

**National Organic Standards Board
Crops Subcommittee
Petitioned Material Proposal
Potassium Cellulose Glycolate
August 30, 2016**

Summary of [Petition](#):

Lamberti USA, Incorporated has petitioned for the inclusion of potassium cellulose glycolate on the National List at 7 CFR 205.601 (synthetic substances allowed for use in organic crop production) as a synthetic inert ingredient.

Potassium Cellulose glycolate, or Potassium Carboxymethylcellulose (CMC), is a chemically modified polymer derived from natural cellulose. The petition proposes to utilize Potassium CMC as a water filtration aid during irrigation and in combination with liquid fertilizers and nutrients.

Potassium CMC is manufactured from naturally occurring cellulose by replacing one or more reactive hydroxyl groups with carboxymethyl groups through etherification. This is achieved by treating cellulose with caustic soda to attain the alkali-cellulose complex. This is further reacted with Mono Chloroacetic Acid (MCA), and the result is CMC and Sodium Chloride. Sodium Glycolate is formed through a side reaction by the caustic soda on MCA. Pure grade CMC is obtained by removing impurities with an aqueous solvent treatment.

Potassium CMC is being petitioned for its water holding properties, delivering water more effectively to the plant's root zone. The petition claims that the material increases drip irrigation efficiency by approximately 30-40%.

Summary of Review:

The Subcommittee determined that water usage is not a criteria under OFPA, and there was insufficient information justifying the need for this material in an organic production system. Soil organic matter serves to naturally increase water holding capacity and retention. Managing for and fostering soil organic matter is a key element in a good organic system plan.

The Subcommittee did not request a technical review after deciding that the petitioned material was not necessary for organic production. The Subcommittee determined that the petitioned substance fails to meet the OFPA criteria and therefore should not be added to the National List.

Category 1: Classification

1. For CROP use: Is the substance Non-synthetic or synthetic? 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.

Potassium CMC is manufactured from naturally occurring cellulose and undergoes a synthetic chemical change.

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?

Potassium CMC is a List 4 Inert approved for food and nonfood uses. It is a low-risk polymer (40 CFR 723.250) and is exempted from a requirement of tolerance under FFDC section 408 when used in accordance with good agricultural practices.

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? [§6518(m)(1)]

The petition states that potassium salt is petitioned to avoid increasing soil sodium content. As a component of plants, cellulose would not be expected to have detrimental interactions with other materials used in organic farming systems

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 petition relied on test results of carboxymethylcellulose, sodium salt (structurally identical to Potassium CMC except for the cation of the salt) as there are no test results available for the petitioned material. Average biodegradation rates were above 73%.

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

The petition presented results from EcoToxicological studies on fish and crustacean toxicity for carboxymethylcellulose, sodium salt with no toxicity detected.

4. Discuss the effect of the substance on human health. [§6517(c)(1)(A)(i); §6517(c)(2)(A)(i); §6518(m)(4)].

Results from acute toxicity tests on rats, short-term studies on rats, guinea pigs, rabbits, and dogs, and long-term and teratogenicity studies on mice and rats for carboxymethylcellulose, sodium salt were shown with minimal or no effects found. The safety data sheet supplied in the petition lists no hazard or precautionary statements but does note a European Union special provision that the substance may produce an allergic reaction.

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)]

The petition presents results from terrestrial toxicity studies measuring bean and corn seed exposure to applications carboxymethylcellulose, sodium salt in natural soil media with no reported effects.

6. Are there any adverse impacts on biodiversity? (§205.200)

None known.

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)]

A primary goal of an organic system plan is maintaining or improving soil organic matter content through strategic management practices. Conservative tillage and no-till practices increase soil organic matter, decrease compaction, minimize water evaporation, and increase rain and irrigation water infiltration. Plant, mulch, and cover crop residues can increase water infiltration by preventing crusting and conserving water. Incorporated residues and compost improve soil fauna, whose activity increases aeration, opens pores, and decreases compaction. In turn, these attributes increase water penetration.

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

Synthetic water filtration materials are incompatible with a system of sustainable agriculture. Natural alternatives and good soil management practices exist, and water use is not an OFPA criteria. The subcommittee does not recommend adding this substance to the National List.

Classification Motion:

Motion to classify potassium cellulose glycolate as synthetic

Motion by: Emily Oakley

Seconded by: Harriet Behar

Yes: 6 No: 0 Abstain: 0 Absent: 1 Recuse: 0

National List Motion:

Motion to add potassium cellulose glycolate as petitioned at §205.601

Motion by: Emily Oakley

Seconded by: Harriet Behar

Yes: 0 No: 6 Abstain: 0 Absent: 1 Recuse: 0