Sunset 2019
Meeting 2 - Review
Crops Substances
November 2017

Note: With the exception of biodegradable biobased mulch film, the materials included in this list are undergoing early sunset review as part of November 18, 2016 NOSB recommendation on efficient workload re-organization.

As part of the National List sunset review process, the NOSB Crops Subcommittee has evaluated the need for the continued allowance for or prohibition of the following substances for use in organic crop production.

Reference: 7 CFR 205.601 Synthetic substances allowed for use in organic crop production.

Chlorine materials: calcium hypochlorite, chlorine dioxide, sodium hypochlorite
Herbicides, soap-based
Biodegradable biobased mulch film
Boric acid
Sticky traps/barriers
Coppers, fixed
Copper sulfate
Humic acids
Micronutrients: soluble boron products
Micronutrients: sulfates, carbonates, oxides, or silicates of zinc, copper, iron, manganese, molybdenum, selenium, and cobalt
Vitamins B1, C, E

205.602 Nonsynthetic substances prohibited for use in organic crop production
Lead salts
Tobacco dust (nicotine sulfate)

Chlorine materials - Calcium Hypochlorite

Reference: 205.601(a) - As algicide, disinfectants, and sanitizer, including irrigation system cleaning systems. (2) Chlorine materials -For pre-harvest use, residual chlorine levels in the water in direct crop contact or as water from cleaning irrigation systems applied to soil must not exceed the maximum residual disinfectant limit under the Safe Drinking Water Act, except that chlorine products may be used in edible sprout production according to EPA label directions.

(i) Calcium hypochlorite

Technical Report(s): 1995 TAP; 2006 TR; 2011 TR

Petition(s): N/A

Past NOSB Actions: 10/1995 NOSB minutes and vote; 04/2006 NOSB sunset recommendation; 04/2011 NOSB sunset recommendation; 10/2015 sunset recommendation

Recent Regulatory Background: Sunset renewal notice 2017 (82 FR 14420)

Sunset Date: 03/15/2022

Subcommittee Review:

Calcium hypochlorite is an EPA registered pesticide (OPP No. 014701) that is used in controlling bacteria, fungi, and slime-forming algae (2011 TR lines 86-87). In water and soil, calcium hypochlorite separates into calcium, hypochlorite ions (OCl-), and hypochlorous acid (HOCl) molecules. The hypochlorous acid molecules diffuse through cell walls of microorganisms, changing the oxidation-reduction potential of the cell and inactivating triosephosphate dehydrogenase, an enzyme essential of the digestion of glucose, destroying the microorganism's ability to function (2011 TR lines 122-133).

Calcium hypochlorite is produced by passing chlorine gas over slaked lime. It is then separated from the coproduct, calcium chloride, and air dried or vacuumed (TR lines 194-195).

Calcium hypochlorite is highly caustic and is a concern for occupational exposure. Acute exposure to high concentrations can cause eye and skin injury. Ingestion can cause gastrointestinal irritation and corrosive injuries to the mouth, throat, esophagus and stomach (2011 TR lines 411-418).

Public comments were received during the 2019 review indicating that chlorine materials are necessary in organic crop production, and that chlorine sanitizers have a wide range of uses, including sanitation of equipment and work surfaces, maintaining functioning irrigation systems, preventing the spread of disease, and controlling pathogens detrimental to human health. Some commenters said it was important to have several types of sanitizers available for use in case resistance develops to any of them.

Some public commenters expressed concerns that chlorine sanitizers can be harmful to human health and the environment, and that alternatives should be used when possible. Commenters also suggested that chlorine sanitizers, and all sanitizers, should be reviewed as a group to identify if all sanitizers currently on the National List are needed, and if the use of chlorine sanitizers could be limited to use only where other sanitizers that are less harmful to human health and the environment are not adequate.

Subcommittee vote:

Motion to remove calcium hypochlorite from §205.601(a) based on the following criteria in the Organic

Foods Production Act (OFPA) and/or 7 CFR 205.600(b) if applicable: none

Motion by: Francis Thicke
Seconded by: Emily Oakley
Yes: 0 No: 7 Abstain: 0 Absent: 2 Recuse: 0

Chlorine materials - Chlorine Dioxide

Reference: 205.601(a) - As algicide, disinfectants, and sanitizer, including irrigation system cleaning systems. (2) Chlorine materials - For pre-harvest use, residual chlorine levels in the water in direct crop contact or as water from cleaning irrigation systems applied to soil must not exceed the maximum residual disinfectant limit under the Safe Drinking Water Act, except that chlorine products may be used in edible sprout production according to EPA label directions.

(ii) Chlorine dioxide

Technical Report(s): 1995 TAP; 2006 TR; 2011 TR

Petition(s): N/A

Past NOSB Actions: 10/1995 NOSB minutes and vote; 04/2006 NOSB sunset recommendation; 04/2011 NOSB sunset recommendation; 10/2015 sunset recommendation

Recent Regulatory Background: Sunset renewal notice 2017 (82 FR 14420)

Sunset Date: 03/15/2022

Subcommittee Review:

EPA has registered the liquid form of chlorine dioxide for use as a disinfectant and sanitizer. The Agency also has registered chlorine dioxide gas as a sterilant. Chlorine dioxide is added to drinking water as a disinfectant in some municipal water-treatment systems in the United States. EPA has set a maximum contaminant level (MCL) of 0.8 mg/L for chlorine dioxide in drinking water and 1 mg/L for chlorite (chlorine dioxide's oxidation product) (2011 TR lines 104-110).

Chlorine dioxide kills microorganisms directly by disrupting transport of nutrients across the cell wall. Chlorine dioxide is an effective disinfectant at a pH of between 5 and 10 (2011 TR lines 149-157).

To form chlorine dioxide, sodium chlorate (NaClO3) and sulfuric acid (H2SO4) are reacted with sulfur dioxide (SO2), or chloric acid is reacted with methanol (CH3OH). Alternatively, chlorine dioxide can be formed with chlorine (Cl2) and sodium chlorite; sodium hypochlorite with hydrochloric acid; potassium chlorate with sulfuric acid; or by passing nitrogen dioxide through a column of sodium chlorate (2011 TR lines 206-210).

Chlorine dioxide is a severe respiratory and eye irritant. The reaction products of chlorine dioxide (chlorite and chlorate) can cause oxidative damage to red blood cells and mild neurobehavioral effects (2011 TR lines 433-436).

Public comments were received during the 2019 review indicating that chlorine materials are necessary in organic crop production, and that chlorine sanitizers have a wide range of uses, including sanitation of equipment and work surfaces, maintaining functioning irrigation systems, preventing the spread of disease, and controlling pathogens detrimental to human health. Some commenters said it was important to have several types of sanitizers available for use in case resistance develops to any of them.

Some public commenters expressed concerns that chlorine sanitizers can be harmful to human health and the environment, and that alternatives should be used when possible. Commenters also suggested that chlorine sanitizers, and all sanitizers, should be reviewed as a group to identify if all sanitizers currently on the National List are needed, and if the use of chlorine sanitizers could be limited to use only where other sanitizers that are less harmful to human health and the environment are not adequate.

Subcommittee vote:

Motion to remove chlorine dioxide from §205.601(a) based on the following criteria in the Organic Foods Production Act (OFPA) and/or 7 CFR 205.600(b) if applicable: none

Motion by: Francis Thicke
Seconded by: Emily Oakley
Yes: 0 No: 7 Abstain: 0 Absent: 2 Recuse: 0

Chlorine materials - Sodium Hypochlorite

Reference: 205.601(a) - As algicide, disinfectants, and sanitizer, including irrigation system cleaning systems. (2) Chlorine materials -For pre-harvest use, residual chlorine levels in the water in direct crop contact or as water from cleaning irrigation systems applied to soil must not exceed the maximum residual disinfectant limit under the Safe Drinking Water Act, except that chlorine products may be used in edible sprout production according to EPA label directions.

(iii) Sodium hypochlorite

Technical Report(s): 1995 TAP; 2006 TR; 2011 TR

Petition(s): N/A

Past NOSB Actions: 10/1995 NOSB minutes and vote; 04/2006 NOSB sunset recommendation; 04/2011 NOSB sunset recommendation; 10/2015 sunset recommendation

Recent Regulatory Background: Sunset renewal notice 2017 (82 FR 14420)

Sunset Date: 03/15/2022

Subcommittee Review:

Sodium hypochlorite is an EPA registered pesticide (OPP No. 014703) that is used in controlling bacteria, fungi, and slime-forming algae (2011 TR lines 86-87). In water and soil, sodium hypochlorite separates into sodium, hypochlorite ions (OCl-), and hypochlorous acid (HOCl) molecules. The hypochlorous acid molecules diffuse through cell walls of microorganisms, changing the oxidation-reduction potential of the cell and inactivating triosephosphate dehydrogenase, an enzyme essential of the digestion of glucose, destroying the microorganism's ability to function. (2011 TR lines 122-133).

Sodium hypochlorite is highly caustic and is a concern for occupational exposure. Acute exposure to high concentrations can cause eye and skin injury. Ingestion can cause gastrointestinal irritation and corrosive injuries to the mouth, throat, esophagus and stomach (2011 TR lines 411-418).

Generally, sodium hypochlorite is produced by reacting chlorine with a solution of sodium hydroxide (NaOH, also called lye or caustic soda). This method is used for most commercial productions of sodium hypochlorite. A more active, but less stable formulation of sodium hypochlorite can be produced by

chlorinating a solution of soda ash (Na2CO3) (TR lines 199-202).

Public comments were received during the 2019 review indicating that chlorine materials are necessary in organic crop production, and that chlorine sanitizers have a wide range of uses, including sanitation of equipment and work surfaces, maintaining functioning irrigation systems, preventing the spread of disease, and controlling pathogens detrimental to human health. Some commenters said it was important to have several types of sanitizers available for use in case resistance develops to any of them.

Some public commenters expressed concerns that chlorine sanitizers can be harmful to human health and the environment, and that alternatives should be used when possible. Commenters also suggested that chlorine sanitizers, and all sanitizers, should be reviewed as a group to identify if all sanitizers currently on the National List are needed, and if the use of chlorine sanitizers could be limited to use only where other sanitizers that are less harmful to human health and the environment are not adequate.

Subcommittee vote:
Motion to remove sodium hypochlorite from §205.601(a) based on the following criteria in the Organic Foods Production Act (OFPA) and/or 7 CFR 205.600(b) if applicable: NA
Motion by: Francis Thicke
Seconded by: Emily Oakley
Yes: 0 No: 7 Abstain: 0 Absent: 2 Recuse: 0

Herbicides, soap-based/ (Soaps, herbicidal)

Reference: 205.601(b) As herbicides, weed barriers, as applicable (1) herbicides soap-based—for use in farmstead maintenance (roadways, ditches, right of ways, building perimeters) and ornamental crops.

Technical Report: 1996 TAP; 2015 TR

Petition(s): N/A

Past NOSB Actions: Actions: 1996 recommendation; 11/2005 NOSB sunset recommendation; 10/2010 NOSB sunset recommendation; 10/2015 sunset recommendation

Recent Regulatory Background: Sunset renewal notice 2017 (82 FR 14420)

Sunset Date: 03/15/2022

Subcommittee Review
Soap-based herbicides generally are comprised of a fatty acid component with carbon, hydrogen and oxygen atoms with potassium or ammonium counterions. Potassium salts of fatty acids include individual soap salts such as potassium laurate, potassium myristate, potassium oleate and potassium ricinoleate). Potassium salts of fatty acids are produced through a process known as saponification, whereby aqueous potassium hydroxide (KOH) is added to fatty acids commonly found in animal fats and plant oils (NPIC, 2001; Nora, 2010). Alternatively, ammonium salts of fatty acids, such as ammonium nonanoate, are produced through the room temperature reaction of aqueous ammonia (NH3) or ammonium hydroxide (NH4OH) with fatty acids (Reiling, 1962; Dunn, 2010). Commercially available soap salt products are used as acaricides, algicides, herbicides, insecticides and animal repellents, controlling a variety of insects, mosses, algae, lichens, liverworts and other weeds.

Technical Review Evaluation Report, Soap-Based Herbicides, February 27, 2015:
Potential Human Health Impact Concerns: The US Food and Drug Administration (FDA) classifies "salts of fatty acids" as Generally Recognized As Safe (GRAS) when used in food and in the manufacture of food components (7 CFR 172.863). Ammonium salts of fatty acids are not included in the FDA's description of GRAS fatty acid salts. Despite the lack of systemic toxicity associated with soap salts, both potassium and ammonium salts of fatty acids can lead to various forms of irritation.

Potassium soaps are classified as corrosive to the skin, side effects include skin redness, cracking and fissuring of skin. Even though potassium soaps are only moderately irritating to the skin, they are corrosive to the eyes and may cause permanent eye damage in extreme exposure scenarios (US EPA, 2012).

Reproductive issues, weight loss, and failure to maintain pregnancies were observed in laboratory animals administered soap salts at high doses. However, the incidences of fetal loss, malformations, visceral or skeletal anomalies and skeletal variants were within the historical control range for young mice in the 500 mg/kg-day dose group. The International Agency for Research on Cancer (IARC) has not listed potassium or ammonium soaps as carcinogens (IARC, 2014).

Potential aquatic organisms impact concerns: The technical review (TR) states that the acute and chronic toxicity of soap salts is markedly different for land- and water-dwelling organisms. Terrestrial animals—including mammals, birds, and insects—are largely unaffected by exposure to even high doses of potassium and ammonium salts of fatty acids; however, aquatic animals are moderately (fish) to highly (crustaceans) sensitive to these substances (Thurston County, 2009a; Thurston County, 2009b). Studies submitted to US EPA for registration of potassium and ammonium salts of fatty acids indicate that potassium salts are generally more toxic to aquatic organisms than their ammonium counterparts. The TR also states that they may harm many soil-dwelling organisms including insects, earthworms, and nematodes that are supportive of organic production.

International Standards, Soap-Based Herbicides: Organic standards for COR, EU, Codex Alimentarius Commission, MAFF, and IFOAM allow fatty acid potassium salts for differing uses in organic production. COR specifically does not allow ammonium soaps to be in direct contact with soil or edible portion of crops production.

The Crops Subcommittee supports relisting soap-based herbicides at §205.601(b).

Subcommittee vote:

Motion to remove soap based herbicides from §205.601(b) based on the following criteria in the Organic Foods Production Act (OFPA) and/or 7 CFR 205.600(b) if applicable: none
Motion by: Sue Baird
Seconded by: Jesse Buie
Yes: 0 No: 5 Abstain: 2 Absent: 2 Recuse: 0

Biodegradable biobased mulch film

Reference: 205.601(b) As herbicides, weed barriers, as applicable (2) Mulches (iii) Biodegradable biobased mulch film as defined in §205.2. Must be produced without organisms or feedstock derived from excluded methods.

Technical Report: 2012 TR; 2015 Report; NOP Policy Memorandum 15-1; Supplemental Technical Evaluation Report 2016

Petition(s): 2012

Past NOSB Actions: Actions: 10/2012 NOSB Recommendation

Recent Regulatory Background: Added to National List effective 10/30/14 (79 FR 58655)

Sunset Date: 10/30/19

Subcommittee Review:

Biodegradable biobased mulch films were approved for placement on the National List of approved synthetics without detailed information about the how much non-biobased content would be allowed. The vast majority of mulch films in this category contain 20% or less of biobased materials, with the remainder consisting of polymers, colorings, and other synthetic materials. There are some products that might meet the biobased aspect of this material's definition on §205.2, but are either not biodegradable or are not used widely in production due to brittleness or other production issues.

In January 2015, the National Organic Program issued Policy Memorandum 15-1, clarifying that biodegradable biobased mulch film must not contain any synthetic polymer feedstocks. The NOSB requested a limited scope technical review (TR) in 2016. This TR focused upon biobased biodegradable mulches that contain polymers and the soil and crop health effects they may have as they biodegrade. This supplemental TR was inconclusive, since research on these materials is currently limited.

There have been numerous public comments requesting the NOSB work with the NOP to allow a biodegradable biobased mulch that contains these unique polymers. Some noted that having a degradable plastic mulch is more environmentally friendly than using landfills for the non-degradable plastic mulches. Commenters also acknowledged that there are currently very few options (other than difficult to use paper mulch), for 100% biobased mulch, but felt the listing should remain. This could encourage development of mulch that would meet the NOP regulations, or solicit information that could change the directive in the policy memo. The fact this product is derived from petroleum, led to negative comments asking for its removal from the National List of approved synthetics.

There are studies now in progress that could provide more information in the future, which could result in a proposed annotation change or other mechanism to allow the use of a mulch containing some percentage of these synthetic polymers. The research may also support the current NOP regulations and policy memo that no synthetic polymers are allowed in degradable mulch. Our current understanding of the unique synthetic polymers used in these biodegradable mulches is they are recognized by the soil biological life as food, and readily consumed and degraded when incorporated into the soil. However, there are fossil fuel-based fertilizers, used in nonorganic agriculture, that also break down in the soil and provide nutrients for plants as well, but they are not allowed. The Crops Subcommittee will keep biodegradable, biobased mulch film on our work agenda. We will revisit it again once we have more information and can determine if the polymers used in these biodegradable mulch films are compatible with the approved synthetic materials criteria in the Organic Foods Production Act.

The Crops Subcommittee favors keeping biodegradable biobased mulch film on the National List at 205.601(b).

Subcommittee vote:

Motion to remove biodegradable biobased mulch film as defined in §205.2 - Must be produced without organisms or feedstock derived from excluded methods.
Motion by: Harriet Behar
Seconded by: Emily Oakley
Yes: 0 No: 8 Abstain: 0 Absent: 1 Recuse:

Boric acid

Reference: 205.601(e) As insecticides (including acaricides or mite control). (3) Boric acid - structural pest control, no direct contact with organic food or crops.
Technical Report: 1995 TAP
Petition(s): N/A
Past NOSB Actions: 04/1995 NOSB minutes and vote; 11/2005 NOSB sunset recommendation; 10/2010 NOSB sunset recommendation; 10/2015 sunset recommendation
Recent Regulatory Background: Sunset renewal notice 2017 (82 FR 14420)
Sunset Date: 03/15/2022

Subcommittee Review:

Boric acid, derived from the mineral borax, is a weak acid that has long been considered a "least-toxic" pesticide because it is non-volatile when placed in bait or gel formulations and therefore eliminates risk of direct exposure. However, when used as a dust for structural pest control, exposure can occur, causing hazards for exposed populations.

Boric acid is a reproductive toxicant, a suspected endocrine disruptor, and toxic to plants and animals if misused. Boric acid has a low toxicity to mammals and humans (1995 TAP). Borax mining causes environmental damage. Boric acid raises challenging issues of health and environmental/mining impacts, and there are alternative materials and practices that may be less harmful. Of the alternative choices of pest control products, boric acid is considered to be among the least toxic, as noted in the sources used for this review.

The following question was put forth by the NOSB to the public in 2015: "Are there situations in which boric acid is the only, or safest, means of controlling the pest?", and some response was received. It was stated that it is good to have as a means for control and as a back-up with insect problems. Comment was received that natural alternatives do exist, and that management changes rather than a material application is the best if problems do occur.

At the Fall 2015 NOSB meeting, the Crops Subcommittee proposed a vote to remove boric acid from §205.601(e) on the basis of not fully meeting all sub-components of OFPA criteria in regards to: criteria

of Impacts on Humans and the Environment, Essentiality, and Compatibility & Consistency. The motion to remove failed after receiving 1 "Yes" and 134 "No" votes. While boric acid does not fully meet the OFPA criteria of Impacts on Humans and the Environment, Essentiality, and Compatibility & Consistency, the alternatives often have equally challenging issues.

This material is often used in packing sheds and other facilities. Many times it is used as a powder introduced into cracks and crevices, and is essential for controlling ants and roaches. A number of members of the public did comment regarding the listing of boric acid, and the majority supported re-listing. Numerous distributors, food processing businesses, certifiers and farmers recommended relisting, as a necessary tool for control of ants and roaches in packing houses and food handling facilities. One certifier noted it was not used by any of their certified operations. A few organizations recommended changing the annotation to read: "For use only as bait in traps or in gel formulations". The CS would consider a petition requesting an annotation change.

Subcommittee vote:

Motion to remove boric acid - As insecticides (including acaricides or mite control) (3) Boric acid-structural pest control, no direct contact with organic food or crops from 205.601(e) based on the following criteria in the Organic Foods Production Act (OFPA) and/or 7 CFR 205.600(b) if applicable: none

Motion by: Harriet Behar
Seconded by: Francis Thicke
Yes: 0 No: 8 Abstain: 0 Absent: 1 Recuse: 0

Sticky traps/barriers

Reference: §205.601(e) As insecticides (including acaricides or mite control). (9) Sticky traps/barriers.

Technical Report: 1995 TAP

Petition(s): N/A

Past NOSB Actions: 10/1995 NOSB minutes and vote; 11/2005 NOSB sunset recommendation; 10/2010 NOSB sunset recommendation; 10/2015 sunset recommendation

Recent Regulatory Background: Sunset renewal notice 2017 (82 FR 14420)

Sunset Date: 03/15/2022

Subcommittee Review:

This listing covers a wide range of traps and coatings made with a number of different materials, including coated paper, coated plastic, and brushed on sticky chemicals applied directly to plants. They are typically used for pest control and monitoring in limited quantities and in confined areas, such as tree trunks. As noted in the 1995 TAP review, these products are of low toxicity, and while persistent, they are unlikely to contaminate the surrounding environment. Coated plastic sticky traps produce a small amount of plastic waste. The sticky coating may contain petroleum distillates, and the traps may contain volatile attractants; however, as they do not come in direct contact with crops, there is minimal concern for human health effects. Some are non-specific and can trap non-targeted beneficial insects, spiders, mites, reptiles, and amphibians, although they do not attract non-targeted insects or animals.

One 1995 TAP reviewer suggested the traps are compatible with organic production only in processing

plants. Another suggested they should be used only for monitoring, mass trapping, or barriers. Over twenty years later, more traps are now available, including targeted lures to attract only pest insects, and there is significant experience with their use in organic farming without negative consequences or problems.
During the 2017 sunset review (completed in 2015), public feedback was solicited on the following questions: 1) should the wide range of products covered by this listing be categorized by use and materials, and 2) are some uses of sticky traps incompatible with organic production? There was support for the continued listing of sticky traps/barriers as a permitted synthetic given both product availability and effective insect control.

During this sunset review, no additional information was requested. As in the previous review, there was broad support for relisting sticky traps/barriers from farmers, certifiers, and trade organizations. There was some concern that non-target animals can get caught, with a suggested annotation stating that traps and barriers must be used in a way that prevents non-target trapping.

Subcommittee vote:
Motion to remove sticky traps from §205.601(e) based on the following criteria in the Organic Foods Production Act (OFPA) and/or 7 CFR 205.600(b) if applicable: none
Motion by: Emily Oakley
Seconded by: Sue Baird
Yes: 0 No: 7 Abstain: 0 Absent: 2 Recuse: 0

Coppers, fixed

Reference: 205.601(i) As plant disease control. (2) Coppers, fixed —copper hydroxide, copper oxide, copper oxychloride, includes products exempted from EPA tolerance, *Provided,* That, copper-based materials must be used in a manner that minimizes accumulation in the soil and shall not be used as herbicides.
Technical Report: 1995 TAP; 2011 TR
Petition(s): N/A
Past NOSB Actions: 10/1995 NOSB meeting minutes and vote; 11/2005 NOSB sunset recommendation; 04/2011 NOSB sunset recommendation; 10/2015 sunset recommendation
Recent Regulatory Background: Sunset renewal notice 2017 (82 FR 14420)
Sunset Date: 03/15/2022

Subcommittee Review:
Coppers, fixed, and copper sulfate were reviewed and approved for continued use during the October 2015 NOSB meeting. Coppers continue to be an important tool for organic producers as part of a comprehensive approach to disease management in many crops. For example, copper products became an integrated part of fire blight control in pome fruits after antibiotics were removed from the national list. While some copper minerals and compounds occur in nature, products for agriculture are made from by-products of processing copper ores and are considered synthetic. Copper is on the list of exemptions for synthetic materials in OFPA at § 6517(c)(1)(B)(i). This review applies to both the listing for Coppers, fixed and the listing for Copper Sulfate on the National List 205.601.

The last technical report (TR) was completed in 2011 at which time the EPA had recently completed a re-assessment of copper products. The potential adverse impacts are well known and were discussed in the TR. The main concern with copper materials is their potential to accumulate to toxic levels in the environment. The TR notes the many factors that can affect copper accumulation (2011 TR lines 465 to 549). To address this concern, the copper listings on the National List have the annotation "That, copper-based materials must be used in a manner that minimizes accumulation in the soil..."

To put copper use patterns into perspective, we consulted the *Materials Fact Sheet Copper Products from the Organic Resource Guide, 2nd edition (2013):* http://web.pppmb.cals.cornell.edu/resourceguide/pdf/resource-guide-for-organic-insect-and-disease-management.pdf

"In New York, maximum soil concentration rates for copper have been recommended based on soil type; rates range from 40 ppm in sandy soils, to 60 ppm in silt loam, to 100 ppm in clay soils. These rates have been suggested in order to protect against phytotoxicity and negative impacts on soil life (Harrison et al. 1999). Typically, each spray with a copper-based fungicide results in an application of 1 to 4 lb. of copper per acre, raising the topsoil concentration from 0.5 to 2 ppm; often several copper sprays are made per season. Under a heavy copper spray program, toxic topsoil levels could be reached in a matter of decades."

The effects on human health from agricultural copper were addressed in the TR as follows:

"In "III Summary of Coppers Risk Assessments" of RED-Cu (2009), human health risk, after aggregate or combined exposure to copper compounds, was adequately assessed. The basic considerations are that copper is naturally-occurring, ubiquitous in environment, copper itself is a nutrient, copper deficiency is more of a problem than copper over-exposure, the active assimilation of copper through routes of food, drink, air, non-occupational sources, and other exposure is efficiently modulated, excessively available copper is not assimilated but instead is actively excreted, and no systematic and carcinogenic effects are observed/confirmed. The overall conclusion is that copper, when used as pesticide following the label, would not cause toxic effects." (2011 TR lines 933 - 940)

The effects of copper on the agro-ecosystem (including on biodiversity) were also discussed in the TR:

The 2011 TR (lines 647 - 761) is quite extensive and evaluates many studies on soil microorganisms, earthworms, and crops. The conclusions in all instances is that it depends on the soil composition, soil pH, concentration of copper, species being studied, and crop species being grown.

And:
Copper can have a significant diminishing effect on biodiversity in an aquatic environment such as wetlands. However it is not prone to leaching or runoff in all but the sandiest of soils and is not likely to end up in the sensitive environments if used according to label restrictions. In contrast, copper can be used to control invasive aquatic plants that out-compete native plants in some ecosystems and this would have a positive effect on biodiversity. (2011 TR lines 870 - 874)

The TR closes with a quote from the "Reregistration Eligibility Decision (RED) for Coppers – Revised May 2009":

"U.S. EPA recognized the advantages of using copper pesticides (RED-Cu, 2009): "Through extensive outreach to the public as well as additional comments and refined information provided by the user community, the Agency has determined that there are many benefits that support the significance and continued agricultural uses of copper pesticides. A significant benefit is that copper exposure from all sources, including use as a pesticide in agricultural settings, does not pose any human health concerns. Although there is still potential for ecological effects to non-target organisms, there are many benefits to retain agricultural uses of copper pesticides" (from the 2011 TR lines 988-996, p.20)

The high variability in copper use patterns and organic farming situations led the NOSB to conclude in October 2015 that the annotation in place for this substance is appropriate since certifiers can assess

copper accumulation in the context of a specific farming operation. However, to make sure that this is true, public comment was requested from growers on the importance of this material, and the ways of monitoring accumulation. Input from certifiers was sought on whether testing was being required for monitoring and whether there have been non-compliances issued for enforcement of this annotation.

Comments from certifiers indicated that they require either a testing protocol or an overall copper monitoring plan for growers who include copper on their OSPs. None of the certifiers who wrote comments had issued a non-compliance for accumulation of copper, but several had done so for not having a monitoring plan in place.

In the review of copper materials in Spring 2017, several public comments expressed concern about the overuse of copper, particularly near harvest time, when copper residues could still be seen on harvested produce. There was a question of whether an additional annotation should be added that no visible residues of copper be present at harvest. Several certifiers commented that this would be very difficult to enforce since it would require an inspection visit during the actual harvest. In general, comments during the Spring 2017 Review supported relisting of copper materials and that the current annotation is adequate.

Given the extensive use and documented need for copper sprays, the Crops Subcommittee thinks these materials should be renewed.

Subcommittee vote:

Motion to remove coppers, fixed from §205.601(i) based on the following criteria in the Organic Foods Production Act (OFPA) and/or 7 CFR 205.600(b) if applicable: none
Motion by: Steve Ela
Seconded by: Emily Oakley
Yes: 0 No: 7 Abstain: 0 Absent: 2 Recuse: 0

Copper sulfate

Reference: 205.601(i) As plant disease control. (3) Copper sulfate - Substance must be used in a manner that minimizes accumulation of copper in the soil.

Technical Report: 1995 TAP; 2011 TR

Petition(s): N/A

Past NOSB Actions: 10/1995 NOSB meeting minutes and vote; 11/2005 NOSB sunset recommendation; 04/2011 NOSB sunset recommendation; 10/2015 sunset recommendation

Recent Regulatory Background: Sunset renewal notice 2017 (82 FR 14420)

Sunset Date: 03/15/2022

Subcommittee Review:

Coppers, fixed, and copper sulfate were reviewed and approved for continued use during the October 2015 NOSB meeting. Coppers continue to be an important tool for organic producers as part of a comprehensive approach to disease management in many crops. For example, copper products became an integrated part of fire blight control in pome fruits after antibiotics were removed from the national

list. While some copper minerals and compounds occur in nature, products for agriculture are made from by-products of processing copper ores and are considered synthetic. Copper is on the list of exemptions for synthetic materials in OFPA at § 6517(c)(1)(B)(i). This review applies to both the listing for Coppers, fixed and the listing for Copper Sulfate on the National List 205.601.

The last technical report (TR) was completed in 2011 at which time the EPA had recently completed a re-assessment of copper products. The potential adverse impacts are well known and were discussed in the TR. The main concern with copper materials is their potential to accumulate to toxic levels in the environment. The TR notes the many factors that can affect copper accumulation (2011 TR lines 465 to 549). To address this concern, the copper listings on the National List have the annotation "That, copper-based materials must be used in a manner that minimizes accumulation in the soil..."

To put copper use patterns into perspective, we consulted the *Materials Fact Sheet Copper Products from the Organic Resource Guide, 2nd edition (2013):* http://web.pppmb.cals.cornell.edu/resourceguide/pdf/resource-guide-for-organic-insect-and-disease-management.pdf

"In New York, maximum soil concentration rates for copper have been recommended based on soil type; rates range from 40 ppm in sandy soils, to 60 ppm in silt loam, to 100 ppm in clay soils. These rates have been suggested in order to protect against phytotoxicity and negative impacts on soil life (Harrison et al. 1999). Typically, each spray with a copper-based fungicide results in an application of 1 to 4 lb. of copper per acre, raising the topsoil concentration from 0.5 to 2 ppm; often several copper sprays are made per season. Under a heavy copper spray program, toxic topsoil levels could be reached in a matter of decades."

The effects on human health from agricultural copper were addressed in the TR as follows:

"In "III Summary of Coppers Risk Assessments" of RED-Cu (2009), human health risk, after aggregate or combined exposure to copper compounds, was adequately assessed. The basic considerations are that copper is naturally-occurring, ubiquitous in environment, copper itself is a nutrient, copper deficiency is more of a problem than copper over-exposure, the active assimilation of copper through routes of food, drink, air, non-occupational sources, and other exposure is efficiently modulated, excessively available copper is not assimilated but instead is actively excreted, and no systematic and carcinogenic effects are observed/confirmed. The overall conclusion is that copper, when used as pesticide following the label, would not cause toxic effects." (2011 TR lines 933 - 940)

The effects of copper on the agro-ecosystem (including on biodiversity) were also discussed in the TR:

The 2011 TR (lines 647 - 761) is quite extensive and evaluates many studies on soil microorganisms, earthworms, and crops. The conclusions in all instances is that it depends on the soil composition, soil pH, concentration of copper, species being studied, and crop species being grown.

And:
Copper can have a significant diminishing effect on biodiversity in an aquatic environment such as wetlands. However it is not prone to leaching or runoff in all but the sandiest of soils and is not likely to end up in the sensitive environments if used according to label restrictions. In contrast, copper can be used to control invasive aquatic plants that out-compete native plants in some ecosystems and this would have a positive effect on biodiversity. (2011 TR lines 870 - 874)

The TR closes with a quote from the "Reregistration Eligibility Decision (RED) for Coppers – Revised May 2009":

"U.S. EPA recognized the advantages of using copper pesticides (RED-Cu, 2009): "Through extensive outreach to the public as well as additional comments and refined information provided by the user community, the Agency has determined that there are many benefits that support the significance and continued agricultural uses of copper pesticides. A significant benefit is that copper exposure from all sources, including use as a pesticide in agricultural settings, does not pose any human health concerns.

Although there is still potential for ecological effects to non-target organisms, there are many benefits to retain agricultural uses of copper pesticides" (from the 2011 TR lines 988-996, p.20)

The high variability in copper use patterns and organic farming situations led the NOSB to conclude in October 2015 that the annotation in place for this substance is appropriate since certifiers can assess copper accumulation in the context of a specific farming operation. However, to make sure that this is true, public comment was requested from growers on the importance of this material, and the ways of monitoring accumulation. Input from certifiers was sought on whether testing was being required for monitoring and whether there have been non-compliances issued for enforcement of this annotation.

Comments from certifiers indicated that they require either a testing protocol or an overall copper monitoring plan for growers who include copper on their OSPs. None of the certifiers who wrote comments had issued a non-compliance for accumulation of copper, but several had done so for not having a monitoring plan in place.

In the review of copper materials in Spring 2017, several public comments expressed concern about the overuse of copper, particularly near harvest time, when copper residues could still be seen on harvested produce. There was a question of whether an additional annotation should be added that no visible residues of copper be present at harvest. Several certifiers commented that this would be very difficult to enforce since it would require an inspection visit during the actual harvest. In general, comments during the Spring 2017 Review supported relisting of copper materials and that the current annotation is adequate.

Given the extensive use and documented need for copper sprays, the Crops Subcommittee thinks these materials should be renewed.

Subcommittee vote:

Motion to remove copper sulfate from §205.601(i) based on the following criteria in the Organic Foods Production Act (OFPA) and/or 7 CFR 205.600(b) if applicable: none
Motion by: Steve Ela
Seconded by: Francis Thicke
Yes: 0 No: 7 Abstain: 0 Absent: 2 Recuse: 0

Humic acids

Reference: 205.601(j) As plant or soil amendments. 3) Humic acids - naturally occurring deposits, water and alkali extracts only.

Technical Report: 1996 TAP; 2006 TR: 2012 TR for oxidized lignite/humic acid derivatives

Petition(s): N/A

Past NOSB Actions: 09/1996 meeting minutes and vote; 04/2006 sunset recommendation; 10/2010 NOSB sunset recommendation; 10/2015 sunset recommendation

Recent Regulatory Background: Sunset renewal notice 2017 (82 FR 14420)

Sunset Date: 03/15/2022

Subcommittee Review:

Humic acids, which naturally exist in soils, can be supplemented by manufactured humic acids from oxidized lignite. Humic acids are used as a component of traditional fertilizers, and do not provide

additional nutrients to plants, but rather affect soil fertility by making micronutrients more readily available to plants. "Humic acids are applied as a soil conditioner to increase cation exchange capacity, enhance mineral availability, improve soil structure, stimulate soil microorganisms, and provide broad spectrum trace elements." Commercially available humic acids are derived from leonardite and lignite. Extracts from nonsynthetic humates by hydrolysis using synthetic or nonsynthetic alkaline materials are permitted, including the use of potassium hydroxide and ammonium hydroxide. Humic acid derivatives are on the National List with the following annotation: naturally occurring deposits, water and alkali extracts only." [7 CFR 205.601(j)(3)].

In 2015 the majority of comments were in favor of keeping humic acids on the National List. At the Spring 2017 NOSB meeting the majority of commenters were also in favor of keeping humic acids. Several objections focused on environmental concerns related to humic acids as fertility tools manufactured, in some cases, from low grade coal (lignite).

However, as reiterated in public comment, humic acids are viewed as a critical and necessary element of nutrient management in organic farming. Concerns were raised that removal from the National List would negatively impact many growers.

Based on the Subcommittee review and public comment, the NOSB finds humic acids compliant with OFPA criteria, and does not recommend removal from the National List.

Subcommittee vote:

Motion to remove humic acids from 205.601(j) based on the following criteria in the Organic Foods Production Act (OFPA) and/or 7 CFR 205.600(b) if applicable: NA
Motion by: Ashley Swaffar
Seconded by: Dave Mortensen
Yes: 0 No: 9 Abstain: 0 Absent: 0 Recuse: 0

Micronutrients: Soluble boron products.

Reference: 205.601(j)(6) - As a plant or soil amendment. Micronutrients—not to be used as a defoliant, herbicide, or desiccant. Those made from nitrates or chlorides are not allowed. Soil deficiency must be documented by testing. (i) Soluble boron products.
Technical Report: 2010 TR Micronutrients
Petition(s): N/A
Past NOSB Actions: 04/1995 NOSB minutes and vote; 11/2005 NOSB sunset recommendation; 10/2010 NOSB sunset recommendation; 10/2015 sunset recommendation; 10/2015 micronutrient annotation change
Recent Regulatory Background: Sunset renewal notice 2017 (82 FR 14420)
Sunset Date: 03/15/2022

Subcommittee Review:
Micronutrients, including soluble boron, are essential for plant health and are typically applied in very small quantities. While producers can choose to rely on the natural presence of micronutrients in their soil, many find deficiencies of some or all of these micronutrients on the National List. The lack of these micronutrients can be a limiting factor in water and macro-nutrient uptake, and can result in limiting growth and vitality of crops.

At the October 29, 2015 NOSB meeting, the Board voted to change the Micronutrients annotation from:
205.601 (j) -As a plant or soil amendment.
(6) Micronutrients -not to be used as a defoliant, herbicide, or desiccant. Those made from nitrates or chlorides are not allowed. Soil Deficiency must be documented by testing.
to:
205.601 (j) -As a plant or soil amendment.
(6) Micronutrients - not to be used as a defoliant, herbicide, or desiccant. Those made from nitrates or chlorides are not allowed. Deficiency must be documented.

As of January 17, 2017, this annotation change has not yet been implemented by the NOP or printed in the Federal Register. The NOSB crops supports this annotation change.

All public commenters were supportive of relisting this micronutrient, calling it essential. Certifiers, distributors, food processing businesses, and many individual growers stated their need for this material and that it is very commonly used. One commenter felt that there should be a way to address over-accumulation of all micronutrients used by organic growers. Others felt that if testing must be done before micronutrients are used, the application may be too late to save the crop or perennial plant.

The Subcommittee supports the proposed annotation change recommended by the NOSB in October 2015. Removing the requirement that there be soil testing before allowing application is problematic for both perennial and annual crop producers. There are numerous ways of documenting a deficiency, other than soil testing. By the time the deficiency is noted through soil testing, it may be too late to save the perennial plant or crop. This is an essential micronutrient, used across all types of crop production.

The Crops Subcommittee supports relisting micronutrients: soluble boron products at §205.601(j)(6).

Subcommittee vote:
Motion to remove micronutrients: soluble boron products from §205.601(j) based on the following criteria in the Organic Foods Production Act (OFPA) and/or 7 CFR 205.600(b) if applicable: none
Motion by: Harriet Behar
Seconded by: Jesse Buie
Yes: 0 No: 8 Abstain: 0 Absent: 1 Recuse: 0

Micronutrients: sulfates, carbonates, oxides, or silicates of zinc, copper, iron, manganese, molybdenum, selenium, and cobalt

Reference: 205.601(j)(6) - As plant or soil amendments. Micronutrients—not to be used as a defoliant, herbicide, or desiccant. Those made from nitrates or chlorides are not allowed. Soil deficiency must be documented by testing. (ii) Sulfates, carbonates, oxides, or silicates of zinc, copper, iron, manganese, molybdenum, selenium, and cobalt.
Technical Report: 2010 TR Micronutrients
Petition(s): N/A
Past NOSB Actions: 04/1995 NOSB minutes and vote; 11/2005 NOSB sunset recommendation; 10/2010 NOSB sunset recommendation; 10/2015 annotation change recommendation; 10/2015 sunset

recommendation

Recent Regulatory Background: Sunset renewal notice 2017 (82 FR 14420)

Sunset Date: 03/15/2022

Subcommittee Review:

Micronutrients are essential for plant health and are typically applied in very small quantities. While producers can choose to rely on the natural presence of micronutrients in their soil, many find deficiencies of some or all of the micronutrients on the National List. The lack of these micronutrients can be a limiting factor in water and macro-nutrient uptake, and can result in limiting growth and vitality of crops.

At the October 29, 2015 NOSB meeting, the Board voted to change the micronutrients annotation from:

205.601 (j) -As plant or soil amendments.

(6) Micronutrients -not to be used as a defoliant, herbicide, or desiccant. Those made from nitrates or chlorides are not allowed. Soil deficiency must be documented by testing.

to:

205.601 (j) -As plant or soil amendments.

(6) Micronutrients -not to be used as a defoliant, herbicide, or desiccant. Those made from nitrates or chlorides are not allowed. Deficiency must be documented.

As of January 17, 2017, this annotation change has not been published in the Federal Register.

All public commenters were supportive of relisting these micronutrients, calling them essential in a variety of cropping systems. Certifiers, distributors, food processing businesses, and many individual growers stated their need for these materials and one or more of them are commonly used. One commenter felt that there should be a way to address over-accumulation of all micronutrients used by organic growers. Others felt that if testing must be done before micronutrients are used, the application may be too late to save the crop or perennial plant.

The Crops Subcommittee supports renewing micronutrients with the proposed annotation change recommended by the NOSB in October 2015. The requirement that there be soil testing before allowing application is problematic for both perennial and annual crop producers. There are numerous ways of documenting a deficiency, other than soil testing. By the time the deficiency is noted through soil testing, it may be too late to save the perennial plant or crop. Many of these are essential micronutrients, used across all types of crop production.

Subcommittee vote:

Motion to remove micronutrients: sulfates, carbonates, oxides, or silicates of zinc, copper, iron, manganese, molybdenum, selenium, and cobalt at §205.601 (j) based on the following criteria in the Organic Foods Production Act (OFPA) and/or 7 CFR 205.600(b) if applicable: none
Motion by: Harriet Behar
Seconded by: Steve Ela
Yes: 0 No: 6 Abstain: 0 Absent: 3 Recuse: 0

Vitamins B_1, C, E

Reference: 205.601(j)(8) - As plant or soil amendments. Vitamins B_1, C, and E

Technical Report(s): 1995 TAP; 2015 TR

Petition(s): N/A

Past NOSB Actions: 10/1995 minutes and vote; 11/2005 NOSB sunset recommendation; 10/2010 NOSB sunset recommendation; 10/2015 sunset recommendation

Recent Regulatory Background: Sunset renewal notice 2017 (82 FR 14420)

Sunset Date: 03/15/2022

Subcommittee Review:

Vitamins, including synthetically derived vitamins B1 (thiamine), C (ascorbic acid) and E (tocopherols), are generally considered non-toxic essential nutrients for terrestrial and aquatic organisms. Nonsynthetic sources of all vitamins and synthetic sources of vitamins B1, C, and E may be used in certified organic crop production. Vitamin B1 is an ingredient in many commercial root stimulator products helping to establish nursery-grown planting stock once transplanted. As noted in the 2015 technical review, the available literature does not support the premise that foliar and soil applications of vitamin B1 are responsible for root stimulation in transplanted crops. Vitamins C and E are used to promote both growth and yields and to protect plants from oxidative stress due to salinity. However, practical information regarding their use was unavailable; therefore the TR relied on peer-reviewed scientific literature.

An OMRI (Organic Materials Review Institute) product search for each of the three vitamins resulted in zero entries. An OMRI generic materials database search indicated that nonsynthetic plant hormones such as gibberellic acid, indole acetic acid (IAA), and cytokinins might be applied to organic crops as plant growth regulators. Additionally, there are several naturally derived, OMRI-listed substances marketed to stimulate root growth.

During the 2017 sunset review, there was some public comment in support of relisting these materials for the purpose intended. Commenters indicated that vitamins B1, C, and E are rarely used individually but are included as ingredients in some of the products reviewed for crop fertility. To supplement the 1995 TAP review, the Crops Subcommittee requested a technical review.

The 2015 TR indicated that the root growth claims associated with vitamin B1 are largely unsubstantiated. Alternative practices include encouraging the growth and productivity of beneficial soil microorganisms to help produce vitamin B1, reduce fertilizer use, refrain from applying fertilizer at the time of planting, and proper irrigation of the root ball and surrounding soil. There was no use information for vitamins C and E on agriculture extension websites.

During the 2019 sunset review, additional information was requested on the efficacy and use of vitamin B1, given that the 2015 TR stated that it is not generally effective at reducing transplant shock or stimulating new root growth outside of a laboratory setting. Public comments were solicited as to whether vitamin B1 should be removed or if there are there other benefits attributed to it that necessitates its continued listing as a plant or soil amendment. Specific information was invited regarding its use in the tree fruit industry and if there is a need for vitamin B1 to assist in transplant shock or replant disease issues.

Public comments were received from certifiers, material reviewers, organizations, and farmers supporting the continued listing of the vitamins. In response to the questions posed, stakeholders again noted that there are products in use containing multiple vitamins, particularly in blended fertilizers. There was some concern that the vitamins could be made from excluded methods; however, there are vitamins available from non-GMO sources, and material reviewers can obtain affidavits attesting to that. There was very limited feedback regarding the efficacy and use of vitamin B1, particularly in relation to the tree fruit industry.

The 2015 TR reveals that it is the auxins indole butyric acid (IBA) and naphthylacetic acid (NAA) that "contribute to root regeneration of transplanted trees by suppressing crown growth to effectively redirect resources to developing roots", rather than vitamin B1 (TR lines 102-111). Additionally, multiple studies of vegetable transplants, trees, and flowers concluded that vitamin B1 had no impact on seedling vigor, size, color, or root development (TR lines 111-117). The TR was unable to describe a mode of action for the substance "in the absence of significant *in vivo* results correlating vitamin B1 applications with enhanced root growth" (TR lines 212-219). The TR provides broad reference to alternative substances for Vitamin B1 (TR lines 643-692). There are no OMRI approved brand name crop inputs containing Vitamin B1 in the final product.

The Crops Subcommittee chose to separate the vitamins for voting purposes, as indicated below.

Subcommittee votes:

Motion to remove vitamin B1 from §205.601(j) based on the following criteria in the Organic Foods Production Act (OFPA) and/or 7 CFR 205.600(b) if applicable: incompatible with a system of sustainable agriculture due to its unproven efficacy or need and a lack of essentiality.

Motion by: Emily Oakley
Seconded by: Steve Ela
Yes: 6 No: 0 Abstain: 0 Absent: 3 Recuse: 0

Motion to remove Vitamins C and E from §205.601(j) based on the following criteria in the Organic Foods Production Act (OFPA) and/or 7 CFR 205.600(b) if applicable: none
Motion by: Emily Oakley
Seconded by: Harriet Behar
Yes: 0 No: 6 Abstain: 0 Absent: 3 Recuse: 0

Lead salts

Reference: 205.602 The following nonsynthetic substances may not be used in organic crop production: (d) Lead salts.

Technical Report: none

Petition(s): N/A

Past NOSB Actions: 04/1995 NOSB minutes and vote; 11/2005 NOSB sunset recommendation; 10/2010 NOSB sunset recommendation; 10/2015 sunset recommendation

Recent Regulatory Background: Sunset renewal notice 2017 (82 FR 14420)

Sunset Date: 03/15/2022

Subcommittee Review:
Lead poisoning can cause a number of adverse human health effects but is particularly detrimental to the neurological development of children. Lead accumulates in soils, so it is important to avoid soil applications of materials containing lead, whether the lead is in synthetic materials or naturally occurring (nonsynthetic) lead salts.

Public comments received were in favor of keeping lead salts on the list of nonsynthetic substances prohibited for use in organic crop production.

The NOSB recommends keeping lead salts in its prohibited status on the National List.

Subcommittee vote:
Motion to remove lead salts from §205.602 based on the following criteria in the Organic Foods Production Act (OFPA) and/or 7 CFR 205.600(b) if applicable: none
Motion by: Francis Thicke
Seconded by: Emily Oakley
Yes: 0 No: 7 Abstain: 0 Absent: 2 Recuse: 0

Tobacco dust (nicotine sulfate)

Reference: 205.602 The following nonsynthetic substances may not be used in organic crop production: (i) Tobacco dust (nicotine sulfate)
Technical Report: none
Petition(s): N/A
Past NOSB Actions: 04/1995 NOSB minutes and vote; 11/2005 NOSB sunset recommendation; 10/2010 NOSB sunset recommendation; 10/2015 sunset recommendation
Recent Regulatory Background: Sunset renewal notice 2017 (82 FR 14420)
Sunset Date: 03/15/2022

Subcommittee Review:
Tobacco dust, nicotine sulfate, has been present on the National List as a prohibited substance since the inception of the USDA organic regulations. This natural product can be used as a pesticide and as a fertility input. Due to the negative human health effects caused by this material, it has been relisted as a prohibited nonsynthetic on the National List at every sunset with no objections from the public or from the NOSB. It is present on the Hazardous Substance list and regulated by OSHA and the EPA as well as other agencies.

Public comments indicated that certifiers, businesses and public interest organizations agree that this product should remain listed as a prohibited nonsynthetic. It was noted by two certifiers and OMRI that this is currently allowed as a natural agricultural product to be incorporated into the soil, while tobacco dust, tea and smoke are prohibited by USDA organic regulations. Clarification had been requested to better

draw the line between where it is allowed and where it is prohibited. It was noted that this product is no longer commercially available as a crop pest control product, however it could still be homemade.

The Subcommittee recognizes there are questions as to where to draw the line in respect to the use of tobacco, tobacco dust, smoke, and tea. The Subcommittee is researching the use of various tobacco products as soil amendments, compost feedstocks, etc. in organic agriculture as well as future actions needed, if any, to clarify these allowed or prohibited uses.

The Crops Subcommittee supports keeping tobacco dust on the National List at §205.602.

Subcommittee vote:
Motion to remove tobacco dust from §205.602 based on the following criteria in the Organic Foods Production Act (OFPA) and/or 7 CFR 205.600(b) if applicable: none
Motion by: Harriet Behar
Seconded by: Joelle Mosso
Yes: 0 No: 8 Abstain: 0 Absent: 1 Recuse: 0