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Written Comments to the NOSB Associated with the April 29 - May 1, 2024 Meeting in Milwaukee, Wisconsin

By:

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This document expands upon points that Dr. Charles Benbrook will make via in-person comments during the NOSB meeting in Milwaukee. His oral presentation will provide a brief update on the status of ORG-Tracker, a new analytical system for quantifying and tracking pesticide-dietary risk.

In addition, a set of issues and challenges are addressed in these written comments involving pesticide thresholds, residue testing, setting enforcement priorities, and continuous improvement in the policy framework through which the organic community strives to deliver on the pesticide exposure and risk-reduction promises embedded in the USDA organic seal.

I. A Brief History of ORG-Tracker and the Dietary Risk Index (DRI) System

The DRI has been developed over the last 35 years by Benbrook Consulting Services. It converts USDA and UK-FSA pesticide residues data in a wide variety of foods into relative-risk values based on typical serving sizes for a four-year old child, the level of detected residues of a pesticide-food product combination, and EPA-set chronic Reference Doses and/or chronic Population Adjusted Doses. The design, data sources, and DRI methods are explained on the website of the Heartland Health Research Alliance (HHRA). A set of tables comparing residues and risk levels in organic versus conventional foods from 1992 through 2022 is freely accessible online.

Several open-access papers have been published explaining the methodologies and capabilities embedded in the DRI including a basic methods paper, and an individual-sample methodology paper. The "Missing the Mark" paper documents the degree to which current US-EPA set tolerances and international MRLs fail to target high-risk food-pesticide combinations. An in-depth assessment of differences in pesticide use and dietary risk levels in organically managed versus conventional fruit and vegetable crops in California was published in 2021 in the journal *Agronomy* (Benbrook, Kegley, and Baker). This paper draws on DRI results and concludes that:

> "There are approximately 1.6 million hectares (four million acres) of fruits and vegetables grown in the US annually. The transition of these 1.6 million hectares—just over 1.2% of total harvested cropland—could eliminate nearly all pesticide dietary exposure and risk. As the scale of the organic fruit and vegetable industry grows, investments will increase in processing and storage facilities that are 100% dedicated to organic produce. Such new organic supply change infrastructure will eliminate post-harvest fungicide use in packing plants as a source of residues in organic produce."

The Genesis of ORG-Tracker

The cover story in the October 2020 issue of *Consumer Reports* magazine was entitled "Stop Eating Pesticides: Use CR's Exclusive Ratings to get the benefits of fruits and vegetables while minimizing your risk from toxic pesticides." The story rated 35 fruits and vegetables relative to pesticide risk levels

calculated by the DRI. The story noted surprisingly significant pesticide residues and risk levels in some samples of organic spinach and other leafy greens grown in California. My team did the analytical work supporting this 2020 CR story, as we had done in the case of the May 2015 *Consumer Reports* story "Eat the Peach, Not the Pesticide" and have done again, more recently.

My friend Tom Willey has grown organic spinach for many years in California and was concerned by the organic leafy green findings in the 2020 CR story. He called me to discuss what was behind the numbers. Our initial conversation led to a series of discussions with CCOF staff responsible for overseeing residue testing. A question kept coming up – What more could certifiers and the NOP do to identify and address the very occasional high-risk sample of organic food finding its way to consumers?

I suggested that early detection and the ability to track residues to their source would be key components of a more effective organic community response. The possible benefits of compiling certifier-generated residue data into a single database were discussed. This would make it possible, year to year, to run the residue data through the DRI to establish risk levels, track changes in risk over time, and compare the number of residues and risk levels in certifier samples to recent findings in the USDA's Pesticide Data Program (PDP) and UK-Food Standards Agency (UK-FSA) datasets across both conventional and organic samples.

ORG-Tracker became the name used to describe such a system. The initial thinking about the design, functionality, and applications of ORG-Tracker were discussed with the Accredited Certifiers Association in late 2020 and 2021. ACA carried out some surveys of its members regarding which labs they use to test samples and other aspects of the day-to-day management of their residue testing programs. Mark Lipson made some presentations on ORG-Tracker to the NOP and in other settings, and interest in ORG-Tracker began to grow.

Compiling, integrating, and analyzing certifier data on pesticide residues in organic food via ORG-Tracker will be a significant undertaking, but one that will surely support continuous improvement of organic certification, advance organic integrity, and make food and farm work safer. Findings ways to use and share a diverse set of ORG-Tracker output tables is a sizable undertaking, especially given the number of certifiers and stakeholders in the organic community that would need to be "sold" on the need for and functions of ORG-Tracker. In light of the above challenges, it took some time to come up with a viable plan to build, test, and launch ORG-Tracker.

I was able to interest a long-term funder of HHRA in investing in the creation of ORG-Tracker. A $300k, three-year grant was secured by HHRA dedicated to building ORG-Tracker and creating enhanced analytical capabilities to quantify, track, and compare the presence of pesticide residues and associated risk levels in organic and conventionally grown foods.

Focused work in building ORG-Tracker has now started and will continue through 2026. The ORG-Tracker team is confident that this funding will allow us to get ORG-Tracker into operation. The team is building a system for certifiers, the NOP, growers, and indeed the entire the organic community to use to protect organic integrity.

ORG-Tracker Applications

Collectively, the pesticide residue data incorporated in ORG-Tracker and the DRI will constitute the most comprehensive dataset available worldwide for comparing residues and risks in organic and

conventional foods in the global food supply. ORG-Tracker applications will serve three primary purposes:

1. Assist the organic community in identifying sources of domestic and imported organic food containing residues that are in/out of compliance with NOP rules and/or containing residues posing possibly worrisome risks.
2. Support researchers seeking to better understand the impacts of organic farming systems on pesticide residues and dietary risk levels, and carrying out epidemiological research on pesticide impacts on specific health outcomes.
3. Provide useful data and analytical support as the NOP, certifiers, food companies, regulators, and farmers working to more effectively prevent synthetic pesticides from entering organic food supply chains, and especially those residues posing greater than "negligible risks" (discussed in more detail below).

The impact of ORG-Tracker will depend upon how system-generated insights are used by certifiers, organic growers, the food industry, the NOP, and the scientific community. On an ongoing basis, ORG-Tracker will identify the specific organic foods that sometimes contain high-risk residues. Such risks can be tracked. Certifiers and NOP enforcement officials can use ORG-Tracker to identify hotspots, as well as areas where past problems have subsided.

Producers, handlers, and certifiers can use ORG-Tracker information to investigate the sources of possibly high-risk residues in organic food, while also developing appropriate food-chain interventions. ORG-Tracker output tables will provide useful data for determining how unusual a given residue is in a specific food. Based on results from random-sampling programs like the PDP and UK-FSA, ORG-Tracker will generate distributions of residues in pesticide-food product combinations from a given region or country of origin, and in both conventional and organic samples,. This will allow certifiers to determine how unusual a given residue detected in an organic sample is.

Concern has grown in recent years over the use of prohibited substances in the case of some imported organic feed grains. A special survey of pesticides detected in corn and soybeans was included in the 2022 PDP and the results are in the DRI system. The results can be used to establish threshold levels for glyphosate and its primary metabolite AMPA (aminomethylphosphonic acid) indicative of a typical use of a glyphosate-based herbicide, as opposed to arising from drift or cross-contamination along supply chains. Establishing such levels can assist certifiers in determining the appropriate response when glyphosate or AMPA residues are detected in a sample of domestic or imported corn, soybeans, and/or corn-soybean based feedstuffs.

ORG-Tracker will also advance science by assisting in the development of pesticide dietary exposure metrics for use in epidemiology research. The lack of accurate estimates of pesticide risk levels in food and beverages has made it near-impossible for epidemiologists to include dietary exposure and risk in many types of population-based studies, even though most such studies collect extensive food intake information via food frequency questionnaires. The ORG-Tracker team will reach out to the scientific community to promote the use of DRI and ORG-Tracker data in research projects focused on pesticide exposures and health impacts. Pending available funding, the ORG-Tracker team will provide graduate student fellowships for individuals interested in doing research on pesticide use, risks, regulation, and pest management system changes and innovation.

I look forward to any questions about ORG-Tracker and am eager to speak with individuals attending the Milwaukee NOSB meeting regarding how ORG-Tracker can best meet their needs.

II. Setting Risk Thresholds and Dealing with Real-World Challenges

Over the years I have had opportunities to work with and learn from many of the people who helped shape and implement the Organic Food Production Act. I served on OMRI's board for several years, and have interacted with hundreds of organic farmers over 20+ years via attendance at the Ecofarm conference and other meetings and travel.

In 2020 in response to the *Consumer Reports* story on pesticides, a series of blogs were posted on organic integrity on my website Hygeia Analytics. Larry Jacobs drew on del Cabo's involvement in historic litigation over pesticide drift onto organic herb fields in a piece entitled "Organic Food & Pesticide Residues, One Grower's Perspective". Lynn Clarkson contributed a provocative blog entitled "So What About the Integrity of the U.S. Organic Grain Supply?" that is highly germane in light of contemporary challenges. Brian Baker provided some sharp-edged commentary in his blog "Finding the Root Cause of Organic Fraud." I wrote a final blog on the topic of organic integrity entitled "Why Promoting Organic Integrity Must Become a Top Priority for the USDA."

It is encouraging to see the focused effort by the NOSB and NOP to enhance organic integrity. Hopefully the Congress will also provide the NOP and certifiers some new tools and authority when they finally get around to passing a new farm bill.

I share links to the above blogs because they all address, in one way or another, the critical role of exposure and risk thresholds, and acceptable levels of contaminants in enforcing compliance with the NOP rule and OFPA. Indeed, the NOSB and NOP, and the entire organic community, faces an ever-growing variety of ever-more complex challenges in dealing with the presence of prohibited substances in organic food. And it's not just pesticides and GMOs. The organic community is confronted with unavoidable contamination by many prohibited substances such as PFAS, heavy metals, GM viruses and RNA, microplastics, nanoparticles, and prohibited food additives.

The NOSB and NOP will be forced by events in the years ahead to tackle several issues related to limits of detection and action thresholds arising from NOP rules and testing requirements, and possibly new legislation.

In all cases, decisions will have to be made about how sensitive a testing method must be. As analytical methods improve, there will be pressure to incrementally lower limits of detection (LODs) and limits of quantification (LOQ). But progress in analytical methods will also increase testing costs and likely increase the number of detections, as well as the number of false positives and negatives.

The Role of "Negligible Risk" in Dealing with Low-level Presence of Prohibited Substances

The NOSB and NOP need to explore the benefits of formally acknowledging and defining the concept of "negligible risk". In a variety of existing laws and regulations, such a risk is generally regarded as one that is so low that any efforts to further reduce exposure cannot be justified, and should not, in general, be pursued. As a practical matter in the case of organic food, adopting such a policy concept is a necessary step to order to better focus limited testing, investigatory, and enforcement resources on clearly, or possibly ***not*** negligible risks.

One question remains. When is a negligible-risk residue grounds for loss of organic certification, because the presence of a residue is presumed to be evidence of use of a prohibited substance? Answering this question is why the NOSB and NOP also need to revisit how to rely upon UREC, and possibly also adopt and operationalize a broader concept such as "inadvertent residues" (defined below).

The OFPA opens the door for the NOSB and NOP to move in this direction by virtue of the provisions addressing the testing of organic foods for Unavoidable Environmental Residual Contamination (UREC) [7 USC 6518(k)(5)]. In the context of UREC in the 2000s, the NOSB and NOP were understandably focused on persistent organochlorine pesticide residues bound in soil that were sometimes detected in organic crops. In the 2010s, the organic community confronted essentially the same cluster of issues in dealing with the "adventitious presence" of genetically engineered traits in organic food. For nearly every chemical, drug, or natural element that can harm people via food, these same or similar issues arise.

One ongoing concern is the tendency of the organic community to always want to go the extra mile in assuring organic integrity. This can result in progressively higher testing costs with incrementally lower LODs and LOQs. It also could sometimes focus the attention of consumers on detections of very low levels of certain prohibited or toxic compounds in organic food, as opposed to much higher levels in some conventional foods and/or other corners of the environment.

Such attention to the presence of low-levels of prohibited substances could, in turn, lead to new efforts to eliminate or reduce such contaminants, thereby raising the cost of bringing organic food to market while achieving negligible, if any public health benefits. The NOP, farmers, and organic food companies need clear direction and policy support to focus on the few significant sources of meaningful risk in organic food, while monitoring – but not needlessly chasing after – negligible risks that do not warrant mitigation.

Many efforts over the years have been made within the NOSB process and across the organic community to deal with this conundrum, but none has led to a path forward that is acceptable to a critical mass of stakeholders, the NOP, and policymakers.

Given the many related policy issues now under review by the NOSB and NOP, the time is ripe to attempt a more comprehensive resolution of the underlying issues and dynamics. A good place to start would be for the NOSB and NOP to fulfill the Congressional mandate by defining and operationalizing UREC. Doing so could set the stage for how the organic community might reach consensus on a consistent set of principles upon which to base new policies, procedures, and regulatory requirements.

Specifically in the pesticide arena, better policies are needed to target residue testing, prioritize investigations, drive enforcement actions, and direct investments in new pest management R+D and handling/processing technology and infrastructure. There is a need to define negligible risk levels and various action thresholds applicable in several circumstances, for example:

1. For legacy organochlorine (OC) residues such as DDT still in the soil in some fields, the criteria governing the setting of both UREC levels and negligible risk levels in the context of organic certification need to be codified. UREC levels must be based on empirical data on levels in soil, and are fortunately steadily declining, albeit slowly. "Negligible risk" levels for legacy OCs in organic food could be set at some fraction of current FDA action levels deemed acceptable in

conventional food (e.g. 10-X lower or 100-X lower, but also a level which is measurable, and hence enforceable). Prior to the implementation of the NOP rule, several certifiers routinely tested soil where crops known to accumulate such pesticides—such as carrots and potatoes—were planned to be grown. The certifiers would not certify such crops grown on fields that had significant levels of legacy OCs. Such a precautionary approach should be reinstated.

2. For prohibited pesticides in current use that are found in organic foods where the EPA has not established a tolerance, a UREC-like "inadvertent residue" concept could be used to differentiate between a case where a residue detection should trigger an investigation and possible loss of certification, or instead, the need for no further investigation because the level found almost certainly did not result from an application of the prohibited substance. Note: in the organic food module within the DRI, an "inadvertent residue" level of $pesticide_x$ in organic $food_y$ is defined in a given year as one that is $1/10^{th}$ or less than the mean of the positive residues of $pesticide_x$ in conventionally grown $food_y$.

3. For many fresh fruits and vegetables, the most common source of prohibited pesticide residues in organic produce is post-harvest fungicides. Organic fruit and vegetables is often packed or handled in split-operation facilities where conventional product is packed using the same packing lines and equipment. In such scenarios, prohibited post-harvest fungicides are routinely used when conventional produce moves along the washing, sorting, and packing lines, and residues typically remain despite a thorough cleaning prior to running organic produce through the facility.

Our research shows that the levels of a half-dozen widely used post-harvest fungicides on organic produce range from 10-X to 100-X lower than on conventional produce. An "inadvertent" residue of a post-harvest fungicide could be defined as some fraction of the mean of residues found on or in conventional crop, or alternatively, as a fraction of the applicable tolerance (e.g. 5%??).

I hope that the NOSB will recommend that the NOP and certifiers define and specify UREC-like levels for pesticides commonly detected in organic food samples. Such levels would cover residues that find their way into organic food through no fault of organic growers or processors. But in addition, the organic community must add a second test or condition – UREC-like levels must also pose negligible risks.

The organic community must find a way to grow, process, and sell food to willing customers recognizing that 100% pesticide-free organic food is a goal to aspire to, but one that will not always be attainable, at least not for several decades. Fifty to 100 years will be required for many persistent pesticides to finally break down and become undetectable in soil, sediment, plant biomass, and water resources.

This is why negligible risk, or a concept like it, is a necessary concept in the policy framework governing UREC and the presence of prohibited pesticide residues in organic food. Negligible risk is inherently qualitative, contextual, and subjective. To play a role in enforcement and compliance with NOP rules, any meaningful definition of UREC and negligible risk will need to take account of:

1. Risk levels allowed via laws and regulations applicable to conventionally grown and processed foods, e.g. the 5% of EPA tolerance threshold in the NOP rule [7 CFR 205.671].
2. Risks relative to a quantitative risk threshold that is deemed compatible with a "reasonable certainty of no harm," the standard that drives FDA and EPA decisions on acceptable levels of

risks from contaminants in food. The organic standard could take a more precautionary approach by setting the acceptable risk level more conservatively than the "reasonable certainty of no harm" level.

3. Risks relative to levels of exposure and risk currently in conventionally grown foods. UREC could be defined as some fraction of the mean of the positive residues in conventionally grown foods.

As a matter of policy guidance—and possibly someday by law—negligible risks in organic certification could be set ***at least*** 10-X lower, or 20-X, or 50-X than the risks sanctioned by government regulations in conventionally grown and processed foods.

Such action thresholds could be coupled with a policy goal of reaching a significant differential, say 100-X, at which point further efforts to reduce risks would not be required. DRI output shows that a 100-X differential goal is attainable in the case of most post-harvest fungicide residues in organic produce. An even better solution is growing organic fruit production to the point where little or no conventional fruit needs to be processed, and treated with fungicides.

The overriding public-good justification for adopting such a new policy framework is simple. The best ROI to efforts designed to advance food safety across the organic and conventional farming communities will come from targeting high-risk crops and foods. Expending resources trying to eliminate or reduce residues in pesticide-food product combinations that pose far-below average risks in conventionally grown crops will result in less action taken to address pesticide-food product combinations that pose a serious health risk.

The simplest approach is to set negligible risk levels relative to what is occurring in conventional crops/food, since the measure of success – and compliance – could be driven solely by exposure metrics. This, of course, avoids the cluster of essentially unresolvable issues that arise around the lack of ability to translate exposures into risk levels for any one chemical or contaminant, let alone all the chemicals each of us are exposed to every day.

The ORG-Tracker team is mindful of the devils in the details and have been confronting them with some modest success over the last 40 years. On behalf of the team, I call on the NOSB to recommend and support a robust and dynamic policy to further reduce the dietary risks in the organic food supply.

Our hope is that the compelling need to advance organic integrity, coupled with the present opportunity to tackle these issues via ORG-Tracker and a modernized policy framework, will draw into the process a new generation of forward-thinking people who are committed and determined to make organic food even safer. Any progress made will need to flow through the NOSB-NOP policy processes. I appreciate the opportunity to share these thoughts and suggestions during the forthcoming NOSB meeting, and look forward to your questions and feedback.