

**National Organic Standards Board
Crops Subcommittee
Petitioned Material Proposal
Fatty Alcohols (Octanol/Decanol mix)
August 1, 2017**

Summary of Petition

Green Ag Supply, LLC has petitioned for inclusion of natural fatty alcohols in Section 205.601 of the National Organic Program's (NOP) National List of Allowed and Prohibited Substances. The petitioner intends to use this substance as sucker control on organic crops.

Category: Synthetic Substance Allowed for Use in Organic Crop Production

NOP Reference: 205.601 - Synthetic substances allowed for use in organic crop production.

NOP Section: 205.601(k) - As plant growth regulators

Requested Annotation: As a sucker control on organic crops

Rather than filing separate petitions for octanol (C8) and decanol (C10), the petitioner chose to submit a single petition to focus on the blend of C8C10 fatty alcohol since it is the product that is specifically manufactured for use in the end products N-TAC (EPA Reg. No. 51873-20) and O-TAC PLANT CONTACT AGENT (EPA Reg. No. 51873-18). This blend of fatty alcohols is also marketed under the product name ALFOL 810 (EPA Reg. No. 63896-1). The only other registered uses for individual fatty alcohols is the C10 (decanol) and it is not included in this petition. There is no EPA registered use for C8 (octanol) fatty alcohol.

Summary of Review:

Fatty alcohols (Octanol and Decanol) are monohydric aliphatic alcohols containing 8 and 10 carbons respectfully with a single (-OH) group. The Octyl-Decyl alcohol blend refers to a blend of C8 and C10 alcohol (42.6%/56.7%). According to the petitioner, raw material for the alcohols are derived primarily from Palm Kernel Oil and Palm Oil, not synthetic alcohol.

The petitioner proposes to use the fatty alcohol blend for topping and sucker control on organic crops. The Technical Review indicates the specific use of this fatty alcohol substance is to chemically remove flower buds and suckers from tobacco plants. This process prevents seed formation and causes the plant to focus on leaf production. This is important because tobacco sells by weight, so the heavier the leaves, the greater the profit.

There is no reference in the National List for fatty alcohols. The proposal to add fatty alcohols to the National List specifies 7 CFR 205.601 (k) under the heading plant growth regulator. This section of the National List currently describes the use of the synthetic substance ethylene in organic crop production as a plant growth regulator for regulation of pineapple flowering. Fatty alcohols as aqueous emulsions inhibit terminal or axillary bud growth of tobacco plants. Contact with meristematic tissue affects plant development by preventing the growth flower buds and suckers. The EPA only registers products containing fatty alcohols for tobacco sucker control.

EPA has only approved fatty alcohols for use as a growth regulator on tobacco, and the technical review only covered use of fatty alcohols for use on tobacco.

Category 1: Classification

1. For CROP use: This substance is **synthetic**.

Is the substance formulated or manufactured by a process that chemically changes a substance extracted from naturally occurring plant, animal, or mineral sources? [OFPA §6502(21)] If so, describe, using NOP 5033-1 as a guide.

Fatty alcohols can be produced from natural fats from plants or animals, or from petroleum sources. In either case, chemical changes are required to produce fatty alcohols.

2. Reference to appropriate OFPA category:

Is the substance used in production, and does it contain an active synthetic ingredient in the following categories: [§6517(c)(1)(B)(i)]; copper and sulfur compounds; toxins derived from bacteria; pheromones, soaps, horticultural oils, fish emulsions, treated seed, vitamins and minerals; livestock parasiticides and medicines and production aids including netting, tree wraps and seals, insect traps, sticky barriers, row covers, and equipment cleansers; or (ii) is used in production and contains synthetic inert ingredients that are not classified by the Administrator of the Environmental Protection Agency as inerts of toxicological concern?

Fatty alcohols do not fall into any of the OFPA categories. Fatty alcohols produced as a mixture of four aliphatic alcohols are not considered inert by the Environmental Protection Agency nor are they included in List 4. Fatty alcohols may be registered with the EPA only for tobacco sucker control. N-decyl alcohol (decanol) and n-octyl alcohol (octanol) are individually approved by the US Food and Drug Administration (FDA) for food and non-food use as solvents or co-solvents.

Category 2: Adverse Impacts

1. What is the potential for the substance to have detrimental chemical interactions with other materials used in organic farming systems?

There appears to be no known detrimental chemical interactions between fatty alcohols and other materials used in organic farming systems. Mineral oil, cooking oil or paraffin oil are currently the only topping and suckering substances used by organic crop producers and there is no proven adverse impact with these substances.

2. What is the toxicity and mode of action of the substance and of its breakdown products or any contaminants, and their persistence and areas of concentration in the environment?

[§6518(m)(2)]

The log Kow is an indicator of a chemical's tendency to bioaccumulate. The TR reports log Kow's for octanol and decanol at 3.15 and 4.57 respectively, which are moderately low.

3. Describe the probability of environmental contamination during manufacture, use, misuse or disposal of such substance? [§6518(m)(3)]

According to the Safer Choice determination of the EPA, 1-decanol, 1-octanol, 1-dodecanol and the C₆-C₁₂ alcohols are expected to be of low concern for environmental contamination based on experimental and modeled data. Linear fatty alcohols in general are easily biodegradable. The solubility of fatty alcohols in water decreases with an increasing C-chain length. Fatty alcohols possess only moderate acute toxicity for aquatic organisms. In general, in their range of water solubility no toxic effects are observed.

The fatty alcohols from both natural and manufactured sources represent a low risk for environmental contamination.

4. Discuss the effect of the substance on human health.

There is no evidence to suggest that the aliphatic alcohols cause increased susceptibility to health problems in infants and children. Based on the results of the available studies, no endpoints of toxicological concern have been identified for human health risk assessment purposes. The EPA concluded that there are no human risks of concern for aliphatic alcohols. TR lines 396 – 399.

5. Discuss any effects the substance may have on biological and chemical interactions in the agroecosystem, including the physiological effects of the substance on soil organisms (including the salt index and solubility of the soil), crops and livestock. [§6518(m)(5)]

When fatty alcohols are applied to tobacco plants for suckering with a surfactant, an average residue of 1.6 parts per million (ppm) of the applied fatty alcohols and 1.0 ppm of the surfactant remain on the cured leaves. Over 7000 ppm of naturally occurring fatty alcohols are also present in and on the cured leaves. Fatty alcohols induce a low incidence of polynucleate root tip cells or root tip cells with fragmented nuclei. The fatty alcohols are produced naturally, in all living organisms, from bacteria to man, and thus, are widely present throughout the natural world. In any agro-ecosystem, fatty alcohols will be present from natural sources. The introduction of C₆-C₁₂ fatty alcohols for topping and suckering may produce short term toxicity to many organisms in the range of 1-100 milligrams/liter, however; because the application rate is intermittent and biodegradability and removal rate are high for this substance no readily observable effects occur in the agroecosystem. TR lines 342-352.

6. Are there any adverse impacts on biodiversity? (§205.200)
Fatty alcohols are chemicals that naturally occur in all plants and animals. They are known for their high level of biodegradability in the environments. Their derivative products are additionally designed to rapidly degrade after use and are not considered endocrine disrupters.

Category 3: Alternatives/Compatibility

1. Are there alternatives to using the substance? Evaluate alternative practices as well as non-synthetic and synthetic available materials. [§6518(m)(6)]

Topping may be done by hand or with special machines that cut the flower heads and sacrifice a few leaves. Topping requires two or three trips over the field to catch all the plants. Suckers can be removed by hand as well as stunted by carefully applying approved soybean oil or mineral oil to the top of the plant. Topping and suckering are the most time-consuming tasks associated with growing organic tobacco, and may be necessary every week for 10 weeks.

2. In balancing the responses to the criteria above, is the substance compatible with a system of sustainable agriculture? [§6518(m)(7)]

No. The Crops Subcommittee does not think that use of a synthetic growth regulator is compatible with a system of sustainable and organic agriculture.

Classification Motion:

Motion to classify fatty alcohols (octanol/decanol mix) as petitioned as synthetic.

Motion by: Jesse Buie

Seconded by: Emily Oakley

Yes: 8 No: 0 Abstain: 0 Absent: 1 Recuse: 0

National List Motion:

Motion to add fatty alcohols (octanol/decanol mix) as petitioned at §205.601(k)(2) for use in organic crop production.

Motion by: Jesse Buie

Seconded by: Emily Oakley

Yes: 0 No: 8 Abstain: 0 Absent: 1 Recuse: 0

Approved by Francis Thicke, Subcommittee Chair, to transmit to NOSB, August 16, 2017