# DETAILED INFORMATION ON THE CRP J15002

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**HOW TO JOIN THE CRP:**

To join the CRP interested institutes and bodies need to submit a proposal for a Research Contract or Research Agreement directly to the IAEA's Research Contracts Administration Section, before the deadline of **15 November 2019**, using only the forms template on the IAEA CRA webpage, to: research.contracts@iaea.org. Please note no other forms will be accepted.

Research Contracts are generally awarded to institutes in developing countries or countries in transition and may entail a modest financial support for a limited number of institutes or bodies. Research Agreements are generally awarded to institutes in developed countries and do not entail any financial support.

For each contract or agreement, one institute staff member is designated as the Chief Scientific Investigator (CSI) responsible for the progress of the research work. The IAEA acts as the sponsoring and coordinating body, with an IAEA technical staff member assigned to lead each CRP as the project officer.

If the proposed project is approved, a contract or agreement will be sent to the head of the institute for approval and signature, and the Government of the Member State will be duly notified through the appropriate channels of the conclusion of the contract or agreement.

Please keep in mind that the IAEA is not able to financially support the research. The research takes place at participating institutes and bodies and the CRP serves as a platform to bring together research institutions from Member States to collaborate on research projects of common interest.

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**PLANNED DURATION / TIME FRAME:** 3 years / 1Q 2020 – 4Q 2022

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**SUMMARY:** This CRP will support IAEA Member States, the IAEA Secretariat and other International Organizations to more effectively use dose projection tools in nuclear and radiological emergency preparedness and response (EPR), by improving their performance within EPR and by improving the understanding of the information they may provide.

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**BACKGROUND SITUATION ANALYSIS:**

Analytical decision support systems, such as dose projection tools, are a key element in the preparedness and response to a nuclear or radiological emergency. IAEA Safety Standards Series No. GSR Part 7 in para. 6.20 requires that "The operating organization and response organizations shall develop the necessary procedures and analytical tools […] for the goals of emergency response to be achieved and for the emergency response to be effective" and highlights in para. 6.21 that "…Any arrangements for the use of analytical tools early in an emergency response for supporting decision making on protective actions and other response

actions shall be made in due recognition of the limitations of such analytical tools and in a way that would not reduce the effectiveness of response actions. These limitations shall be made clear to, and shall be recognized by, those responsible for decision making."

Dose projections tools have been largely used at the preparedness stage to derive EPR arrangements. For example, such analytical tools have been used to determine the size of the areas around a facility or activity where predefined protective actions need to be implemented during the response based on operational criteria (such as emergency action levels) and where response actions can be implemented based on radiation monitoring. Dose projection tools help estimating the prospective radiological exposure from release of radioactive material stemming from the events defined in the hazard assessment.

At the response stage, the use of these tools has varied among different countries and has evolved with the time and experience gained. There are many countries using these tools to support / inform decision making, but not for decision making as such, and also to assist in defining priorities for radiation monitoring. In some cases, (especially in the past) a number of countries used these tools strongly relying on the results provided by these tools without due recognition of their limitations.

Experience from past emergencies has shown that analytical decision support systems, in some cases, have not been integrated into EPR arrangements in such a way that they reflect the realities of an emergency (such as the limited availability and reliability of information, the high level of uncertainties, or the need to implement response actions within a very short time frame). EPR arrangements need to reflect both the potential and the limitations of such analytical decision support systems.

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**OVERALL OBJECTIVES:**

This CRP is aimed at:

- Providing scientific evidence (e.g. by comparing results from dose projection tools with real data obtained from past events) and expert judgement, on the potential and limitations of these models, as well as the main factors influencing those limitations.
- Identifying specific ways to further improve the performance of these tools, by better understanding the main driving factors of their shortcomings and strengths.
- Better understanding and defining possible improvements of their use at both the preparedness phase and the response stage for different Emergency Preparedness Categories and events.

**SPECIFIC OBJECTIVES / OUTCOMES:**

- Identify uses, advantages, uncertainties and limitations of dose projection tools in nuclear and radiological EPR, based on their current and past use and lessons learned from experience.
- Perform a benchmark analysis of different dose projection tools against the releases and actual radiological conditions observed in past emergencies, as available.
- Identify the main factors contributing to performance of these analytical tools in different types of emergencies and events.
- Make specific recommendations for the use of dose projection tools to better support their integration in radiation monitoring platforms, such as feasibility and steps for the integration of these models to the IAEA International Radiation Monitoring Information System (IRMIS) or other platforms.

- Develop recommendations, based on all the above, for an improved use of these tools to support emergency planning and management at the preparedness phase and the response stage.

**OUTPUTS:**

1. Quarterly report of R&D activities on the subject matter carried out through research agreements and research contracts.
2. Annual progress report of the CRP.
3. Final report of the CRP, which will provide basis for the development of IAEA guidance document to be published within the IAEA EPR Series publications.

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**ACTIVITIES:**

| Activities | 2020 | | | | 2021 | | | | 2022 | | | |
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| | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| 1st research coordination meeting (CRM) | | | | | | | | | | | | |
| Annual progress report | | | | | | | | | | | | |
| 2nd CRM to discuss progress and share interim research results | | | | | | | | | | | | |
| Annual progress report | | | | | | | | | | | | |
| 3rd CRM to share research results and develop final draft report | | | | | | | | | | | | |
| Completion of final report, including recommendations for an improved use of these tools to support emergency planning and management at the preparedness phase and the response stage. | | | | | | | | | | | | |

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**LIST OF POTENTIAL PARTICIPATING COUNTRIES:**

- All Member States
- Due to limited funds, the number of participating countries to receive research contracts should be limited to 5 – 7 countries (preferably those with Emergency Preparedness Category I facilities).

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**PROJECT OFFICERS:**

Philip Vilar Welter and Sanjoy Mukhopadhyay will be the Technical Officers on behalf of the NS-IEC, and Ms Joanne BROWN will be the Technical Officer on behalf of the NSRW-WES.

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**LINKS:**

You can find further information under the following links:

CRP's website: https://www.iaea.org/projects/crp/j15002
IAEA CRA website: https://www.iaea.org/services/coordinated-research-activities
How CRPs work: https://www.iaea.org/services/coordinated-research-activities/how-crps-work
How to participate: https://www.iaea.org/services/coordinated-research-activities/how-to-participate
Factsheet: https://www.iaea.org/sites/default/files/18/08/iaea-coordinated-research-activities.pdf
New CRP announcements: https://www.iaea.org/news/3151/4958

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