BEYOND PESTICIDES
701 E Street, SE ■ Washington DC 20003
202-543-5450 phone ■ 202-543-4791 fax
info@beyondpesticides.org ■ www.beyondpesticides.org

March 2021

Ms. Michelle Arsenault
National Organic Standards Board
USDA-AMS-NOP
1400 Independence Ave. SW.,
Room 2648-S, Mail Stop 0268
Washington, DC 20250-0268

Docket ID # AMS-NOP-20-0089

Re. MS: Research Priorities

These comments to the National Organic Standards Board (NOSB) on its Spring 2021 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.

Here we make recommendations for research that we believe is urgently needed to ensure the safety and integrity of organic food, especially for our youngest and most vulnerable consumers.

Background

A staff report [hereinafter "the report"] produced for the Subcommittee on Economic and Consumer Policy of the Committee on Oversight and Reform of the U.S. House of Representatives has documented substantial levels of the heavy metals arsenic, lead, cadmium, and mercury in infant foods.[1] The researchers examined organic as well as nonorganic brands, finding contamination of both. They found that heavy metals were present in both crop-based ingredients and additives. However, many unknowns remain regarding the precise origin of the metals.

[1] Staff Report produced for the Subcommittee on Economic and Consumer Policy of the Committee on Oversight and Reform of the U.S. House of Representatives, 2021. https://oversight.house.gov/sites/democrats.oversight.house.gov/files/2021-02-04%20ECP%20Baby%20Food%20Staff%20Report.pdf.

Heavy metals can have serious health impacts, especially on young children. As stated in the report,

> Children's exposure to toxic heavy metals causes permanent decreases in IQ, diminished future economic productivity, and increased risk of future criminal and antisocial behavior.
>
> Babies' developing brains are "exceptionally sensitive to injury caused by toxic chemicals, and several developmental processes have been shown to be highly vulnerable to chemical toxicity." The fact that babies are small, have other developing organ systems, and absorb more of the heavy metals than adults, exacerbates their risk from exposure to heavy metals.
>
> Exposure to heavy metals at this developmental stage can lead to "untreatable and frequently permanent" brain damage, which may result in "reduced intelligence, as expressed in terms of lost IQ points, or disruption in behavior." For example, a recent study estimates that exposure to environmental chemicals, including lead, are associated with 40,131,518 total IQ points loss in 25.5 million children (or roughly 1.57 lost IQ points per child)—more than thetotal IQ losses associated with preterm birth (34,031,025), brain tumors (37,288), and traumatic brain injury (5,827,300) combined. For every one IQ point lost, it is estimated that a child's lifetime earning capacity will be decreased by $18,000.

Because heavy metal contamination occurs in organic as well as nonorganic baby foods and in food ingredients as well as additives such as vitamin mixtures, it is important to discover the sources from which heavy metals enter the food. Some sources are known—it is known that some vitamin mixes are contaminated. It is known that rice—especially brown rice—contains arsenic as a result of historical use of arsenic pesticides and the fact that rice concentrates arsenic. Other sources are more speculative, but there are three main possible sources—pesticide residues in agricultural products, food contact with processing machinery and containers, and food additives. Growing food organically eliminates additions to the heavy metal burden of soils but does not eliminate existing residues in the soil and environment generally. Organic processing standards must be strengthened to address problems associated with food contact contaminants and contaminated additives. While background levels and action levels set by FDA standards are one measure, under the Organic Foods Production Act, the National Organic Standards Board must set its own standards for contaminants of added substances in organic food production and processing, taking into account background levels in the environment.

After decades of polluting practices in agricultural production under risk assessment standards that allowed contamination at "acceptable levels," we have a legacy problem with background contamination of farmland. As a result, manufacturers of processed food may not be able to source ingredients without these unacceptable contaminants. Therefore, we need to first define the scope of the problem and then consider remediation measures that may be

needed on the agricultural land used to grow crops that are ingredients in baby food and the food supply generally.

With the problem fully defined, we can launch a national clean-up program—from farmers to processors and packagers—to eliminate the contamination from the food supply. As a part of this national program, FDA must set strict regulations on heavy metal concentrations in finished products. The heavy metal contamination occurs regardless of organic production and processing methods. Organic standards are based on practices rather than purity, but consumers do expect that organic foods will be free of hazardous contaminants. Therefore, regardless of actions that may be taken by Congress or the Food and Drug Administration (FDA) affecting foods in general or baby foods in general, the NOSB and NOP should, to the extent possible, ensure that organic food, especially infant food, is free from heavy metal contamination.

Besides distinguishing food ingredients grown according to organic standards from ingredients allowed in processing by virtue of their inclusion on the National List, another distinction needs to be recognized—contamination of ingredients as opposed to contact contamination that may arise from processing machinery or packaging.[2] Hence, the NOSB should recommend research examining the following potential sources of contamination:

1. Organic crop and livestock production practices and the land;
2. National List ingredients;
3. Processing and handling processes; and
4. Packaging materials.

Organic crop and livestock production practices and the land

Contaminated inputs

Organic producers and processors use methods that avoid adding toxic chemicals to food and the soil. Part of the job of the NOSB is to examine both synthetic (§§601, 603 of the National LIst) and nonsynthetic (potentially on §§602, 604) inputs for their impacts on organic crops and the environment. §6518(m) establishes these guidelines for review:

> In evaluating substances considered for inclusion in the proposed National List or proposed amendment to the National List, the Board shall consider—
> (1) the potential of such substances for detrimental chemical interactions with other materials used in organic farming systems;
> (2) 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;
> (3) the probability of environmental contamination during manufacture, use, misuse or disposal of such substance;
> (4) the effect of the substance on human health;

[2] Muncke, J., Backhaus, T., Geueke, B., Maffini, M.V., Martin, O.V., Myers, J.P., Soto, A.M., Trasande, L., Trier, X. and Scheringer, M., 2017. Scientific challenges in the risk assessment of food contact materials. *Environmental Health Perspectives*, *125*(9), p.095001.

(5) the effects of the substance 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;
(6) the alternatives to using the substance in terms of practices or other available materials; and
(7) its compatibility with a system of sustainable agriculture.

At the Spring 2015 NOSB meeting, the Crops Subcommittee (CS) issued a report on its work on contaminated inputs.[3] It outlined a "plan developed by the Crops Subcommittee for ensuring that inputs of organic matter do not result in contamination 'of crops, soil, or water by plant nutrients, pathogenic organisms, heavy metals, or residues of prohibited substances.'" The plan called for looking at off-site inputs based on feedstocks/pathways. For each, the subcommittee suggested asking: "What contaminants might be present here? Which would survive currently prescribed requirements for composting? If there are remaining contaminants known to persist through the composting process at any level, is there a way to restrict the source so that those contaminants would not be present? (E.g., ask a farmer whether arsenic is fed to poultry.) If there are remaining contaminants, do they exceed unavoidable residual contamination levels from a historical, but not current use, of a toxic material? Are there treatments that could be applied to the compost that can eliminate those contaminants?" NOSB work on contaminated inputs has been dropped. In 2016, the CS work agenda said the topic is "On HOLD pending compost ruling." That compost ruling—in which plaintiffs Center for Environmental Health (CEH), Center for Food Safety (CFS), and Beyond Pesticides successfully challenged USDA on allowing the use of compost contaminated with pesticides—was settled in 2016.[4] The report on heavy metals in baby food underscores the importance of continuing that work.

Unavoidable Residual Environmental Contamination

We live in a world contaminated by toxic chemicals. Land farmed organically may have been contaminated by previous use. OFPA §6518(k)(5) says, "The Board shall advise the Secretary concerning the testing of organically produced agricultural products for residues caused by unavoidable residual environmental contamination." The fact that heavy metals find their way into organic produce used for infant foods demonstrates the need to investigate the extent to which land farmed organically is so contaminated that food grown on the land passes on hazardous contaminants to consumers—including our youngest and most vulnerable consumers.

The NOSB should prioritize research into the questions:

1. Which organic products contain heavy metals?
2. To what extent can heavy metal contamination of organic products be traced to contaminated soil or water?
3. What is the distribution of contaminated soil and water?

[3] https://www.ams.usda.gov/sites/default/files/media/CSProposalContmnntsinFarmInputsApr2015.pdf.
[4] https://www.beyondpesticides.org/assets/media/documents/Case315-cv-01690-JSCDoc86.pdf.

4. What remediation methods can be used to reduce the level of heavy metals in soils and irrigation water?[5]
5. Are there farming practices that reduce the transfer of heavy metals to crops?

After receiving answers to these questions and others, the NOSB should advise the Secretary as required by law. The NOSB may want to consider further questions in response to the research results, such as:

1. Can organic regulations prohibit organic food production on highly contaminated soil?
2. If food is not produced on those soils, can the land be used for biodiversity support without harming wildlife?
3. Can organic regulations require certain production methods for high-risk crops/soils? (e.g., dryland rice over paddy rice)
4. Can organic regulations require testing for high-risk crops/soils?
5. Can organic regulations require remediation of contaminated soils before the land is used for organic production?

National List ingredients

The report finds that some additives, including mixtures of vitamins, contain high levels of heavy metals. There has been some controversy over the listing for nutrient vitamins and minerals on §205(b), but it has concerned which vitamins and minerals may be added and to what levels. The listing is annotated with reference to FDA regulations, "Nutrient vitamins and minerals, in accordance with 21 CFR 104.20, Nutritional Quality Guidelines For Foods." Section 205.600(b)(5) requires that "any synthetic substance used as a processing aid or adjuvant" must be "listed as generally recognized as safe (GRAS) by Food and Drug Administration (FDA) when used in accordance with FDA's good manufacturing practices (GMP) and contains no residues of heavy metals or other contaminants in excess of tolerances set by FDA." Unfortunately, vitamins and minerals do not meet the definition of "processing aid," and "adjuvant" is not defined. In addition, the report points out that FDA limitations on heavy metals are insufficient.

In parallel with the investigation of the crop origin of heavy metal contamination, the NOSB should prioritize research into additives to determine how widespread heavy metal contamination is and whether particular sources of additives are more likely to be contaminated. Based on the results, the NOSB may want to consider the following:

1. Should the listing for additives like vitamins and minerals be annotated to require more stringent limits on heavy metals than those set by FDA?
2. Should §205.600(b)(5) be expanded to cover all synthetic additives?

[5] For example, see Schaefer, H.R., Dennis, S. and Fitzpatrick, S., 2020. Cadmium: Mitigation strategies to reduce dietary exposure. *Journal of food science*, *85*(2), pp.260-267.

Processing and handling processes

Both crops and additives are processed using machines that may release heavy metals.[6] How much of the heavy metal contamination revealed in the report comes from contact with processing machines? This is a question that is relevant to avoiding contamination in the future. It may lead to information that can help produce regulations or guidance concerning processing of organic foods.

Packaging materials

Similarly, heavy metal contamination may come from packaging materials.[7] Heavy metal contamination is even associated with plastic packaging.[8] How much of the heavy metal contamination revealed in the report comes from contact with packaging materials? For example, in examining FDA data, the Environmental Defense Fund found that canned peaches, pears, and pineapples, but not fresh or frozen fruit, is pervasively contaminated with lead.[9] This question is also relevant to avoiding contamination in the future. Answers may lead to information that can help produce regulations or guidance concerning packaging of organic foods.

Conclusion

Heavy metal contamination of organic food can come from many sources, and consumers expect organic products to be free of harmful contaminants. Eliminating or reducing this contamination will require a comprehensive effort involving research in several areas to inform a comprehensive action plan. We encourage the NOSB to make heavy metal contamination a priority research topic, to reinvigorate the work agenda item on contaminated inputs, and to work with NOP to identify possible actions to reduce contamination of organic foods.

Thank you for your consideration of these comments.

Sincerely,

Terry Shistar, Ph.D.
Board of Directors

---

[6] http://blogs.edf.org/health/2021/01/12/lead-brass-and-bronze-food-equipment/.

[7] http://blogs.edf.org/health/2021/01/11/its-time-to-eliminate-lead-from-tin-coating-and-solder-on-metal-food-cans/.

[8] Groh, K.J., Backhaus, T., Carney-Almroth, B., Geueke, B., Inostroza, P.A., Lennquist, A., Leslie, H.A., Maffini, M., Slunge, D., Trasande, L. and Warhurst, A.M., 2019. Overview of known plastic packaging-associated chemicals and their hazards. *Science of the total environment*, *651*, pp.3253-3268.

[9] EDF, Lead in food: A hidden health threat, 2017. See https://www.edf.org/sites/default/files/edf_lead_food_report_final.pdf.