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Committee to Bridge the Gap • Natural Resources Defense Council  
Multicultural Alliance for a Safe Environment • Beyond Pesticides  
International Center for Technology Assessment • Nuclear Information and Resource Service  
Sugar Law Center For Economic & Social Justice • Don't Waste Arizona  
California Safe Schools • Center for Environmental Health • Ecological Options Network • Mamavation  
Physicians for Social Responsibility-Los Angeles • Physicians for Social Responsibility-San Francisco Bay Area  
San Luis Obispo Mothers for Peace • Tri-Valley CAREs (Communities Against a Radioactive Environment)  
Snake River Alliance • Kentucky Environmental Foundation • Citizens Awareness Network  
48217 Southwest Detroit • Citizens Resistance At Fermi Two (CRAFT) • Flint Rising  
Green Door Initiative • Interfaith Council for Peace and Justice • Michigan Environmental Justice Coalition  
Soulardarity • Midwest Food Connection • MN BIPOC Environmental Justice Table  
Clean Air Action Network of Glens Falls • Community Concerned about NL Industries  
Council on Intelligent Energy & Conservation Policy • New York Public Interest Research Group  
United Neighbors Concerned About the Dewey Loeffel Dump • Ohio Nuclear Free Network  
Dallas Peace and Justice Center • Sustainable Energy and Economic Development (SEED) Coalition  
Nukewatch • Peace Action WI

March 15, 2022

Dr. Carlton Waterhouse  
Deputy Assistant Administrator  
Office of Land and Emergency Management  
U.S. Environmental Protection Agency

**RE: Food Pathways in Chemical Cleanups**

Dear Dr. Waterhouse:

We write to call to your attention a major gap in protection of the public from toxic chemicals at contaminated sites and urge you to arrange for EPA to commence an undertaking to remedy the situation. Specifically, the EPA should update its Regional Screening Levels (RSL) Calculator to incorporate food ingestion pathways, including consumption of homegrown foodstuffs in the resident scenario and a farmer scenario.

Consumption of fruits, vegetables, and other food raised in and on contaminated soils is an important pathway for exposure to pollutants for members of the public at many polluted sites. Although reliance on backyard and community gardens and subsistence farming affects a wide range of people, low income communities of color, Native American tribes, and rural communities are disproportionately affected. Addressing this exposure pathway is therefore especially important now in light of the Biden Administration's focus on addressing environmental justice.

[EPA's Preliminary Remediation Goal \(PRG\) Calculator](#) for radionuclides already incorporates the garden and farmer scenarios. [EPA's Regional Screening Levels \(RSL\) Calculator](#) [EPA's RSL Calculator](#) for chemicals, however, does not at present. Contaminated sites being cleaned up under CERCLA or RCRA are supposed to be cleaned up to remediation levels that take into

account these food ingestion pathways when future land use (e.g., as set forth in local zoning) would allow them. However, because there is no RSL Calculator that can be used to assist in setting those levels, and therefore Remedial Project Managers would need to come up with separate levels for every individual site, it appears that the great majority of contaminated sites where such food ingestion pathways are relevant nonetheless do not consider them. In practical terms, this means that remediation levels at many sites may be very much less protective than they should be.

We therefore recommend that you initiate an EPA undertaking to upgrade the RSL Calculator to include the food ingestion pathways, parallel to what EPA already does for radionuclides in its PRG Calculator. While the task is not trivial, EPA already has a solid base of data on which such an effort can be based. For example, the PRG Calculator currently includes consumption rates for many individual types of homegrown fruits and vegetables (e.g., specific values for apples, peaches, berries, corn, potatoes, peas, etc.), drawn from EPA's Exposure Factors Handbook.<sup>1</sup> It also includes values for mass loading factors (MLFs), the amount of contaminated soil presumed to exist on the surfaces of produce, pasture, etc.<sup>2</sup>

The main inputs that generally cannot be taken from the PRG calculator for radionuclides and used for chemicals are the soil transfer factors (Bv-wet, or Bio-Accumulation Factor, BAF), i.e., how much of the contaminant in the soil is taken up by the roots into the plant. The PRG calculator only includes soil transfer factors for radionuclides. While some of those radionuclide transfer factors could potentially be useful in estimating transfer factors for non-radioactive metals, transfer factors for organic chemicals would need to be obtained elsewhere. A good starting point would be EPA's [\*Eco-SSLs: Ecological Soil Screening Levels, Attachment 4-1, Guidance for Developing Ecological Soil Screening Levels \(Eco-SSLs\), Exposure Factors and Bioaccumulation Models for Derivation of Wildlife Eco-SSLs, OSWER Directive 9285.7-55\*](#), Revised April 2007. See particularly Appendices B, C, and F and Table 4b.

While ironically assembled to deal with soil screening levels for ecological receptors, EPA's Eco-SSL document includes a number of experimentally determined soil transfer values for toxic chemicals into various human food crops. It does not represent by any means a complete dataset—there presumably are a number of other measurements that pre-date it, and one would need to review studies performed in the years since its release, as well as identify additional studies that would be useful to fill data gaps—but it would be a good starting point.<sup>3</sup> We have

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<sup>1</sup> While including many individual fruit and vegetable types, there are other food types, particularly for tribes, that are not in the PRG calculator and would be useful to add to it and to the RSL revision we are suggesting.

<sup>2</sup> While EPA has a good starting point in the PRG Calculator, some of the MLFs in the PRG calculator are of poorer quality than others (particularly those relying on a generic estimate from Environment Agency of the UK) and all are fairly old, so a review of the literature to see if there are more recent and applicable values would be useful.

<sup>3</sup> The measured soil transfer data for fruits and vegetables in the Eco-SSFL report make clear that one must rely on measured values, not use an ancient and highly unreliable simple uptake assumption based on the octanol-water coefficient,  $K_{ow}$ . Chemicals with similar  $K_{ow}$  values can have greatly different uptake factors, and measurements of  $K_{ow}$  for the same chemical can vary by orders of magnitude.

included as an attachment a summary of organic chemicals and the plants for which measured bioaccumulation factors are included in the Eco-SSL document.

The commitments by current EPA leadership to good science and to environmental justice reinforce the need to commence a scientifically high-quality program to incorporate the food ingestion pathways into EPA's Regional Screening Levels for toxic chemicals, paralleling what is already done for radionuclides in EPA's Preliminary Remediation Goals. Such an initiative would be particularly important in protecting vulnerable communities.

As you well know, many of the communities who would benefit by this change are environmental justice communities. In these disadvantaged communities, which are often food deserts unserved by supermarkets, growing fruits and produce is an important source of nutrition, as well as community connection. Inclusion of such a "garden pathway" into the RSL calculator would be a key public health safeguard for these communities.

In addition, a garden pathway is also easily understood by lay people. Its ultimate measure is one that can be grasped without reliance on a scientific formula. As such, it is an avenue for gaining community confidence and understanding of the protectiveness of the soil cleanup at any contaminated site. Community confidence and understanding are hard to win but remain key components in any successful EPA remediation.

We look forward to hearing from you whether EPA will undertake a project to incorporate the garden pathway into the RSL calculator for determining cleanup standards for sites contaminated with toxic chemicals, parallel to what is already done for radionuclides in the EPA PRG calculator.

Sincerely,

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