

## **FREQUENTLY ASKED QUESTIONS: A HORIZON-STYLE EXERCISE**

### **Who is organising this research question identification and prioritization exercise?**

The RAD/CHEM Adverse Outcome Pathway Joint Topical Group of the Nuclear Energy Agency's High-Level Group on Low-Dose Research (NEA HLG-LDR) is organising this horizon-style exercise. The exercise will involve two phases: 1) research question solicitation and 2) an international survey of radiation professionals.

### **The points of contact of this research question solicitation phase of the project include:**

- Julie Burt, Canadian Nuclear Safety Commission (CNSC), Canada (Julie.burt@cnsccsn.gc.ca)
- Julie Leblanc, Canadian Nuclear Safety Commission (CNSC), Canada (Julie.leblanc@cnsccsn.gc.ca)

### **Why an international horizon exercise question solicitation?**

The strength of this strategy is that it allows for the collection of questions across a broad and international audience representing current and future stakeholder groups (government, industry, academia, non-government organisations, etc.) involved in, or that may be impacted by, the Adverse Outcome Pathway (AOP) concept and its potential applications. As such, this strategy will facilitate the identification of key questions, and enable prioritisation of important AOP questions.

### **Is my input confidential?**

Yes. All input is strictly confidential, and providing your name is optional. In no way will submitted questions be attributed to individuals or organisations without your permission.

### **What criteria should submitted questions meet?**

Questions should meet the following criteria:

1. Addresses important gaps in knowledge;
2. Have a factual answer that does not depend on value judgments;
3. Are of a spatial and temporal scale that realistically can be addressed by expert groups; or
4. Are not answerable simply by "it all depends" (questions answerable "yes" or "no" are rarely useful either)

An ideal question will also be useful for decision-makers, increasing the effectiveness of policy and decision-making in the field of radiation protection.

### **What are examples of well-designed questions?**

The following are examples of succinct questions that have met the criteria listed above

- How best to incorporate risk factors into AOP development
- How can the AOP framework be used to support radiation risk assessment (i.e., how can it be incorporated into decision-making)
- What is the best approach for determining the most influential studies to support the weight of evidence in an AOP?
- How can we improve the characterization of the exposure–response relationship when multiple stressors (e.g., radiation and chemicals) are present?
- Does the AOP framework allow flexibility to be stressor specific?

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### **What are the next steps? Who is your audience? How will the questions be disseminated?**

Following the question solicitation phase of the exercise, a 1-day virtual workshop will be held with experts that are charged to narrow and refine the candidate questions to a list of approximately 40 key questions. These questions will then be used in a survey of the international radiation community, comprised of researchers, policy-makers, regulators, societies, and select experts from the chemical toxicology field. The responses from the survey will be used to rank the importance of the questions by sector and geographic location of respondents, and to provide the information to advance the use of the AOP approach in the radiation field, including the design of future workshops.

The survey results will inform the ongoing work of the RAD/CHEM Topical Group with the aims to: (1) advance radiological and chemical research using the AOP framework; (2) play a role as an AOP-oriented discussion forum; (3) facilitate the identification and collaborative development of joint initiatives; and (4) facilitate collaboration and co-ordination between the chemical and radiation fields for effective uptake of the AOP framework.

Overall, we anticipate a range of outputs including:

- 2 journal articles: describe the initial list of key questions selected and refined by the Steering Committee, and report on the results of question ranking from the international survey.
- Presentation of the results at professional meetings, including the NEA HLG-LDR, International Commission on Radiological Protection Symposium, etc.

### **Have similar priority-setting efforts been conducted elsewhere?**

Yes. Two workshops have been organised by Health Canada and others including the NEA, with participants from both Canada and the international community.

### **Have those efforts had a real impact?**

They have attracted considerable interest among researchers and regulators. Articles have been published summarising the outcomes of these workshops (1, 2).

## **References**

- 1- Chauhan, V. et al. 2019. Is there a role for the adverse outcome pathway framework to support radiation protection? *International Journal of Radiation Biology* 95(2): 225-232. Link: <https://doi.org/10.1080/09553002.2019.1532617>
- 2- Chauhan, V. et al. 2021, Bringing together scientific disciplines for collaborative undertakings: a vision for advancing the adverse outcome pathway framework. *International Journal of Radiation Biology* 97:4. Link: <https://doi.org/10.1080/09553002.2021.1884314>