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National Organic Standards Board
USDA-AMS-NOP
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Washington, DC 20250-0268

Docket ID # AMS-NOP-18-0071-0001

Re. CS: Sunset materials

These comments to the National Organic Standards Board (NOSB) on its Spring 2019 agenda are submitted on behalf of Beyond Pesticides. Founded in 1981 as a national, grassroots, membership organization that represents community-based organizations and a range of people seeking to bridge the interests of consumers, farmers, and farmworkers, Beyond Pesticides advances improved protections from pesticides and alternative pest management strategies that reduce or eliminate a reliance on pesticides. Our membership and network span the 50 states and the world.

Hydrogen peroxide

205.601(a)(4) - As algicide, disinfectants, and sanitizer, including irrigation system cleaning systems.
205.601(i)(5) - As plant disease control.
No checklist was provided in the spring.

Hydrogen peroxide is relatively nontoxic in low concentrations, though it is a powerful oxidizer and may damage soil biota. Repeated exposure to vapor is harmful. It breaks down quickly to oxygen and water, and therefore does not have a residual effect. As mentioned above, EPA has approved the following for use in DfE disinfectant products: citric acid, hydrogen peroxide, l-lactic acid, ethanol, and isopropanol.[1]

Conclusion

Beyond Pesticides supports the relisting of hydrogen peroxide. Although concentrated hydrogen peroxide is a powerful oxidizer, the advantage of hydrogen peroxide is its nontoxic residue. Hydrogen peroxide has been identified as a "safer" sanitizer by EPA's Design for the Environment Program (aka Safer Choice Program).

[1] http://www.epa.gov/pesticides/regulating/labels/design-dfe-pilot.html.

Soaps, ammonium

205.601(d) As animal repellents—Soaps, ammonium—for use as a large animal repellant only, no contact with soil or edible portion of crop.

The Technical Review for ammonium nonanoate says, "In several assessments, EPA has considered all ammonium and potassium salts of fatty acids to be similar in chemistry, toxicology, and environmental fate and effects," so we rely on that TR for some information lacking in the original TAP review of ammonium soaps. Ammonium soaps do not meet any of the three OFPA criteria of absence of harm to humans and the environment, essentiality, and compatibility with organic practices.

Ammonium soaps pose ecological hazards.

Ammonium soaps are typically sprayed, which allows drift.[2] Drift may damage plants and kill aquatic insects. Investigations into impacts on soil organisms have not been reported.

Ammonium soaps are not necessary

Alternative materials include area repellents, including tankage (putrified meat scraps), bone tar oil, blood meal, human hair, and bar soap –which should be applied close to or on the plants needing protection– and contact repellents that work by taste and are applied directly to plants, including putrescent egg solids and hot pepper sauce. Other methods include habitat modification, hunting, shooting, fencing/exclusion, encouraging predators.[3]

Ammonium soaps are not compatible with organic production.

There are many alternatives that are not synthetic chemicals.

Conclusion

Ammonium soaps should be allowed to sunset because they do not meet the criteria for listing on the National List.

Oils, horticultural (Narrow range oils)

205.601(e)(7) - As insecticides (including acaricides or mite control). —narrow range oils as dormant, suffocating, and summer oils.
205.601(i)(7) As plant disease control. –narrow range oils as dormant, suffocating, and summer oils.

A number of health and environmental hazards are associated with the manufacture and use of horticultural oils.

As an aerosol of petroleum, it may produce lipid pneumonitis by those inhaling the mist.[4] It is an irritant to skin, eyes, and mucous membranes.[5] It kills mostly by smothering, and

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[2] Label: http://www.pestproducts.com/ropel.htm.

[3] North Carolina State University, Vertebrate Management. http://ipm.ncsu.edu/apple/orchardguide/Vertebrate.pdf.

[4] HSDB, Mineral oil. http://toxnet.nlm.nih.gov/cgi-bin/sis/search/a?dbs+hsdb:@term+@DOCNO+192.

[5] TAP, p. 6.

may kill predatory mites, soft-bodied predaceous insects.[6] It is a medium hazard to honeybees.[7] Some plants are sensitive to it.[8]

Horticultural oils can interfere with biological control of insects and mites.

In addition to their action on plant diseases, horticultural oils are broad-spectrum insecticides/miticides. They kill predators and parasitoids along with pests, thus disrupting the agroecosystem and creating a dependence on pesticides. For this reason, they are incompatible with organic production if used when predators and parasites are present.

Conclusion

The listing for horticultural oils should be annotated in a way that protects workers from inhalation hazards, and nontarget arthropods from harm. If this is not possible, horticultural oils should be delisted. We suggest this annotation: "Steps to meet worker protection standards must be documented in the Organic System Plan. Must not be used when predators, parasitoids, or pollinators are present."

Pheromones

205.601(f) - as insect management.

Pheromones may have adverse impacts on human health and the environment.

The technical review points out that the effects on human health depend on the application method, "inerts," and retrieval/disposal.[9] "However, it is important to note that only a small fraction of known insect pheromones (which have effects that are mimicked by commercially available synthetic pheromones) have been thoroughly examined for their toxic or other pharmacological effects on non-target (including mammalian) species."[10]

Pheromones as used in pest management are synthetic analogs of parts of the pheromones found in nature. Because they lack the complexity of natural pheromones, they also lack the specificity of those pheromones. Thus, some pheromone products designed to disrupt the mating of pest insects can affect the behavior of many non-pests. Microencapsulated pheromones may be a hazard to honey bees.

Pheromones are an important part of many organic pest management systems.

Despite the lack of specificity, pheromone products have permitted growers to avoid the use of more toxic controls. They can be used in a way that complements alternative methods

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[6] Colorado State Extension, Pest and disease control using horticultural oils. http://www.colostate.edu/Dept/CoopExt/4dmg/PHC/hortoil.htm.

[7] UC Davis, Horticultural Oil. http://www.ipm.ucdavis.edu/TOOLS/PNAI/pnaishow.php?id=39.

[8] UC Davis, Horticultural Oil. http://www.ipm.ucdavis.edu/TOOLS/PNAI/pnaishow.php?id=39.

[9] TR lines 490-519, 554-564, 663-703.

[10] TR lines 468-470.

suggested by the TR: biological controls, traps, repellents, soil management, sanitation, other cultural practices, physical barriers, hand removal.[11]

Conclusion

In the spring of 2011, the CS and NOSB struggled with an annotation describing a group of pheromones that they felt comfortable approving as a class. Lacking a technical review at the time, the board ended up approving the simple listing. Although EPA standards are not the same as the standards of OFPA, the EPA conditions for pheromone products that are exempt from regulation under FIFRA come close to describing products that could be allowed in organic production without further examination, and **we support the following listing, which we believe captures the sense of the conditions for exempting pheromone products from regulation:**

> **§205.601(f) As insect management. Pheromones, provided that they are identical to or substantially similar to natural pheromones as defined in 40 CFR 152.25(b), in passive dispensers, without added toxicants, and with only approved inert ingredients.**

Ferric phosphate

Beyond Pesticides opposes the relisting of ferric phosphate because ferric phosphate alone is not essential —because it is not effective—and ferric phosphate in combination with EDTA (ethylenediaminetetraacetic acid) poses risks to soil organisms, uses highly toxic materials in manufacture, and is not compatible with organic agriculture. It is time for the NOSB address this material in the context of the law and give it the hearing it deserves. The NOSB must either consider ferric phosphate alone —in which case, it may be found to lack efficacy or essentiality—or complexed with EDTA, in which case it may be found to pose environmental hazards that require evaluation. Considering one or the other, without a standardized review process that is uniformly applied, contravenes the intent of the Organic Foods Production Act (OFPA) and circumvents the evaluation required under OFPA.

Ferric phosphate is not essential.

The patent cited on the product label says that neither ferric phosphate nor EDTA alone is effective in killing snails and slugs, but the combination, when used either as a compound (e.g., sodium ferric hydroxyl EDTA) or together in a bait where they react within the gut of the mollusk), is effective. Therefore, if the listing is for ferric phosphate alone, then it is not essential because it is not effective. Furthermore, the Technical Review (TR) cites cultural practices that eliminate the need for a snail and slug bait, as well as alternative control measures.

Ferric phosphate with EDTA poses hazards for soil organisms and humans.

An important issue has been whether EDTA is a necessary part of the formulation, or whether it should be considered separately as an “inert.” USDA’s Agricultural Research Service (ARS), in reviewing a supplemental technical review (STR), calls EDTA a “synergist.” The patent indicates that neither ferric phosphate nor EDTA alone is effective in killing snails and slugs, but

[11] TR lines 832-873.

the combination, when used either as a compound (e.g., sodium ferric hydroxyl EDTA) or together in a bait where they react within the gut of the mollusk), is effective. Ferric phosphate with EDTA has negative impacts on earthworms and other soil organisms, as documented in the TR and STR. Sodium cyanide and formaldehyde are used in making EDTA. EDTA can result in the detrimental movement of metals in soils and river sediments and has been detected in the ocean, with unknown effects.

Ferric phosphate with EDTA is not compatible with organic agriculture.

EDTA has negative impacts on beneficial soil organisms. It can build up in the soil. It is the most abundant anthropomorphic chemical in some European surface waters. It can enhance the movement of metals in soil and river sediments.

"Inerts"

In the spring of 2012, the Crops Subcommittee requested a supplementary TR (STR) on the role of EDTA in ferric phosphate products —in particular, whether the NOSB needed to consider the EDTA as an integral part of "ferric phosphate" and its active properties against the target pest, as claimed by the petitioner. The STR addressed four questions:

1. Is ferric phosphate alone an effective molluscicide? Can it be combined with other ingredients besides EDTA and still work, or are EDTA and related compounds the only ones that contribute to efficacy?
2. Are there reasons for concern about EDTA beyond what information goes into a tolerance exemption, such as effects on soil organisms or contamination in groundwater?
3. Does the EDTA as used with ferric phosphate pose the same concerns as the EDTA that was reviewed as part of the Sodium Ferric Hydroxyl EDTA?
4. Are there any unbiased studies that back up the findings of Edwards et al. (2009) as cited in the TR or with contrasting results? Does the Edwards et al. (2009) study seem biased?

The subcommittee received a supplemental TR addressing the above questions, along with a review of that document by the ARS, resulting in the following answers:

1. As stated by ARS in its review of the STR, ferric phosphate requires a chelating agent such as EDTA or EDDS synergist in order to make it an effective product. This "synergist" function separates EDTA from so-called "inert" ingredients, such as the wheat flour that makes up most of the actual product.
2. The ARS review confirmed the potential for widespread harm from the use of ferric phosphate-EDTA/EDDS baits noted in the original and supplemental TRs.
3. The ARS review found reasonable the conclusion of the STR that, "EDTA poses the same concerns whether used with ferric phosphate or as sodium hydroxyl EDTA." As summarized in the supplemental TR, these are:

...EDTA clearly has the potential to be harmful to the environment and can result in the detrimental movement of metals in soils and river sediments. Furthermore, the Crops Committee was concerned about EDTA's slow rate of biodegradation and its persistence in the environment. The EU Commission risk assessment on EDTA (EC, 2004) was cited as the reference for this conclusion. The potential harmful effects of EDTA on human health were also a concern to the Crops Committee. In particular, the Committee concluded that "EDTA is a very

strong metal chelating agent, especially for calcium. It is poorly absorbed in mammalian GI tract and concerns have been raised that excessive usage in food could deplete the body of Ca and other minerals."

4. The ARS review finds that the principal study on which the TR relied in presenting hazards that iron phosphate baits containing EDTA and EDDS chelating agents are toxic to earthworms "is not likely to be biased."

Although we are clear about the fact that so-called "inert" ingredients are Onot biologically or chemically inert, the evidence that has been presented to the NOSB shows that without EDTA or related chemicals, there would be no ferric phosphate snail baits. Furthermore, it was one thing to defer action on ferric phosphate + EDTA when it appeared that the NOSB would be acting soon to consider individual "inert" ingredients. But now, as "List 4 inerts" appear to have been removed from work agendas for the Crops and Livestock Subcommittees, no protocol for reviewing the "inerts" and timeline for action have been set since the Board adopted an "inerts" recommendation at its fall 2012 meeting.

Further discussion.

In November 2007, the NOSB denied a petition for sodium ferric hydroxy EDTA because it "is not consistent with environmental and compatibility with organic farming (OFPA) criteria, primarily due to the behavior of EDTA in the environment and the toxic chemicals used to manufacture." In view of the STR and ARS review, ferric phosphate should not be relisted for the same reasons given by the Board for rejecting the sodium ferric hydroxy EDTA petition. At any rate, the NOSB must consider ferric phosphate with EDTA in performing its sunset review. Ferric phosphate with EDTA is the only ferric phosphate product in use, and it is dependent on the EDTA component, as the manufacturer's patent states.

Potassium bicarbonate

205.601(i)(9) - As plant disease control.

Potassium bicarbonate has minor environmental and health impacts. It is useful for controlling a number of diseases that are difficult to control organically. Potassium bicarbonate in many situations may be more environmentally sound and safer for applicators and other farmworkers than the other synthetic alternatives.[12] It does not appear to interfere with biological control organisms. However, it does not fit into any of the categories in §6517(c)(1)(B)(i) of OFPA, which lists the limited types of synthetic materials that are allowed in organic production: 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.

Conclusion

Potassium bicarbonate should be removed because it does not fit into any of the categories of allowable synthetics in §6517(c)(1)(B)(i) of OFPA.

[12] 1999 TAP, p. 3

Magnesium sulfate

205.601(j)(5) As plant or soil amendments. - allowed with a documented soil deficiency.

Magnesium sulfate is allowed as a synthetic plant nutrient—generally applied to leaves—in the case of documented soil deficiency. Magnesium should not be deficient in biologically active soils. It is the central atom in chlorophyll, so any soils that have decayed leafy vegetation added as compost, mulch, cover crops, or crop residues will contain magnesium as a result of the decay of the organic matter. In addition, nonsynthetic magnesium is available as langbeinite and dolomite.

Synthetic magnesium sulfate should not be necessary in organic agriculture.

Magnesium deficiency should not occur in biologically active soils, and adding any one mineral risks unbalancing soil nutrients. Although nonsynthetic magnesium is available as langbeinite and dolomite, both of those forms add other macronutrients—potassium in the case of langbeinite and calcium in the case of dolomite— that may not be needed.[13] Foliarly-applied magnesium sulfate addresses an urgent need for a crucial macronutrient, but is not acceptable as a general practice.

Synthetic magnesium sulfate is not compatible with organic production.

Synthetic magnesium sulfate is a synthetic plant nutrient, and hence its use as a foliar spray is contrary to the organic philosophy of feeding the soil to feed the plants. Magnesium should be abundant in biologically active soils, so organic soil-building practices should be used to enrich soils with magnesium.

Conclusion

Magnesium sulfate is acceptable only under limited conditions. Synthetic plant nutrients should not be taking the place of organic soil-building practices.

Hydrogen chloride

Beyond Pesticides supports the relisting of hydrogen chloride in recognition of the lack of alternatives of organic cotton growers. However, in view of the extreme hazard posed by gaseous hydrogen chloride, we ask the NOSB to put its voice behind support for research and development of alternative methods of delinting cotton seed in preparation for planting. From a procedural viewpoint, we are disappointed that the Crops Subcommittee has not published an updated checklist that would give the public more substance for its comments during this first meeting to discuss Sunset 2016 materials.

Hydrogen chloride poses hazards for humans and the environment.

Hydrogen chloride, the gaseous form of hydrochloric acid, is extremely corrosive, with the ability to kill any cell it contacts. According to the Agency for Toxic Substances and Disease Registry, "People working in occupations in which hydrogen chloride is used have the highest risk of being exposed to this compound. . .Exposure to high levels can result in corrosive damage to the eyes, skin, and respiratory tissues, and could lead to pulmonary edema and even

[13] TAP, p. 4. TR, lines 427-447.

death in extreme cases." The fact that the risk accrues to workers other than organic farmers should not cause us to ignore the extreme danger of working with hydrogen chloride. Hydrogen chloride also has the potential to cause damage to the soil and other organisms in the case of a spill.

Hydrogen chloride is not compatible with organic and sustainable agriculture.

Since it is a by-product of the formation of chlorinated and fluorinated organic compounds, the use of hydrogen chloride supports the chlorine chemical industry, which is responsible for pollution by some of the most toxic chemicals known, including dioxins and PCBs. The use of a dangerous chemical, which poses extreme hazards to workers, is incompatible with organic and sustainable practices and we should be aggressively moving to phase it out of organic systems.

Unfortunately, hydrogen chloride is at this point in time essential for organic cotton production in the United States.

It is our understanding, from conversations with a representative of the Texas Organic Cotton Marketing Cooperative, that organic cotton growers in the U.S. currently do not have a lot of choice about how their seed is prepared for planting. U.S. organic cotton production is small and concentrated in west Texas. Cotton growers are limited to using the technology available in that area. There is, however, on-going research into the development of mechanical delinting mechanisms that would eliminate the need for hydrogen chloride. The NOSB should support these alternatives by making alternatives to hydrogen chloride a research priority. This is the kind of "minor" use that deserves special support. It appears to us that there are alternative technologies ripe for development, and that very little is needed to move them into the stage of being able to meet the demand of organic cotton growers. The NOSB should also recommend that USDA support the infrastructure needed to deliver mechanically delinted seed to organic cotton growers. A strong statement by the NOSB that this may not survive another sunset would go a long way toward incentivizing the alternative.

Ash from manure burning

§205.602 Nonsynthetic substances prohibited for use in organic crop production.
(a) Ash from manure burning.

In 2015, the CS gave the following background to this listing:

Ash from manure burning was placed on §205.602 based on its incompatibility with organic production: "Burning these materials is not an appropriate method to use to recycle organic wastes and would not be considered a proper method in a manuring program because burning removes the carbon from these wastes and thereby destroys the value of the materials for restoring soil organic content. Burning as a disposal method of these materials would therefore not be consistent with section 2114(b)(1) of the OFPA (7 U.S.C. 6513(b)(1))." (Preamble to proposed rule, December 16, 1997. 62 FR 241: 65874)

Burning a material that is central to maintaining soil fertility and tilth in organic soils would be incompatible with organic production systems.

Conclusion

Ash from manure burning should remain on §602.

Sodium fluoaluminate (cryolite)

§205.602 Nonsynthetic substances prohibited for use in organic crop production.
(f) Sodium fluoaluminate (mined).

Cryolite is harmful to human health and the environment. It is a nonselective pesticide, and there are alternative materials and management practices.

Cryolite is harmful to human health and the environment.

It is applied as a dust, so movement off the target plant is likely.[14] Natural cryolite is made into the product by crushing rocks, making powder that is likely to move in air, water, and soil. Workers engaged in crushing and refining cryolite were found to have silicosis, a sclerotic affection of bones, ligaments, and muscular attachments, probably due to the deposition of calcium-fluoride in the bones, corrosion of the mucous lining of the stomach, and a pronounced oligemia, found in 11 of the 30 workers in whom pathological changes in the bones were observed.[15] Dental fluorosis is also a problem.[16] Cryolite breaks down to sodium, fluoride, and aluminum, which may lead to increases of fluoride and aluminum in the soil.[17] Exposure to fluoride is in addition to that from fluoridated water, which is already excessive for some people.[18]

Cryolite is unnecessary in organic production.

Cryolite is used on many conventional fruit and vegetable crops, and there are alternative substances available that do not pose so many hazards.

Cryolite is incompatible with organic production systems.

Cryolite is a non-selective insecticide. Little is known about its non-target effects, but use of a broadly-toxic material is not compatible with organic methods. It does not "promote plant and animal health by enhancing soil physical, chemical, or biological properties."

Conclusion

Sodium fluoaluminate (cryolite) should remain on §602.

Thank you for your consideration of these comments.

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[14] Cryolite RED. http://www.epa.gov/pesticides/reregistration/REDs/0087.pdf.

[15] PF Moller and SV Gudjonsson, 1932. **Massive Fluorosis of Bones and Ligaments,** Acta Radiologica, 13:269-294.

[16] http://www.icca-chem.org/Portal/SafetySummarySheets/634593802744407699_PSS%20Cryolite_V01.pdf.

[17] Cryolite RED. http://www.epa.gov/pesticides/reregistration/REDs/0087.pdf.

[18] http://www.fluoridealert.org/wp-content/uploads/10facts.pdf.

Sincerely,

Terry Shistar, Ph.D.
Board of Directors