

# DEVELOPMENT OF RADIATION RESEARCH CAPACITY IN IRELAND

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## ABSTRACT

Ireland's Environmental Protection Agency (EPA) is the national competent authority for the protection of workers, members of the public and the environment against the hazards associated with ionising radiation and has a role in maintaining, growing and building national capacity in radiation science. Evidence indicates that the current capacity nationally in terms of the availability of skilled radiation scientists is insufficient to meet future staffing requirements for EPA in this field. It is acknowledged that a programme to build radiation research in Ireland is a strategic priority for the EPA in its 2016 – 2020 Strategic Plan under the heading "Implement the EPA Research Strategy and leverage national co-funding and EU funding opportunities to help build environmental and radiological protection research capacity in Ireland and improve the dissemination of research outputs". This paper presents a vision and approach towards reinvigoration of radiation research in Ireland to attract the next generation into this field of science.

### 1. Introduction

Recent efforts by the Environmental Protection Agency (EPA) to recruit new staff for positions relating to radiation protection have shown that the current capacity nationally in terms of the availability of skilled radiation scientists is insufficient to meet future staffing requirements. This concern was acknowledged during the development of the EPA's 2016 – 2020 Strategic Plan and a programme to build radiation research in Ireland was identified as a strategic priority in the plan. In particular the plan includes an action to "implement the EPA Research Strategy and leverage national co-funding and EU funding opportunities to help build environmental and radiological protection research capacity in Ireland and improve the dissemination of research outputs".

This paper presents a vision and approach towards development of radiation research in EPA and to achieve the following objectives:

1. To stimulate the Irish radiation research community so as to develop national radiation research capacity
2. To support high standards and broad horizons in radiation research by facilitating engagement with national and international research groups.
3. To address knowledge gaps on radiation matters relevant in Ireland and internationally and aligned with the EPA Corporate Strategy.
4. To build expertise and facilitate knowledge sharing by engaging with a network of stakeholders.
5. To inform EPA and national policy by addressing the knowledge needs of governmental and non-governmental stakeholders, both nationally and internationally and providing evidence based solutions with an emphasis on continually improving nuclear safety and radiation protection.

## **2. Background to EPA participation in research**

### **2.1 Historical Perspective**

The Environmental Protection Agency (EPA) has been assigned a statutory role to co-ordinate and support national environmental and radiation research following its merger with the Radiological Protection Institute of Ireland (RPII). As a result of the merger the EPA is mandated under the Radiological Protection Act, 1991(1) 'to carry out or to arrange for the carrying out of and to co-ordinate or assist in arrangements for the carrying out of research into any matter' relating to its functions or activities.

The fulfilment of these functions points towards the need to be involved in radiation research. In particular, following the Chernobyl accident in 1986, there was a desire by Government for the then RPII to be involved in international research into agricultural countermeasures and also to be involved in projects that supported the development of technical expertise in radiation monitoring and assessment. This involvement in research has been clearly beneficial in many ways. For example, in the years following the Chernobyl accident, the RPII participated in a number of international collaborative research projects. These were hugely important in expanding and developing Ireland's skills base in the areas of environmental behaviour of radionuclides and transfer through food systems, a key area of interest for Ireland given the emphasis on the agricultural sector. The RPII's, and more recently the EPA's, involvement in research to underpin its environmental monitoring and assessment roles has also allowed it to establish the capability to undertake nationally important projects such as the assessment of new nuclear build in the UK, and to provide credible and high quality advice to Government in this area. It has also provided a solid base to allow it to fulfil its role in relation to Ireland's preparedness for a nuclear emergency and its capacity to respond to such an event.

In addition the RPII/EPA's work on radon established the scale and nature of the problem in Ireland and developed expertise that was crucial to formulating the advice to Government and the public on this issue.

Collaborative radiation research is particularly important to EPA due to the fact that Ireland is a non-nuclear country and the pool of radiation expertise and the radiation research community is quite small. Participation in research opened up staff access to the wider research community, and allowed EPA to maintain and develop links with colleagues in other agencies and third level institutes both within Ireland and abroad.

With the passage of time since Chernobyl the radiation research community in Ireland, particularly in environmental aspects of radiation research, has dwindled. The impact of this decline is seen when experienced recruits are sought; this has been the EPA's experience and more recently succession was identified as an issue by the reviewers in the IAEA International Regulatory Review Service (2). This decline was also illustrated in a recent EPA call for radiation research tenders where only one tender was received for each project.

### **2.2 Future radiation research programme in EPA**

The current EPA corporate strategy recognises the importance to the future of radiation protection in Ireland of maintaining a commitment to radiation research. Being able to attract the next generation of talent is crucial to the future success of any organisation.

Research provides a means of keeping abreast of latest developments, provides a basis for providing up to date and sound advice to Government, and sustains capacity to respond as needed in the event of a nuclear emergency. Supporting radiation research in Ireland will nurture a pool of scientists as a national resource in radiation protection.

Looking forward it is clear that research will continue to play an important role in underpinning delivery of the EPA's mandate.

### 3. Vision for radiation research in Ireland

*That Ireland will have a vibrant, well-resourced and sustainable radiation research community, with high quality outputs actively addressing knowledge gaps and working towards enhanced radiation safety, and understanding of environmental and health aspects of radiation science.*

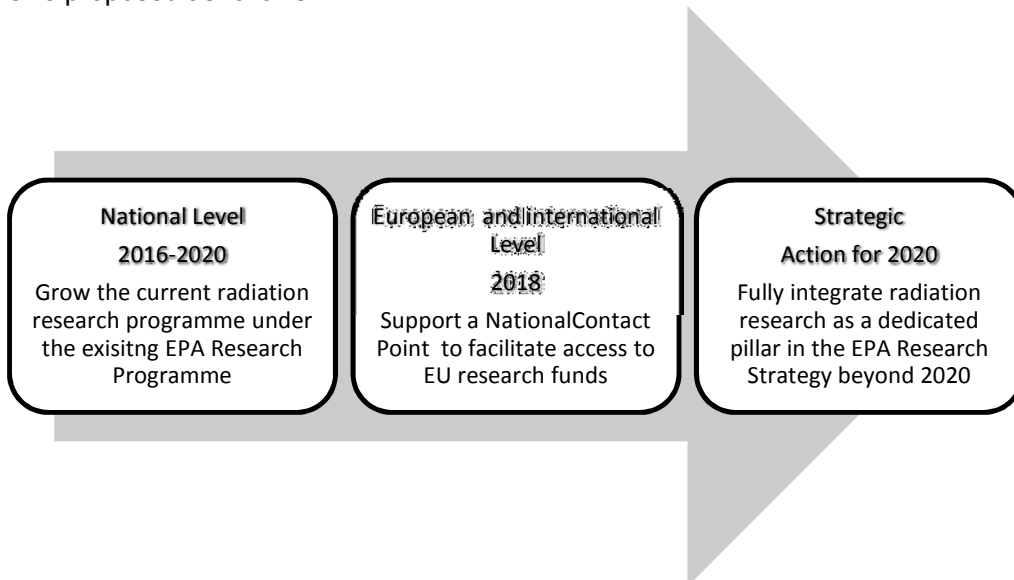
It is proposed that the EPA will be a key player in delivering on this vision. The EPA will stimulate, facilitate and support the development of radiation research in Ireland:

1. through engagement with the research community and funding authorities nationally and internationally,
2. by supporting the co-ordination of access to EU funds and
3. by directly funding a research programme.

#### 3.1 Approach to realising the vision

Research capacity can be understood as a country's ability to produce, debate and use research knowledge and products relevant to their needs. Research capacity strengthening (also known as capacity building or capacity development) is thus the long-term, complex processes aiming to enhance these abilities. A wide variety of approaches and interventions can be employed to build capacity.

A three stranded approach to realising the vision at national and European/International level is proposed as follows:



##### 3.1.1 Strand 1: National Level

The objective under this strand is to build on the current suite of radiation research EPA funded projects between 2016 and 2020 in order to grow the current radiation research programme under the EPA Research Programmes Sustainability Pillar (3). This will involve a modest incremental allocation of resources to radiation research.

In order to deliver this objective an EPA-based Radiation Research Co-ordinator will be nominated to work with the EPA Research Team to:

- Be a point of contact on radiation research and integrate radiation in existing EPA research activities e.g. dissemination of information, information days, research conferences, updating EPA website.
- As identifying synergies and enhanced collaboration with other national funders is a key objective of the EPA Research Programme, liaise with other national funding agencies to ensure a coordinated approach
- Consult with colleagues in EPA radiation teams to identify knowledge gaps as a basis for future research calls and work with the EPA Research Team to encourage research calls
- Support the EPA Research Team in budget negotiations to secure additional radiation research funding
- Work with others. The EPA recognises the value of engagement and networking with other sectors and organisations involved in research. The research programme has formed strong linkages with national and international partners over the past number of years and the research we fund is of significant value to other government departments and state agencies.

### **3.1.2 Strand 2: EU & international level**

Under this strand the ambition is to have the necessary arrangements in place by 2018 to support the Horizon 2020 National Contact Point (Euratom) to facilitate access by Irish researchers to EU research funds

The EPA Radiation Research Coordinator will work closely with the Irish National Contact Point (Euratom) for European research funding to:

- Identify actions needed to open access to Euratom funding for Irish radiation researchers
- Develop a collaborative work programme to deliver on these actions
- Continue participation as a National Delegate to the Euratom Programme Committee - Fission (complementing the Horizon 2020 – The Framework Programme for Research and Innovation) representing Irish views at Programme Committee meetings.

A number of international linkages have been established to promote Irish radiation research in the European research area. By ensuring that Ireland is represented in significant European initiatives such as Horizon 2020, working towards participation Joint Programming Initiatives e.g. CONCERT, the EPA will aim to increase the critical mass, reach and impact of Irish radiation research.

### **3.1.3 Strand 3: Strategic**

The actions under the *Strand 1: national level* and *Strand 2: EU & international level* will be delivered within the framework of the existing EPA research strategy which currently does not have a dedicated radiation pillar. However, in 2018 the EPA intends to commence work on the development of a new research strategy for 2020 and beyond. As part of this

development work it is intended to fully integrate radiation research in the new strategy by providing for a dedicated radiation research pillar.

As part of this work the EPA Radiation Research Coordinator will:

- Work with the EPA research team to develop an appropriate pillar position for EPA radiation research within the next EPA Research Strategy.
- Consult with research community on strategic direction for radiation research

#### **4. Conclusions**

As the national competent authority EPA has a role in maintaining, growing and building national capacity in radiation science. Evidence indicates that the current capacity nationally in terms of the availability of skilled radiation scientists is insufficient to meet future staffing requirements for EPA. To address this concern the EPAs current corporate strategy contains an action to implement the EPA Research Strategy and leverage national co-funding and EU funding opportunities. It is further intended to help build environmental and radiological protection research capacity in Ireland and improve the dissemination of research outputs. It is believed that this approach will go some way in enriching the pool of knowledge and expertise available for addressing Ireland's current and future radiation protection capacity requirements.

#### **5. References**

(1) Radiological Protection Act, Number 9 of 1991. Ireland, 1991. Dublin: Stationery Office.

(2) Integrated Regulatory Review Service (IRRS) mission to Ireland. IAEA, 2016.  
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(3) EPA Research Strategy 2014-2020 Published: 2014  
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