CENTER FOR FOOD SAFETY

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National Organic Standards Board
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**Docket No: AMS–NOP–12–0040-0001**

**Center for Food Safety Comments to the National Organic Standards Board**

The Center for Food Safety (CFS) is a non-profit membership organization that works to protect human health and the environment by curbing the proliferation of harmful food production technologies and by promoting organic and sustainable agriculture. Our list of True Food Network members has rapidly grown to include over two hundred thousand people across the country that support organic food and farming, grow organic food, and regularly purchase organic products.

Our comments address the following issues: conflict of interest; public communications; biodegradable bioplastic mulch; inert ingredients; infant formula additives; omnivore diets; biodiversity; and research priorities.

**Policy Development Subcommittee — Conflict of Interest and Ethics**

CFS has been highly supportive of the Policy Development Subcommittee's continued efforts to update its conflict of interest (COI) policy and procedures in direct response to stakeholders' requests, as we have stated in several of our previous comments to the NOSB.[1] In fact, we fully supported the proposed policy changes in the Subcommittee's proposed revisions circulated prior to the NOSB's meeting in May of this year.[2] The only major change we advocated was the addition of a COI requirement for NOSB contractors and consultants who conduct Technical or TAP reviews of materials on the National List. This is still a notable omission in the latest draft.

[1] CFS Comments to NOSB. 3 May 2012. AMS-NOP-12-0017; CFS Comments to NOSB. 13 November 2011. AMS-NOP-11-008.
[2] NOSB Policy Development Committee. (2012). Proposal: Conflict of Interest. March 29, 2012.

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Given all of the public support that the May 2012[3] document received, we were quite surprised to see the turn taken in the new Subcommittee proposal.[4] While we agree with the stated intent of the document that the COI policy "should provide greater transparency and expectations related to NOSB members' work on behalf of the organic community," the document falls short of meeting that goal. Our main criticism is that the Subcommittee's proposed recommendations seem to make COI evaluations and discussions more opaque than transparent, by allowing them to primarily take place outside of the public process, with the NOP being the audience and arbiter of COI decisions.

The purpose of requiring a potential conflict of interest to be publicly disclosed is to increase transparency among NOSB members and between the NOSB and the public with respect to its decision-making process. Any attempt to hold such discussions behind closed doors undermines the purpose of requiring COI disclosures in the first place.

People in the organic community who regularly participate in the NOSB process understand that the very nature of this stakeholder Board is that its representatives are comprised of individuals with direct expertise, experience, and personal, organizational and/or corporate stakes in the outcomes of Board decisions. Within this context conflicts of interests are bound to arise. For this reason, the Board must routinely confront the question of whether it is sufficient for a given individual to publicly disclose their potential conflict or if that potential conflict warrants a recusal from the vote at hand.

The new Subcommittee recommendations seem to suggest that certain unidentified COI statutes and regulations that apply to the Board should govern all COI decisions, which we do not believe is in the best interest of an open public participation process. When decision-making authority is solely granted to the NOP, neither the NOSB nor the public are privy to the basis upon which such decisions are made. This is certainly not what CFS envisioned would be the final outcome of the NOSB discussion on this matter of critical importance. On the contrary, we believe that the goal of the NOSB's COI policy should be to facilitate the open, transparent and equitable functioning of the Board as a whole by distinguishing those instances of genuine personal financial gain where it would be inappropriate for a certain individual(s) to cast a vote.

We view the process of requiring each Board member to voluntarily and publicly disclose potential conflicts of interests as the best way to ensure the highest possible integrity in organic policy decision-making. It allows members to show respect for the decision-making process and to maintain trustful collegial relations in a supportive environment where everyone lays their cards on the table before a vote. For the public, having a potential COI disclosed by Board members is akin to having a report citation. Knowing the study's author and her or his institutional affiliation sheds light on their stakes in producing the report, much like a COI disclosure reveals what is at stake with certain Board members prior to a vote.

[3] NOSB Policy Development Committee. (2012). Proposal: Conflict of Interest. March 29, 2012.
[4] NOSB Policy Development Committee. (2012). Proposal: Conflict of Interest/Ethics. July 9, 2012.

For these aforementioned reasons, CFS does not support the Subcommittee's recommendation to move COI discussions and decision-making authority out of public review and into the hands of the NOP exclusively.

With respect to the specific recommendations proposed by the Subcommittee, we would like to offer the following comments:

Recommendation #7
CFS does not support this change. We believe that it is up to the NOSB to make decisions about whether it is appropriate for a Board member to vote based upon their potential COI, with the NOP serving in an advisory capacity.

Recommendation #8
CFS does not support this definition of COI because it is too broad and we instead prefer the definition presented in the COI document circulated for public comment at the May NOSB meeting:

> *The term "conflict of interest" is defined as a situation in which there is an actual or potential direct financial interest of a Board member which could impair the individual's objectivity or which has the potential to create an unfair competitive advantage for said Board member, Board member's immediate family member, or Board member's organization or affiliated business.*
>
> *An "immediate family member" includes a Board member's relative by blood or marriage who may be a spouse or partner, children or step children, parents or step-parents, brother or sister (Recommendation 2).*[5]

Recommendation #10
Under all circumstances, we believe that the NOSB should be the decision-maker and retain authority over all COI issues that pertain to the Board. We believe that the NOP, the designated federal officer, and the USDA Office of Ethics should serve as advisors and not decision-makers on COI matters pertaining to the NOSB.

**Policy Development Subcommittee — Public Communications**

CFS is pleased to see the Subcommittee's proposal reaffirming the NOSB's statutory authority and obligation to communicate directly with the Secretary of Agriculture on issues of public concern with respect to the organic rules, OFPA, and organic integrity. It has always been our position that issues of critical importance to the wider organic community should not in any way be mediated by the NOP, given the NOSB's legal role as advisor to the Secretary as is explicitly stated in OFPA. The law specifically states that the NOSB shall be established by the

[5] NOSB Policy Development Committee. (2012). Proposal: Conflict of Interest. March 29, 2012.

Secretary of Agriculture to "assist in the development of standards for substances to be used in organic production and *to advise the Secretary on any other aspects of the implementation of this chapter* [emphasis added].[6] An excellent example of the Board fulfilling this role was when it sent a letter to the Secretary relaying a message of strong public concern about the need for USDA to prevent threats to organic integrity from contamination by genetically engineered (GE) crops and seeds.

CFS also supports the Subcommittee's recommendation to retain the ability of the public to communicate directly with USDA staff and individual NOSB members outside of the regularly scheduled bi-annual meetings, as needed.

**Crops Subcommittee — Biodegradable Mulch Film Made from Bioplastics**

CFS does not support the Crops Subcommittee's recommendation to allow biobased biodegradable plastic mulch in organic production systems at this time. While, theoretically, biodegradable plastic mulch is preferable to the petrochemical-based mulch currently available in the marketplace, research has *not* conclusively demonstrated its adequate biodegradation in the field. Our investigations have shown that even those bioplastics that conform to the ASTM[7] standards do not biodegrade adequately in the field and have not undergone any long-term soil testing to ensure that they have no negative impacts on agroecosystems. Given the twin challenges of questionable biodegradability and unknown environmental effects, CFS believes that biodegradable bioplastic mulch is not ready for the organic market and that more research is needed to demonstrate its acceptability for use in organic farming systems.

*Definitions and Standards*

CFS agrees with the Subcommittee's designation of the petitioned mulches as synthetic plastics and its insistence that the mulch must be both "biobased" and "biodegradable"[8] if it will be allowed to remain on farmland at the end of the growing season. We also share the Subcommittee's concern about adequately defining biodegradable mulch and ensuring that the feedstocks used are in fact biobased. While the Subcommittee appropriately warned that "it may be difficult to separate claims from truth concerning biodegradability and the source of the material,"[9] their concerns have not been sufficiently addressed either in the petition or in their proposed annotation.

[6] Organic Foods Production Act of 1990. Sec. 2119. [7 U.S.C. 6518] National Organic Standards Board.

[7] ASTM provides standardized test protocols to allow for the certification of materials to specific criteria. The standards that are referenced by the Crops Subcommittee relate to the biodegradability and compostability of bioplastics.

[8] NOSB Crops Subcommittee. (2012). Petitioned Material Proposal: Biodegradable Mulch Films Made from Bioplastics. August 15, 2012. Page 36.

[9] NOSB Crops Subcommittee. (2012). Page 36.

Plastic mulches that meet the proposed definitions of "biobased" and "biodegradable" have not been demonstrated to biodegrade in field trials.[10] ASTM standards, used by the Subcommittee for defining biodegradable bioplastic mulch, are based upon on a series of laboratory testing protocols – not field tests – which do not sufficiently represent the full range of conditions that the mulches would be exposed to if left on the farm field. Using a laboratory test protocol to represent biodegradation in soil is unrealistic because of the wide range of geophysical and climatic conditions that farmers encounter across the US. Moreover, compliance with ASTM standards in no way ensures that products can completely degrade on the farms where they are used because the laboratory test results have yet to be corroborated in the field.

ASTM standards D6400[11] and D6868[12] assess the degradability of bioplastics in industrial and municipal compost systems. They are laboratory tests that simulate the conditions that would be found in managed, high-heat compost systems, not in the field. The bioplastic mulch that is being petitioned, however, is intended to remain in the field, so testing for degradability in managed compost systems does not reflect the environment in which these mulches are meant to biodegrade. Therefore, these standards are not applicable, because the intent of biodegradable mulch is to avoid the labor and expense of removing mulches from the field and, instead, allow them to biodegrade in the field. The intent is *not* to add them to an industrial or municipal compost system for degradation.

ASTM standard D5988[13] is a laboratory-based test protocol that is intended to assess biodegradability of plastics in soil conditions. The Subcommittee proposes using ASTM D5988 to ensure that the mulches will biodegrade in field conditions, but this is an inappropriate comparison. The ASTM D5988 laboratory test protocol utilizes optimal conditions for biodegradation that would not be found in agricultural fields between growing seasons. Utilizing a laboratory test protocol with prescribed conditions does not account for the variations in environmental and climatic conditions where these mulches will be used. There are three particularly problematic areas in the laboratory protocol:

1. The protocol calls for ***mixing soils*** from "at least three diverse locations" (for example, an agricultural field, a forest, and a pasture or meadow) to maximize the biodiversity of the microbes found in the soil samples.[14] It also recommends avoiding soils from locations that may have altered populations of microbial fauna due to pollutants or other contamination. Selecting soils from a variety of locations and avoiding pollutants

[10] Corbin, A.T., C. Miles, J. Cowan, D. Hayes, J. Dorgan, and D. Inglis. (In press). Biodegradable plastics as agricultural mulches.
[11] ASTM. (2012). D6400 – 12: Standard Specification for Labeling of Plastics Designed to be Aerobically Composted in Municipal or Industrial Facilities. ASTM International.
[12] ASTM. (2011). D6868-11: Standard Specification for Labeling of End Items that Incorporate Plastics and Polymers as Coatings or Additives with Paper or Other Substrates Designed to be Aerobically Composted in Municipal or Industrial Facilities. ASTM International.
[13] ASTM. (2012). D5988-12: Standard Test Method for Determining Aerobic Biodegradation of Plastic Materials in Soil. ASTM International.
[14] ASTM. (2012). D5988-12. Page 3.

may overestimate the microbial diversity and biological activity that would be found on any given field, thus favoring biodegradation.

2. The protocol requires the ***soil moisture*** content to be between 80-100% of the measured moisture holding capacity of the soil sample.[15] While this high soil moisture content is conducive to biodegradation, it is unlikely to be consistently found in field conditions.

3. The protocol requires ***soil temperature*** to be maintained within +/- 3.6°F (+/- 2°C) of a selected temperature between 68 and 82°F (20-28°C) throughout the test period.[16] (For comparison, the average soil temperatures at 5cm depth, reported by scientists in a field trial of biodegradable mulches across three regions during the growing season, varied between 62.2-80°F [16.8-26.7°C].[17]) While soil temperatures in this range may be reached during the growing season, the majority of mulch biodegradation is intended to occur between growing seasons, during the colder winter months when soil temperatures will fall well below the test range.

Warmer, humid, and consistent conditions facilitate microbial biological activity and thus mulch biodegradation. Therefore, ASTM D5988 laboratory test results are likely to show a more favorable picture of mulch biodegradation than can be realistically expected in the field.

The Subcommittee proposal requires that mulch show 90% biodegradation using the ASTM D5988 test, allowing up to 10% of the mulch to remain in the microbial biomass or as an undegraded or partially degraded residue in the soil. Thus, the real potential exists for mulch to persist and accumulate in the farm environment. The design of the test protocol does not require any chemical testing to differentiate between material that has become part of the microbial biomass and any material that may remain as a residue in the soil sample. This potential persistence of plastic residues raises concerns about the long-term impacts of using biodegradable mulches on the same field over consecutive years. The Subcommittee's recommendation that 90% of mulch degradation occurs within two years means that mulch would certainly remain in the soil during the subsequent growing seasons. Even more concerning is that mulches that conform to the ASTM D5988 standard have not demonstrated biodegradation to this standard in the field.

*Incomplete Field Biodegradation*

Studies conducted on biodegradable mulches have largely relied upon visual assessments of biodegradation, which is insufficient to understand the composition of residues that may remain from partial degradation. The Technical Evaluation Report (TER) recognizes the need for adequate evaluation of biodegradation, noting that "testing is necessary to determine which

[15] ASTM. (2012). D5988-12. Page 3.
[16] ASTM. (2012). D5988-12. Page 4.
[17] Miles, C., R. Wallace, A. Wszelaki, J. Martin, J. Cowan, T. Walters, and D. Inglis. (2012). Deterioration of Potentially Biodegradable Alternatives to Black Plastic Mulch in Three Tomato Production Regions. HortScience 47(9): 1270-1277.

polymer mixtures are degraded completely and what effects incomplete degradation may have on the agroecosystem."[18] These experiments have not yet been completed and no approvals of biodegradable mulches should be made by the NOSB until ongoing research in this area is complete.[19]

Test results from field experiments with several biodegradable mulches that comply with ASTM standards have not shown that bioplastic biodegradable mulches adequately decompose in the field.[20] The SCRI-SREP research project has been evaluating biodegradable mulches at three experimental agricultural sites in Lubbock, Texas, Knoxville, Tennessee, and Mount Vernon, Washington.[21] Preliminary results have shown that the products tested (BioTelo and BioAgri) had the greatest deterioration on the soil surface at sites in Tennessee and Washington by the end of the growing season.[22] These results show that the biodegradation of mulch proceeds at different rates in different climates, suggesting that biodegradable mulches may be less suitable for use in certain regions. Climate variability across regions and weather variations will impact the rate of biodegradation and may impact the ability of mulches to degrade completely.

In tests at those same sites, samples of the mulches were buried in mesh bags to be retrieved after decomposition and only some of the biodegradable mulch samples from each site showed "significant degradation," signaling that the biodegradation has been inconsistent.[23] Surface area degradation of the biodegradable mulches ranged from 0% at the Washington site to almost 90% at the Texas site after 18 months in the soil.[24] These preliminary results are extremely concerning because they suggest that products meeting the proposed biodegradability definition may not be degrading at all in field conditions in some areas. This experiment is ongoing, and complete results from this as well as other field studies should be considered before biodegradable mulches are approved for use in organic systems.

While field testing to visually assess degradation of biodegradable mulches over time is important, it is equally as important to conduct experiments that chemically test for mulch residues in field environments. Such residues may be detrimental to soil microbial communities and the growth of future crops, both concerns which have not yet been addressed by field studies. In fact, the TER identifies incomplete degradation of bioplastics as an important "data gap" in the literature about biodegradable mulches.[25] According to the TER, "ecotoxicology studies on biodegradable polymers following partial or complete decomposition in the soil are

[18] USDA National Organic Program. (2012). Technical Evaluation Report: Biodegradable Mulch Film Made from Bioplastics. Compiled by ICF International. August 2, 2012. Lines 595-597.
[19] Corbin, A.T. et al. (In press). Page 3
[20] Miles, C. et al. (2012).
[21] Miles, C. et al. (2012).
[22] Miles, C. et al. (2012).
[23] Inglis, D., C. Miles, A. Corbin, E. Belasco, M. Brodhagen, D. Hayes, J. Lee, K. Leonas, T. Marsh, J. Moore-Kucera, L. Wadsworth, R. Wallace, T. Walters, and A. Wszelaki. (2011). SCRI-SREP Project CRIS Report: Biodegradable Mulches for Specialty Crops Produced Under Protective Covers, Year 2. Available at: http://mtvernon.wsu.edu/hightunnels/Content/SCRI-CRIS-2011.pdf
[24] Corbin, A.T. et al. (In press). Page 5.
[25] USDA NOP. (2012). TER: Biodegradable Mulch Film Made from Bioplastics. Lines 651-652.

not common… a better understanding of bioplastic degradation and soil environmental effects is needed."[26] The variety of conditions under which these mulches are expected to perform amplifies the need for extensive field testing and evaluation of their biodegradation. This lack of ecotoxicological studies to test for potential residues or harmful compounds, alone, should preclude the NOSB from supporting the biodegradable mulch petition.

There are also unanswered questions concerning the bioavailability of bioplastics to wildlife if mulches do not completely degrade. The health of soil microbial communities that are directly exposed to the mulch during the biodegradation process is of concern as well, particularly given the importance of soil quality to healthy organic farming systems. Introduction of the mulch may favor certain species of microbes which are better suited to utilizing biodegradable mulch as a food source, thus altering the microbial community. It is also possible that intermediate or breakdown compounds in the biodegradation process or residues of mulch could be harmful to some soil microbes. While the effects of biodegradation on microbial communities have not yet been analyzed, they are a critical area of further research before the use of biodegradable mulch is permitted in organic agriculture.[27]

Another concern is the spread of biodegradable mulch pieces into adjacent ecosystems. As the degradation process begins and holes appear on the surface of the mulch, pieces may become loose and disperse throughout the environment. Depending on the size of the fragments, they may be bioavailable to different wildlife in both the terrestrial and aquatic ecosystems that surround organic farms. Mulch fragments can enter aquatic ecosystems via runoff, wind, or animals where they will not be able to be recovered and could impact aquatic species. If dispersal of mulch fragments occurs, farmers will no longer be able to "take appropriate actions to ensure complete degradation at the end of each growing season" as required in the proposed annotation.[28] Further research should be conducted to assess risks to wildlife, aquatic life, and adjacent ecosystems and to suggest best management practices that farmers can use to minimize dispersal of mulch fragments from their farms.

*Materials and Additives*

The TER mentions several additives and processing aids that can be included in biodegradable mulches that may negatively impact agroecosystems and which require more research. Of particular concern are titanium dioxide and erucamide. Titanium dioxide "may settle out into sediments and persist for long periods of time" and "may persist [in the soil] from use in bioplastic mulch."[29] Erucamide may be released during the manufacturing process and "binds strongly to soil and sediments in water and is likely to bioaccumulate in aquatic organisms," meaning that it could remain in the ecosystem and accumulate in wildlife.[30] The potential persistence and bioavailability of these colorants and plasticizer additives requires further ecotoxicological research. This is particularly important because biodegradable mulches would

[26] USDA NOP. (2012). TER: Biodegradable Mulch Film Made from Bioplastics. Lines 443-444.
[27] C. Miles. August 21, 2012. Personal communication by phone.
[28] NOSB Crops Subcommittee. (2012). Page 37.
[29] USDA NOP. (2012). TER: Biodegradable Mulch Film Made from Bioplastics. Lines 416-418.
[30] USDA NOP. (2012). TER: Biodegradable Mulch Film Made from Bioplastics. Lines 422-423.

be used in the same fields over many consecutive years and, therefore, the effects of such accumulation would be magnified over time.

*Proposed Annotation*

CFS commends the Crops Subcommittee for recognizing the importance of specifically prohibiting excluded methods and nanomaterials in the annotation, and this prohibition must extend to all stages of biodegradable much production. Some starch-based bioplastics may be made with GE feedstocks or with the use of transgenic plant cells.[31] Research has been conducted on genetically engineering microbes to use in bioplastic production, so the presence of GE materials in bioplastic mulch is entirely possible.[32] Manufacturers must certify that their feedstocks and microbial fermentation processes are free from GE products or processes before being permitted in organic. Currently, there is no standardized test method that has been identified to verify the presence or absence of GE byproducts in the final mulch product.[33] Exactly how farmers can ensure that such materials will not be included in the biodegradable plastic mulches that they use on their organic farms is an outstanding question that still needs to be answered.

<u>The proposed annotation for biodegradable bioplastic mulches is not adequate to ensure that the mulches will fully biodegrade in the fields without negatively impacting the agroecosystem.</u> Compliance with the ASTM standards does not require bioplastic mulches to fully biodegrade in soil. Instead, the D5988 soil standard only requires testing to the 90% biodegradation level, leaving up to 10% of the material to potentially persist indefinitely in the soil. Research is ongoing in this area, but preliminary results show that the commercially-available products are not degrading even in this required two year timeframe.[34]

The annotation's requirement that growers take "appropriate actions to ensure complete degradation at the end of each growing or harvest season"[35] noticeably omits a description of how growers should verify that degradation is taking place, presumably because of the lack of research in this area to inform such a recommendation. The annotation should at least specify that the mulches should be buried or covered to prevent pieces of still-intact mulch from dispersing while the decomposition process is taking place. Without clear guidance on appropriate measures to ensure decomposition, misuse of biodegradable mulch films may occur.

*Conclusion*

Many unanswered questions remain about the long-term impacts of biodegradable plastic mulch on soil and the surrounding ecosystem and the biodegradable mulches on the market today have not been shown to degrade as per the Subcommittee's proposal. Research is ongoing to answer questions about what constitutes an acceptable biodegradable mulch

[31] USDA NOP. (2012). TER: Biodegradable Mulch Film Made from Bioplastics. Lines 59-66.
[32] USDA NOP. (2012). TER: Biodegradable Mulch Film Made from Bioplastics. Lines 59-66.
[33] Corbin, A.T. et al. (In press). Page 4
[34] Corbin, A.T. et al. (In press).
[35] NOSB Crops Subcommittee. (2012). Page 37.

product and what steps need to be taken on the farm to facilitate biodegradability in the range of field conditions that exist across the US. Research is also need to evaluate the long-term impacts of bioplastic mulch residues on cropping systems, soils, biodiversity, and wildlife. Therefore, in the absence of this data upon which the NOSB could make an informed decision, we recommend that this topic is revisited and reconsidered when the commercially available mulches have been proven to biodegrade adequately and proven not to have a negative impact on the agroecosystem. We strongly urge the NOSB to *not* consider biodegradation in the field to be equivalent with 'removing' plastic mulches at the end of the growing season because existing research has not verified that such biodegradation is occurring or that it is possible.

In sum, CFS recommends that the NOSB neither adopt the petition nor the proposed annotation until adequate research, data, and biodegradable mulch products exist to ensure that the use of the product is consistent with the spirit and intent of OFPA.

**Crops Subcommittee — Review of Inert Ingredients**

We support the Subcommittee's proposal to review all inert chemicals used in organic production systems over the next five years. As our scientific understanding of chemical ingredients and their reactivity, toxicity, and ecological impacts has evolved, it has become clear that many substances formerly listed as "inert" can be both toxic and active. And these ingredients often comprise the majority of ingredients in a given pesticide formulation. "Inerts" are also not necessarily as harmless as the "inert" designation implies. On the contrary, the nature of their hazards range from acute toxicity to being endocrine disruptors – hazards that should never be allowed in organically produced products. We fully support the Subcommittee's thoughtfully-designed proposal, which affirms the need to conduct an evaluation of each of these substances in a timely manner.

**Handling Subcommittee – Materials Related to Infant Formula**

CFS opposes the addition of all of the synthetic additives under consideration in organic infant formula. Organic should be the source of the least chemically adulterated food, particularly when it comes to feeding infants. Processed foods that rely on synthetic, added nutrients for essential nutrition should not be considered for organic certification, particularly in infant formula.

We believe that purchasers of organic infant formulas are unaware that some of the nutrients added to infant formula are synthetic and are not required by law. Consumer confidence in the organic label can only be increased by thoroughly evaluating infant formula additives and scrutinizing them for their necessity and safety. Infants are the most vulnerable age group and, therefore, consideration of synthetic additives in infant formulas must proceed cautiously, even if the end result is a loss of organic infant formulas in the marketplace.

There are five cross-cutting issues raised by the petitions for ascorbyl palmitate, beta carotene, lutein, lycopene, L-carnitine, L-methionine, nucleotides, and taurine:

1. **Synthetic macronutrients (especially amino acids) should not be permitted in organic foods.** Organic food is expected to draw its major nutrients from healthy soils and agricultural practices, not from the addition of major synthetic nutrients. Organic consumers do not expect that major nutrients will be supplied from nonorganic or synthetic sources. The addition of synthetic amino acids to organic infant formula is not compatible with organic principles.

2. **The use of synthetic antioxidants as preservatives in organic food is prohibited by §205.600(b)(4).** The petitioned use of the antioxidants ascorbyl palmitate and beta carotene is to preserve the quality of polyunsaturated fatty acids. This use does not comply with §205.600(b)(4) criteria for the use of synthetic materials in processing, which prohibits added synthetics if their primary use is as a preservative.

3. **Organic infant formula should not be made from synthetic materials, including isolated soy protein.** Isolated soy protein's status has not been clarified as to whether it should be considered synthetic or non-synthetic. During a 2004 petition process for its use as a crop input, TAP reviewers agreed it was synthetic, but its status has not been confirmed and discussion of isolated soy protein was deferred. Organic infant formula should not be based on a material that is prohibited in the rest of organic – if there is no organic method for creating a soy infant formula, there should not be organic soy infant formula.

4. **Infant formulas should not be over-fortified.** Infants cannot process excess nutrients through excretion as well as adults, so there may be detrimental effects from the addition of too many nutrients. The precautionary principle should be applied to the levels of nutrients allowed in organic infant formula and the NOSB should not assume that more fortification is better while the intricacies of nutrition are still being discovered. Synthetic or nonorganic nutrients that are not required by law should not be added to organic infant formulas.

5. **Infant formula may not be able to be certified organic.** Until there are appropriate organic or at least natural sources of FDA required nutrients in infant formulas, there should not be organic infant formulas on the market. Infant formula should not be allowed to meet a lower bar for its composition than the rest of the organic foods on the market.

**Livestock Subcommittee – Omnivore Diets (Methionine)**

CFS applauds the Livestock Subcommittee for initiating a conversation about how to deal with deficiencies in omnivore diets beyond simply approving petitions for synthetic forms of nutrients such as methionine. As a strong supporter of the organic label, CFS is discouraged by the continued use of synthetic methionine in omnivore diets, a practice that has been perpetuated for more than ten years. It is critical that the organic community develop solutions

to provide omnivores greater nutritional quality without the use of synthetic amino acids, including methionine or controversial feed additives, such as slaughterhouse waste, in order to maintain the integrity of the organic label.

As you know, synthetic methionine was added to the National List in 2001 and has remained there ever since. Methionine, a sulfur-based essential amino acid, is vital to proper cell growth in omnivores. Synthetic methionine, however, is necessary only for maintaining maximal growth, and is not necessary to maintain animal health and wellbeing.[36] Synthetic methionine provides a cheap alternative to a diet rich in natural methionine, but its use is controversial. Methionine is commercially synthesized by condensing highly toxic, flammable, and explosive chemicals to varying degrees, several of which have been classified as ecological hazards. Thus, the use of synthetic methionine does not fit with the principles of organic production.[37] The time has come for the NOSB to strongly advocate for more government research dollars to be allocated to finding a natural alternative to the use of synthetic methionine to enhance organic integrity in poultry production.

In looking at alternatives to synthetic methionine, NOSB has suggested allowing organic animal by-products and slaughterhouse waste in organic animal feed. This proposal raises concerns about the direction organic animal production is heading. Feeding organic animals low-cost synthetic dietary supplements, slaughterhouse waste, or animal by-products does little to improve the health or welfare of organic animals or improve organic production. CFS strongly believes that the National Organic Program must eliminate synthetic methionine without exposing the organic label to new risks associated with using animal by-products in animal production, as discussed below. Instead, natural sources of methionine such as meat, worms, insects and organically certified fish meal (if it becomes available), corn-gluten meal and potato meal must be provided. Natural-based dietary supplements also should be further studied. CFS recommends that the Livestock Subcommittee develop clear research goals and a timeline to find naturally-derived and safe alternatives to synthetic methionine in order to permanently eliminate synthetic methionine from organic production within five years.

CFS welcomes the opportunity to provide the following comments on this important subject:

**Question 1: Would you recommend the LS look at a possible annotation to allow 100% organic meat scraps or by-products to be used in omnivore diets (poultry and pigs), since it is natural for these omnivores to consume both plant and animal materials? Explain.**

CFS believes it is perfectly acceptable to feed omnivores a diet containing certified organic meat

[36] Rack A.L., et al. (2009). *The Effect of Genotype, Choice Feeding, and Season on Organically Reared Broilers Fed Diets Devoid of Synthetic Methionine*, 18 J.Appl. Poult. Res. 54, 54 (*citing* National Organic Standards Board TAP Review 2001).

[37] Rack et al. (2009). at 55; Goldfarb et al. (1981). *Organic Chemicals Manufacturing Hazards* (Ann Arbor Science Publishers Inc.) (Methionine is commercially synthesized by condensing acrolein and methyl mercapton. The resulting compound is reacted with ammonia and hydrogen cyanide to form a racemic mixture of the d and l isomers of methionine.).

and certified organic fish by-products produced in land-based, closed loop systems, once they become available. However, we do not recommend that the Livestock Subcommittee look at a possible annotation to allow 100% organic meat scraps or by-products to be used in omnivore diets. While it is natural for omnivores to eat a mix of plant and animal materials, CFS has concerns about meat scraps and by-products because they can contain contaminants from post-processing or harbor disease such as transmissible spongiform encephalopathy (TSE). It is well known that bovine spongiform encephalopathy (BSE) or mad cow disease—a fatal neurological disorder of cattle which can be transmitted to other species, including humans—is caused by feeding animal by-products back to animals. Thus far, there have been no known outbreaks of TSE in chickens, turkeys, or pigs. However, researchers have infected pigs with porcine spongiform encephalopathy in the lab, suggesting the possibility that the disease could be transmitted naturally if pigs are fed a diet containing meat by-products.[38]

Feeding omnivores animal by-products or meat scraps contradicts the general provisions prohibiting feeding mammalian or poultry slaughter by-products to mammals or poultry (§501.237.b.5), a provision that recognizes the importance of protecting livestock from disease organisms that may inadvertently be carried between animals. It would be difficult, if not impossible, to ensure that meat scraps and animal by-products are contaminant free. CFS believes that an annotation to allow organic meat scraps or by-products opens a Pandora's Box of concerns and would create an unacceptable risk to the organic food supply and the organic label.

**Question 2: Natural herbal methionine, potato meal, and corn gluten meal are showing promising results. Should this type of research effort increase? Explain.**

CFS is in favor of both government and privately funded research on the efficacy and availability of naturally-derived methionine sources. While NOSB just approved allowing synthetic methionine to remain on the National List for another five years, it is time to draw a line in the sand and take steps to ensure that its use is not extended again when the substance is scheduled to Sunset in 2017. Research must be conducted now to ensure viable options exist when that five year extension expires. As discussed in Question 7 below, there are a variety of ways to provide omnivores essential amino acids without synthetic supplements. NOSB should promote all efforts to research the efficacy and availability of the following natural sources:

- Worms and insects as alternative protein feed sources
- Organic corn-gluten meal, to increase its production
- Organic potato meal, to increase its production
- Natural methionine supplements such as the herbal supplement produced in India
- Recently discovered African plant sources high in methionine[39]

[38] Pawel P. Liberski, et al. (2012). Ultrastructural findings in pigs experimentally infected with bovine spongiform encephalopathy agent, *Folia Neuropathol; 50 (1): 89-98*

[39] Mohammed, A. A. (2008). Evaluation of Beniseed (*Sesamum indicum*) and Drumstick Tree (*Moringa oleifera*) Leaf as Sources of Methionine in Broiler Diets. Ahmadu Bello University, Zaria, Nigeria.

- Sources of organic fish-based amino acids, once they become available

**Question 6**: **Would the organic brand be damaged if organic livestock producers were given the choice of feeding organic animal by-products and naturally or organically harvested fish by-products? Explain.**

Introducing animal by-products and slaughterhouse waste in omnivore feed will harm consumer perception of the organic label and could pose unknown health risks for animals and humans. Consumers undoubtedly associate animal by-products and slaughterhouse waste with past outbreaks of mad cow disease. One reason consumers choose to purchase organic meat is to avoid any risk of coming into contact with contaminated meat. Feeding animal by-products and slaughterhouse waste to organic omnivores will certainly impact consumer perception of organic meat, despite the fact that there have not been any known cases of TSE in omnivorous food animals.

Organic food is grown in a manner that is legally-mandated to safeguard human health, animal welfare, and the environment. If these legal mandates are compromised, consumers will be less likely to pay the premium for organic meat. The organic market is based on adherence to strong standards. As the organic market has grown and become more profitable, there continues to be a push by some to weaken the organic rules by allowing cheaper, and often synthetic, ingredients in organic foods and feed. It is critical that the National Organic Program maintain a standard that sets organic apart from conventional agriculture. This includes distancing organic animal production from factory farming, where animals are not provided adequate space, access to pasture, or a natural diet.

Synthetic amino acids such as methionine allow producers to raise animals quickly and at a high profit margin. Similarly, the use of animal by-products and slaughterhouse waste would provide a cheap, readily available source of methionine, but at a high risk to organic consumers. This type of industrial organic production does not support the spirit of the organic rules. Endorsing synthetic methionine or animal by-products as the solution to amino acid deficit promotes industrial scale organic animal agriculture.

Organic food, and specifically organic meat, is a healthy, humane alternative to conventional food. In order to preserve the integrity of organic, producers cannot be given the choice to supplement animal feed with animal by-products, slaughterhouse waste, or offal.

**Question 7**: **Would a rule change at §205.237(5)(b) to allow the feeding of organic meat offal or by-products to omnivores be appropriate to help fulfill the essential amino acids, vitamins, and minerals requirement? If yes, state the language you would use. If no, offer viable suggestions to dealing with the absence of synthetic amino acids in omnivore rations.**

There are several options for dealing with the absence of synthetic amino acids in omnivore rations. First, some alternative methionine feedstuffs such as potato meal, corn-gluten meal,

fish meal, milk powders, kelp, worms, and insects[40] are showing promising results. Although these natural sources can be more expensive than synthetic methionine, may be unavailable as organic, or they are not readily available, they represent effective dietary sources that NOSB should continue to research and promote. On the other hand, these alternative dietary options could create a diet that is too high in protein for poultry, a factor the research must take into account.[41] Second, methionine levels increase when the balance of amino acids is shifted in feed rations. For example, the standard poultry feed is currently 90% corn and 10% soy. Changing the ration to 70% corn and 30% soy could increase the level of methionine in feed significantly enough to eliminate the need for synthetic methionine because soy has more methionine than corn.[42] Third, research has shown that adequate access to high quality pasture (27 square feet per bird) can completely eliminate the need for methionine supplements.[43] For example, in a 2009 study, researchers found that they could grow healthy chickens without the introduction of synthetic methionine when those birds were allowed to pasture for eight hours a day. Unfortunately, many producers are not able to provide such abundant pasture. Finally, slower growing poultry genotypes could eliminate the need for synthetic methionine.[44]

Natural proteins, shifting feed rations, genuine access to pasture, and slow growing genotypes are currently less cost effective for large-scale producers. For example, potato meal is ten times as expensive as synthetic methionine, and currently no reliable source of organic potato meal exists.[45] Shifting feed rations can mean that animals grow slower, increase their days to market, and produce more manure, a burden for large producers that do not spread manure on their farms. For these reasons alone, it is imperative that NOSB continue to research additional options to provide a viable natural methionine source for organic poultry.

**Compliance, Accreditation, and Certification Subcommittee — Biodiversity Update**

CFS commends the NOSB's continued diligence in addressing the conservation and enhancement of biodiversity and natural resources in organic production systems. It is gratifying to see such agreement about how biodiversity conservation is a crucial component and cornerstone of organic agriculture. CFS is pleased to see the Compliance, Accreditation and Certification Subcommittee's (CAC) discussion document, the progress made to date in facilitating biodiversity conservation efforts on organic operations, and its efforts to solicit and

[40] National Sustainable Agriculture Information Service. (2010). Organic Poultry Production, Providing Adequate Methionine.
[41] *Id*.
[42] Cara Hungerford. (2005). The Rodale Institute, There's A Synthetic in My Organic Chicken, *available at* http://newfarm.rodaleinstitute.org/columns/org_news/2005/0405/methionine.shtml.
[43] Moritz, J.S. et al. (2005). *Synthetic Methionine and Feed Restriction Effects On Performance and Meat Quality of Organically Reared Broiler Chickens*, 14 J. Appl. Poult. Res 521.
[44] Rack et al. (2009). at 55.
[45] National Sustainable Agriculture Information Service. (2010). Organic Poultry Production, Providing Adequate Methionine.

make improvements in its guidance.

CFS supports requirements for technical reports to address whether or not a substance has a positive impact on biodiversity in addition to its possible harms. Such an assessment will help growers and producers to make more informed decisions about using substances in a manner that is consistent with the natural resources standard, which requires the operator maintain or *improve* natural resources [emphasis added]."[46] Conservation includes protection and restoration, and questions addressing both the positive and negative impacts of a decision will help reflect these dual goals.

Organic inspectors have requested clearer information and additional resources to better understand how to inspect for biodiversity and natural resources conservation. It appears, as the CAC discussion document indicates, that organic certifiers also need more guidance. CFS supports inspector trainings, and the development of a useful framework in the form of a Guidance or Instruction in the *NOP Handbook* to provide a clear and streamlined resource for these groups. It is essential that the NOP make this direction readily accessible and provide consistent training for inspectors and certifiers to assist in the implementation of biodiversity and natural resources conservation practices. Education is an important aspect of furthering the role of biodiversity conservation in organic farming, and more educational resources should be developed to promote knowledge among growers, inspectors, certifiers, and the community of organic consumers.

We feel strongly that a protocol should be established in relation to the conversion of high value conservation lands. The organic community received a wake-up call when an investigative reporter broke the story that thousands of acres of old growth forest had been recently cut down in Paraguay where NOP certified sugar was being produced.[47] Land conversion takes place here in the US as well, most notably in western states that still have intact prairies. CFS supports Wild Farm Alliance's suggestion to takes steps to determine a land's conservation value and, if necessary, involve the certifier in mitigating and monitoring biodiversity losses.
CFS is pleased to note the progress made towards conserving biodiversity and natural resources via the 2009 recommendations and we encourage further efforts to clarify and standardize these processes to assist growers and producers, inspectors, and certifiers in implementing these plans under the recommendations and authority of the NOP. CFS supports the recommendations and documents submitted by the Wild Farm Alliance to further the conservation of biodiversity in organic practices and provide guidance to the organic community.

We would also like to reiterate the National Organic Coalition's recommendation that handling operations should adhere to biodiversity and natural resource conservation requirements.

[46] NOP Regulations, Standard 205.200.
[47] Rogers, H. (2010). Sweet and low down: Would you like some deforestation with your organic sugar. Mother Jones. May/June issue.

Such practices should include:

- Landscaping methods and materials used around processing facilities,
- Management of nearby land to mitigate the loss of natural environments, such as wetlands or other sensitive environments, when building facilities,
- Pest control systems that are sensitive to non-target species,
- Wastewater treatment systems that protect water quality and quantity,
- Air handling systems that shield natural systems from dust and fumes, and
- Plantings that create shelter and food for beneficial insects, bats and birds.

**Materials Subcommittee – Research Priorities for 2012**

CFS strongly supports the development of research priorities that relate to unmet needs in organic agriculture. The Materials Subcommittee's document identifies important areas for future research that currently impinge upon the future growth and integrity of organic agriculture. We support the research priorities presented by the Subcommittee with the additional suggestions below:

*Biodegradable Bioplastic Mulch:* As our comments in this document suggest, more research is needed to assess the biodegradability of bioplastic mulch materials and to ensure that their degradation does not negatively impact agroecosystems, wildlife, and the surrounding natural environment. Chemical analyses of the soil during the biodegradation process should be conducted to ensure complete biodegradation as well as to identify intermediate compounds worthy of further study. Microbial community assessments are needed to quantify any potential impacts on microbes from the use of biodegradable mulch and to look for changes in community structure. Long-term soil studies should monitor for the presence of residues of mulch products and additives in the soil as well as the impacts on soil structure, microbes, water holding capacity, and other soil health parameters. Research should investigate and recommend best management practices that growers can employ to facilitate the biodegradation of mulches on farmland at the end of the growing season. Only once more research has been completed can biodegradable bioplastic mulch be considered for use in organic agriculture.

*Organic Aquaculture:* Fish protein produced in land-based, closed-loop, recirculating systems has the real potential to provide an important source of organic food and afford the organic industry huge potential for tremendous growth. But, the organic industry needs to design an appropriate system to realize this potential without compromising the organic label. Research should focus on identifying the best inland, closed-loop, recirculating systems that allow for controlling the inputs and effluents resulting from the aquaculture system. The development of alternative sources of fish feed, including aquatic plant-based diets, should also be explored to avoid using wild fish in aquaculture diets, which is inconsistent with organic principles. CFS supports the recommendations of the National Organic Coalition's letter to the NOP regarding organic aquaculture priorities.

*GMO Vaccines:* Avoiding the use of GMOs in all facets of organic production is crucial to consumer confidence in the organic label. There is confusion among organic producers with respect to the marketing of GMO vaccines which makes it difficult for them to distinguish GMO vaccines from conventional ones. The compilation and publication of a list of all available non-GMO vaccines and their uses is an urgent need and essential to avoid the situation where a farmer accidentally uses a prohibited GMO vaccine. This document should be posted on the NOP website and regularly updated, at least annually.

*Antibiotics in Tree Fruits:* CFS believes that phasing out the use of antibiotics in tree fruits should be a high priority for research. CFS supports the research questions posed by the Materials Subcommittee. Alternative control measures for fire blight should be developed, including other cultivars and cultural practices, and field studies must be conducted to assess the efficacy of these solutions. Surveys of growers who are using alternative controls should be contacted to identify potential solutions, and to assess the positives and negatives of each.

*Methionine Alternatives:* The time has come for the NOSB to strongly advocate for more government research dollars to be allocated to finding a natural alternative to the use of synthetic methionine. CFS recommends that the Livestock Subcommittee develop clear research goals and a timeline to find natural and safe alternatives to synthetic methionine in order that it may permanently eliminate synthetic methionine from organic production within five years so that the use of the substance finally sunsets. Some potential areas for further research include high-methionine corn, implementation of insect-based diets, herbal sources of methionine, and supplementation with potato meal and corn gluten meal and the potential for expanding the organic markets for these ingredients.

We thank the Board for the important work it does on behalf of the organic community and for its consideration of our remarks.

Respectfully submitted by,

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