.

Committee Vote:

Moved: Zea Sonnabend

Seconded: Jay Feldman

Yes: 8 No: 7 Abstain: 0 Absent: 0 Recuse: 0

National Organic Standards Board
Crops Subcommittee
Petitioned Material Proposal
Oxidized Lignite/Humic Acid

August 15, 2012

Introduction:
A petition was submitted requesting the addition of "Humic Acid Derivatives – Hydrogen Peroxide extracted", which is also known as Oxidized Lignite.

Background:
The Crops Subcommittee encountered considerable confusion over what this material actually is and whether leonardite humates subject to oxidation in the environment could also be known as oxidized lignite. A Technical Evaluation Report (TER) was commissioned to address the nature of this petitioned substance and compare it to the other humic acid derivatives that are alkali extracted as per National List section 205.601(j)(3).

Relevant Areas in the Rule:
The National List includes at §205.601(j)(3)

Humic acids—naturally occurring deposits, water and alkali extracts only.

Discussion:
In reviewing the information in the TER it was apparent that a substance named oxidized lignite could occur through natural processes in the field or through using super-heated water or ozone in a lab (TER lines 258 - 263). However since the manufacturing process in this petition is redacted as Confidential Business Information, it is not clear how to propose listing this substance to distinguish it from these other methods of production. Therefore the motion that is being proposed is to add Hydrogen Peroxide extraction to the annotation for Humic Acids on the National List. Included in the motion is that this new clause will expire in 2017, to enable all the humic acids to be re-reviewed together at their normal sunset date.

The Crops Subcommittee noted in their review that leonardite materials extracted with hydrogen peroxide do not have any residual synthetic materials in the end product because the hydrogen peroxide breaks down completely into water and oxygen. Humic Acids that are alkali extracted do contain a surplus of potassium or other cations from the extractant, and it has never been clear what amount of alkali is necessary for the extraction but is not considered fortification.

Another key issue in the deliberation over this material is the fact that there are many alternative substances and practices that can be used to enhance plant uptake of nutrients, which is the primary use for this product class. The justification statement in the petition only compared hydrogen peroxide extraction with alkali extraction for humic acids, but did not address the bigger context of soil-building practices as alternatives. The TER did address the soil-building practices and alternative substances that can be used. However, the contention by the petitioner that humic acids must be deliverable in liquid form was not discussed in the TER. The Subcommittee majority does not feel that the need for nutrients in liquid form is a compelling reason to distinguish this from the alternatives.

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: [2,3] **Comments:**

Proposed Annotation (if any): "Humic acids – naturally occurring deposits, water, alkali *and hydrogen peroxide* extracts only."

Basis for annotation: ☒ To meet criteria above ☐ Other regulatory criteria ☐ Citation
Notes:

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

Motion:
Humic Acids – Hydrogen Peroxide extracted are synthetic.

Motion by: Zea Sonnabend Seconded by: Colehour Bondera
Yes__**8**___ No__**0**__ Abstain__**0**__ Recuse__0__ Absent__**0**__

Listing Motion:
To change the listing in [7 CFR 205.601(j)(3)] to: "Humic acids – naturally occurring deposits, water, alkali *and hydrogen peroxide* extracts only, to expire in 2017."

Motion by: Zea Sonnabend Seconded by: John Foster
Yes__**3**___ No__**5**__ Abstain__**0**__ Recuse__**0**__ Absent__**0**__

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 15, 2012

NOSB Evaluation Criteria for Substances Added To the National List

Category 1. Adverse impacts on humans or the environment? Substance: Humic Acids – Hydrogen Peroxide extraction

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			There may be environmental contamination from coal mining (see TER 339-340) "surface mines are more likely than underground mines to result in surface water pollution." The treatment with hydrogen peroxide may release carbon dioxide into the atmosphere, but because of the CBI that cannot be determined. (TER 343-346)
3. Is the substance harmful to the environment and biodiversity? [§6517c(1)(A)(i);6517(c)(2)(A)i]				TR 394-396: Humic substances appear to depress some organisms in the environment while stimulating others (Peterson, 1989). There is therefore no clear-cut answer to this criteria.
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		If anything the use of such humic substances would enhance the uptake of other fertilizer materials. (TER lines 353-354)
6. Are there adverse biological and chemical interactions in agro-ecosystem? [§6518 m.5]	?			There is always a potential for detrimental interactions, but in the TER lines 356-357: "However, because of their widely varying structures and functions, it is difficult to predict with certainty the effects of humic substances in the soil."
7. Are there detrimental physiological effects on soil organisms, crops, or livestock? [§6518 m.5]		X		TER 404-412: "The impact of oxidized lignite on soil organisms is inconclusive."
8. Is there a toxic or other adverse action of the material or its breakdown products? [§6518 m.2]		X		While the TER discusses concerns over the humic substances in drinking water and in aquatic environments (TER lines 365-369 and 386 - 388), there is no reason to think the substance would end up in these places as used in organic farming.
9. Is there undesirable persistence or concentration of the material or breakdown products in environment? [§6518 m.2]		X		Lignite itself is very persistent (TER lines 279 - 280) but the reacted versions of it will break down faster. Persistence in this case is not undesirable as the unreacted humates are used in organic agriculture for their long-term

				benefits.
10. Are there any harmful effects on human health? [§6517 c (1)(A)(i); 6517 c(2)(A)i; §6518 m.4]	X	X		The TER in lines 302 - 326 gives extensive literature on the negative effects of coal and coal dust on human health. However these all stem from burning coal for fuel, hazards in mining coal, and if lignite ends up in drinking water. None of them relate to any harmful effects from using extracted humic acids as a soil amendment.
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.

NOSB Evaluation Criteria for Substances Added To the National List

Category 2. Is the Substance Essential for Organic Production? Substance: Humic Acids – Hydrogen Peroxide extraction

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)]	?			Unknown because of CBI
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			
3. Is the substance created by naturally occurring biological processes? [6502 (21)]		X		Oxidized lignite may be created by naturally occurring processes, but that is why this substance is referred to as hydrogen peroxide extracted Humic Acids.
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			TER 502: "Non-synthetic lignite may be used in place of the liquefied oxidized or alkali treated lignite." TER 522: "It is also possible to treat lignite coal by microbial fermentation (Catcheside and Ralph, 1999)."
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			TER 491-498: "Compost, cover crops, manure, mulch, and other natural sources of organic matter can all increase humic acid content of the soil (Magdoff and Weil, 2004). Humic acids from decaying organic matter have been empirically shown to have the same benefits as those from fossil sources, such as lignite (Weil and Magdoff, 2004)." TER 557: "Synthetic ligninsulfonates are also used as chelating agents for micronutrients [7 CFR 205.601(j)(4)]."
10. Is there another practice that would make the substance unnecessary? [§6518 m.6]	X			Any soil-building practice that increases the organic matter in soil will be similar in action to these substances, only they take more time. Green manures, rotation, incorporating crop residues and using compost are all equivalent to the use of these substances. (TER 569 - 581)

[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.

NOSB Evaluation Criteria for Substances Added To the National List

Category 3. Is the substance compatible with organic production practices? Substance: Humic Acids – Hydrogen Peroxide extraction

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		As the organic rule is written, synthetic substances for crop inputs must fall within one of the exception areas mentioned in #7 below. Since this does not, it cannot be considered consistent with the rule.
3. Is the substance compatible with a system of sustainable agriculture? [§6518 m.7]	X	X		While agronomically this appears to be a compatible material and humic substances are primarily beneficial to soil and plants, the concerns over coal mining to produce the starting ingredient do not contribute to the overall sustainability of this materials over other practices.
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		
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.

NOSB Evaluation Criteria for Substances Added To the National List

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: Humic Acids – Hydrogen Peroxide extraction**

Question	Yes	No	N/A[1]	Documentation (TAP; petition; regulatory agency; other)
1. Is the comparative description provided as to why the non-organic form of the material /substance is necessary for use in organic handling?			X	
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?			X	
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?			X	
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?			X	
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);			X	
b. Number of suppliers and amount produced;			X	
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;			X	
d. Trade-related issues such as evidence of hoarding, war, trade barriers, or civil unrest that may temporarily restrict supplies; or			X	
e. Are there other issues which may present a challenge to a consistent supply?			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.