## FORMAL RECOMMENDATION BY THE NATIONAL ORGANIC STANDARDS BOARD (NOSB) TO THE NATIONAL ORGANIC PROGRAM (NOP)

TO THE NATIONAL ORDANIC I ROOKAM (NOT)								
Date: November 30, 2007								
Subject:Aqueous Potassium silicate (as insecticide)								
Chair:Andrea M. Caroe								
<u>Recommendation</u>								
The NOSB hereby recommends to the NOP the following:  Rulemaking Action:  Guidance Statement:  Other:								
Statement of the Recommendation (including Recount of Vote): To add aqueous potassium silicate as insecticide to §205.601(e) Synthetic substances allowed for use in organic crop production								
NOSB Vote: Motion: G. Davis Second: J. Moyer								
Board vote: Yes - 15 No- 0 Abstain- 0 Absent - 0								
Rationale Supporting Recommendation (including consistency with OFPA and NOP): Public comment at Nov. 2007 NOSB meeting well supported listing the substance as insecticide by providing historical 2003 NOSB consideration of the material as well as more information from petitioner and other interested stakeholders.								
Sunset Material Vote								
Response by the NOP:								

## NOSB COMMITTEE RECOMMENDATION Form NOPLIST1. Committee Transmittal to NOSB

For NOSB Meeting:	November 2007		Subs	stance: Ac	queous Potas	sium	Silicate				
Committee: Crops X Livestock ☐ Handling ☐ Petition is for: Use as plant disease control §205.601(i), as											
insecticide §205.601(e), and as plant or soil amendments (for hydroponic use) §205.601(j) on the National List.											
A. Evaluation Criteria (Applicability noted for each category; Documentation attached)  Criteria Satisfied? (see B below)											
1. Impact on Humans and Environment insecticide §205.601(e) Yes √ No □ N/A □ plant disease control §205.601(i) Yes √ No □ N/A □ plant or soil amendments (for hydroponic use) §205.601(j) Yes √ No □ N/A □											
2. Essential & Availability Criteria insecticide §205.601(e) Yes □ No √ N/A □ (Dissenting member – yes) plant disease control §205.601(i) Yes □ No √ N/A □ (Dissenting member – yes) plant or soil amendments (for hydroponic use) §205.601(j) Yes □ No √ N/A □											
insecticide §205.6 plant disease con plant or soil amer	3. Compatibility & Consistency insecticide §205.601(e) Yes $\square$ No $\vee$ N/A $\square$ (Dissenting member – yes) plant disease control §205.601(i) Yes $\square$ No $\vee$ N/A $\square$ (Dissenting member – yes) plant or soil amendments (for hydroponic use) §205.601(j) Yes $\square$ No $\vee$ N/A $\square$										
4. Commercial S	Supply is Fragile or P	otentially Unavailable	as Organic (onl	y for 606)	Yes □ No		N/A √				
	a #2 - multiple substi	gory: <u>2 &amp; 3</u> Co tutes are available Cri		netic soil app	olied fertilizers	not co	mpatible with				
Minority: As insecticide and plant disease control, the material favorably satisfies Criteria 1, 2, and 3 and should be added to the National List. Information provided in TAP report amply supports prohibition of the material as plant or soil amendment, but does not provide ample support for failing any of the evaluation criteria for the material as insecticide or plant disease control. Previous NOSB Crops Committee (2003) voted 4-0 to approve these uses. At May 2003 NOSB meeting, material was deferred for later vote pending eventual EPA pesticide registration.											
C. Proposed Annot	ation (if any): No in	dustrial by-products a	llowed in manuf	acture.							
Basis for annotation	on: To meet criteria a	bove: Otl	her regulatory c	riteria:	Citation:_						
D. Recommended C	Committee Action &	Vote (State Actual	Motion): <u>Add a</u>	queous pot	assium silica	te on	the National List				
insecticide §205.601											
plant disease contro plant or soil amendr		ion: GD Seconded: . nic use) §205.601(j)-				lo: 4	Absent: 2				
Motion by:	Seconde	d:	Yes:	No:	Absent:		Abstain:				
	0	<b>X</b> A		A.I							
	Crops Livestock	X Agricultural Allowed <sup>1</sup>									
	Handling	Non-Synthetic Prohibited <sup>2</sup> Synthetic X Rejected <sup>3</sup> X									
	No restriction	Commercially Un- Available as Organic <sup>1</sup> Deferred <sup>4</sup>									
Substance voted to be added as "allowed" on National List to § 205with Annotation (if any)											
2) Substance to be added as "prohibited" on National List to § 205with Annotation (if any)											

Describe why a prohibited substance:						
3) Substance was rejected by vote for amending National List to § 205. 601 Describe why material was rejected: Failed evaluation criteria 2 & 3						
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:  Gerald Davis Committee Chair Date						

## NOSB EVALUATION CRITERIA FOR SUBSTANCES ADDED TO THE NATIONAL LIST

Category 1. Adverse impacts on humans or the environment? Substance – <u>Aqueous Potassium Silicate</u>

Question	Yes	No	N/A	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		The manufacturing process does not appear to pose a substantial risk of environmental contamination other than the combustion of fossil fuels to power the reaction. Annotation to prohibit the use of industrial byproducts in manufacture would be needed. Proper use and disposal of the material is unlikely to cause risk to the environment. (TAP pg4, item #3). Unlikely environmental contamination except for the possibility of harm to aquatic species if bulk material was improperly disposed of in a body of water.
3. Is the substance harmful to the environment? [§6517c(1)(A)(i);6517(c)(2)(A)i]		X		Material has no known chronic hazards and applications will not result in any environmentally persistent byproducts.(TAP pg3, item #2)
4. Does the substance contain List 1, 2, or 3 inerts? [§6517 c (1)(B)(ii); 205.601(m)2]	X	X		The revised petition (2006) states that the material is on EPA List 4B. The TAP report (2003) states that potassium silicate is on EPA List 3.
5. Is there potential for detrimental chemical interaction with other materials used? [§6518 m.1]		X		Little or no adverse reactions expected. High solution pH of spray mixture can be mitigated with acidifying materials from The Allowed Substance List for use with alkaline sensitive materials or alkali sensitive plants. (TAP pg3 & pg11, item #1)
6. Are there adverse biological and chemical interactions in agroecosystem? [§6518 m.5]		X		Not when used as foliar applied disease control or insecticide. Successive silicate fertilizer application could raise soil pH to levels that adversely affect plant growth. (TAP pg 5, item #5)
7. Are there detrimental physiological effects on soil organisms, crops, or livestock? [§6518 m.5]		X		Same as question # 6.
8. Is there a toxic or other adverse action of the material or its breakdown products? [§6518 m.2]		X		See question # 3.
9. Is there undesirable persistence or concentration of the material or breakdown products in environment?[§6518 m.2]		X		Breakdown products of the material are naturally occurring in practically all animal species and ecosystems. Dissolved potassium and silica species are indistinguishable from their naturally occurring analogs. (TAP pg 3, item #2)
10. Is there any harmful effect on human health? [§6517 c (1)(A)(i); 6517 c(2)(A)i; §6518 m.4]		X		The effects of potassium silicate applications on human health are likely to be minimal. Proper skin and respiratory protection for spray applicators of the material would be required to prevent acute overexposure. (TAP pg4, item # 4)
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	

<sup>1</sup>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 - <u>Aqueous Potassium Silicate</u>

Question	Yes	No	N/A <sup>1</sup>	Documentation (TAP; petition; regulatory agency; other)
1. Is the substance formulated or manufactured by a chemical process? [6502 (21)]	X			TAP pg 2
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			TAP pg 2 Aqueous potassium silicate is manufactured using a calcination process that combines natural silica sand and potassium carbonate at high temperatures. The two substances fuse into glass, which is dissolved with high pressure steam to form a clear, slightly viscous liquid.
3. Is the substance created by naturally occurring biological processes? [6502 (21)]		X		Aqueous potassium silicate does not occur in nature.
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	X		Bacillus subtilis, Bacillus pumilus, milk, whey, canola oil, rosemary oil, garlic oil and neem oil. Botanical insecticides such as neem or pyrethrin. Effective natural fungicides and insecticides are very limited in number and effectiveness. As silica soil amendments, greensand, wollastonite, various other rock dusts.
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			Sulfur and copper as fungicides, horticultural oils as fungicides and insecticides.
10. Is there another practice that would make the substance unnecessary? [§6518 m.6]	X			Variety selection, green manure cover crops and crop rotations

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

 $Category \ 3. \ Is \ the \ substance \ compatible \ with \ organic \ production \ practices? \ Substance \ -\underline{Aqueous \ potassium \ silicate}$ 

Question	Yes	No	N/A <sup>1</sup>	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	X		No, the use of this synthetic material as a soil /plant amendment is not compatible with organic farming rules.  Yes, the use of this material as plant disease control and as insecticide could be considered consistent with organic farming and could help replace some uses of other synthetics such as copper and sulfur. (TAP pg 6 & 8, item #7; Pg 8, item #6; pg 8 &12, Recommendations to NOSB)
3. Is the substance compatible with a system of sustainable agriculture? [§6518 m.7]	X			TAP pg 6 & 8, item #7
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			It is a mineral – potassium and silica are minerals
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		

<sup>&</sup>lt;sup>1</sup>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 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				production of the production o
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				
<u>form</u> 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				
<b>quality</b> 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?				