

## IAFNS Food and Chemical Safety Committee Request for Proposals

### Advancing Exposure Assessment for Food Contaminants Through Implementation of Probabilistic Modeling

The Institute for the Advancement of Food and Nutrition Sciences (IAFNS) is a non-profit, 501(c)(3) scientific organization that pools funding from industry collaborators and advances science through the in-kind and financial contributions from public and private sector participants.

The IAFNS Food and Chemical Safety Committee is recognized as a scientific leader in food and chemical safety research. The Committee has made significant contributions in toxicology, risk assessment and overall food safety. National and international scientific organizations apply the science provided by the Committee to address research gaps and drive decision making.

IAFNS adheres to strict procedures to maintain scientific integrity in all work we support. These requirements are described further in the attached TOP Guidelines and Guiding Principles for Scientific Integrity addendums.

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#### Background:

Risk assessments for foods, ingredients and additives have evolved over the past few decades to incorporate new techniques such as benchmark dose modeling. Additionally, risk assessment approaches have evolved to include thresholds of toxicological concern, and advancements in carcinogen risk assessment. While these advancements have enhanced the way in which health-based guidance values are derived, exposure assessments still tend to rely on deterministic approaches utilizing very conservative inputs. Deterministic assessments are easy to conduct and easy to interpret; however, as point estimates of exposure, they do not account for variability in the level and/or likelihood of occurrence of a chemical/contaminant or population differences in exposure inputs (e.g., food consumption amount and frequency). Probabilistic assessments can further refine deterministic assessments using distributions for various exposure inputs and, as such, better account for exposure variability and uncertainty<sup>1</sup>.

#### Objective:

Building from analysis of the current state of adoption of probabilistic exposure modeling by regulatory agencies to inform risk management decisions and regulation for food contaminants, highlight the value of further integration of probabilistic exposure assessments into regulatory frameworks and discuss factors that hinder widespread adoption of probabilistic exposure models.

This project will address:

1. When probabilistic exposure assessments are warranted for food contaminants.

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<sup>1</sup> EPA ExpoBox. Exposure Assessment Tools by Tiers and Types - Deterministic and Probabilistic Assessments. [www.epa.gov/expobox/exposure-assessment-tools-tiers-and-types-deterministic-and-probabilistic-assessments#main-content](http://www.epa.gov/expobox/exposure-assessment-tools-tiers-and-types-deterministic-and-probabilistic-assessments#main-content)



2. The criteria for determining that the assessor has high quality distributions for input variables.
3. Review existing guidance on how to describe the model and present the results and underlying inputs so that the stakeholders who are evaluating the assessment have confidence to evaluate and decide.
4. Identify the primary barriers to more widespread adoption and provide discussion/critique around whether each of the identified deterrents/concerns are valid or based on misconceptions/resistance to change. If a barrier is valid, provide recommendations of what information is needed. If an existing barrier is more subjective or based on perception, provide a rationale, utilizing existing examples where possible, to counter the misperception.

### **Approach**

Provide a general discussion on probabilistic assessments for food contaminants weaving in specific examples (i.e., contaminants, ingredients, etc.) to demonstrate current use by regulatory/public health authority and/or to highlight specific aspects important to a probabilistic exposure assessment. Incorporate discussion of the following topics:

- Highlight current recommendations on the use of probabilistic assessments for consumption and chemical exposure and discuss any critical differences. (There are several existing guidance documents that exist on probabilistic exposure assessment including ones by the EPA<sup>2,3</sup>.)
- Provide guidance on when a probabilistic modeling approach is warranted and the best practices for presenting the results so that the risk manager has the necessary transparency and understanding of the data that were used and the model parameters.
  - Certain data sets, such as NHANES, may be applicable for consumption of many foods but how does one evaluate quality for occurrence of a specific contaminant, for example?
  - Differences in acute vs chronic assessments?
- Identify the primary barriers to more widespread use and provide recommendations and/or discussion as to why each is or is not a valid gap/concern.

### **Proposal Content:**

The Committee requests that applicants address each of the following components in their proposal:

1. **Overview:** Please provide a short description of the proposal.
2. **Research Approach:** Please provide your approach to the research design elements as described above. Identify key research questions, primary and secondary outcomes, methodology, and analysis plan. Where appropriate, please reference the validation of proposed methods.
3. **Research Team:** Please indicate the primary and secondary investigators, plus any additional contributors or collaborators including ones from outside organizations.

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<sup>2</sup> [www.epa.gov/expobox/exposure-assessment-tools-tiers-and-types-screening-level-and-refined#tool](http://www.epa.gov/expobox/exposure-assessment-tools-tiers-and-types-screening-level-and-refined#tool)

<sup>3</sup> [www.epa.gov/risk/policy-use-probabilistic-analysis-risk-assessment-epa](http://www.epa.gov/risk/policy-use-probabilistic-analysis-risk-assessment-epa)



#### 4. Anticipated Challenges

5. **Investigator Credentials:** Please describe the experiences that make you and your team a candidate for carrying out this project. In addition, the CV of the principal investigator(s) is required.
6. **Resources:** Please describe the resources available to you to complete the project.
7. **Budget:** Please provide a budget summary indicating allocation of the requested funds to specific tasks, as well as a corresponding timeline to completion.
  - a. Please note that IAFNS limits overhead to 10% of project costs.
  - b. IAFNS will directly pay publication fees for open access.
8. **Timeline and Key Deliverables:**
  - a. Publication in a peer reviewed journal.
  - b. Periodic updates to the Food and Chemical Safety Committee via webinar.
  - c. Presentation at appropriate scientific forum.
  - d. Timeline to completion: 6-9 months.
9. **Potential Conflicts of Interest:** List any potential conflicts of interests for all investigators, co-investigators, collaborators. We suggest using the Conflict of Interest Guidelines as set forth by the American Society for Nutrition:  
<https://nutrition.org/publications/guidelines-and-policies/conflict-of-interest/>

**Page Limit:** No more than 5 pages excluding references and investigator bios and CV.

**Proposal Deadline: April 10, 2021**

**Submission Instructions: Please submit completed proposals to:**

Neal Saab, PhD  
Senior Science Program Manager  
nsaab@IAFNS.org

**Proposal Review Process:**

- a) Proposals will be reviewed promptly by the Food and Chemical Safety Committee. Only projects meeting requested criteria will be considered.
- b) Applicants will be notified in writing if additional information is needed.
- c) Once the proposal review is over, all applicants will be notified of the disposition of their proposals in a timely manner.
- d) Upon project initiation, the project summary, principal investigator and budget will be published on our funded projects portal: <https://iafns.org/funded-projects/>