The 3rd meeting of the Radiological Protection Advisory Committee (RPAC) was held on Wednesday 12th October 2016 at the EPA Office of Radiological Protection, Clonskeagh Square, Clonskeagh, Dublin 14

Members present:	Micheál Lehane (Chair), Anthony Bexon, Paul Dorfmann, Ray Ellard, Jean-Luc Godet, Fiona Lyng, Mary O'Mahony, Peter Mitchell, Michael Rowan
In attendance:	Barbara Rafferty, Tanya Kenny, Jack Madden, Ciara McMahon Kilian Smith
Apologies:	Darren Arkins Sean Curran Michael Sadlier Maurice Fitzgerald
Scientific Secretary:	Stephanie Long

1. Introductory remarks and welcome

The Chairperson introduced himself to the Advisory Committee and welcomed all to the EPA for their 3rd meeting. He outlined the function of the Committee and emphasised the importance of drawing on the wide range of expertise in the group. It was noted that there have been a number of changes since the last meeting, including a new government and the consequent move of the EPA to the Department of Communications, Climate Action and Environment. In addition, the Chairperson set out the recent decision to amalgamate the EPA monitoring laboratories within the Office of Radiological Protection in order to strengthen the Office, particularly in terms of emergency planning support, and also to facilitate deeper integration of the Office within the EPA.

2. Minutes of 2nd meeting and Matters Arising

The minutes of the first meeting were agreed, with the exception of a comment from a Committee member to be clarified between the member and the scientific secretary – the minutes will then be updated accordingly. There were no matters arising.

3. Potential impact on Ireland of postulated severe accidents at Sellafield.

Dr Kilian Smith, Scientific Officer, Nuclear Safety gave a presentation on the radiological consequences of four postulated severe accidents at Sellafield. These were identified in a probabilistic risk assessment (PRA) of potential accidents at the Sellafield nuclear site that was performed a group of independent experts for the Irish Government . This was followed by a presentation by Dr Ciara McMahon, Programme Manager, Radiation Protection Regulation and

Nuclear Safety, on the economic consequences for Ireland of a nuclear accident in Western Europe.

This item generated a number of comments and questions requiring clarification including:

- A request to access the original data that the probabilistic risk assessment was based on in order to estimate confidence intervals and to better understand the dispersion models. The underlying data is considered critical since subsequent dose calculations are dependent on the assumptions made.
- What assumptions were made regarding the duration of the accidental releases
- Whether the variation in bioavailability between different soil types was considered?
- Whether bioaccumulation was considered?
- Whether a potential airstrike on legacy fuel ponds was considered?
- Whether the use of caesium-137 as an analogue for other radionuclides holds for other species?
- Whether modelling of the potential impact on the marine environment was considered?

The presenters explained that the probabilistic risk assessment (PRA) report, on which the EPA report is based, brings together a large volume of security sensitive information. Consequently the full report has not been published. A summary report was published in 2012 and is available online. As the report belongs to the Irish Government, a request regarding access to the full report would have to be made to Government.

Dr Smith noted that a number of assumptions had to be made in the dispersion modelling for the four scenarios with the greatest impact on Ireland. Where possible, the EPA used publicly available information on the quantities of High Activity waste stored in Sellafield. These accident scenarios used in the EPA study were developed by the PRA experts and this included assumptions regarding the durations of the releases.

The variation in bioavailability in different soil types was not specifically considered in this work, instead average Irish values were used as the regional variations were not being examined. Regarding bio-accumulation, the approach used is described further in the report "Proposed nuclear power plants in the UK –potential radiological implications for Ireland".

Regarding an air strike on legacy storage ponds. Dr Smith noted that the PRA considered all processes and systems at the Sellafield site. It also identified what could go wrong and lead to an accidental release of radioactivity. The PRA considered fire in various facilities, flooding events, earthquakes etc. The four accident scenarios considered in the EPA's work were identified as those having the greatest impact on Ireland. The High Activity Storage Tanks (HAST) tanks are of particular interest as this is where most radioactivity on site is stored, legacy ponds have much lower levels of radioactivity.

Regarding the use of radiocaesium as a surrogate, the dose from Cs-134 and Cs-137 was considered. As Sr-90 has very relatively low volatility it was considered unlikely that significant amounts would reach Ireland and so it would not have a significant impact on the radiation dose estimated for radiocaesium. The report "Proposed nuclear power plants in the UK – potential radiological implications for Ireland" considered the dose from the full range of radioisotopes and found the greatest doses from Cs-134 and Cs-137.

Modelling of the impact on the marine environment was not included as there has already been much work in this area and any potential impact on the marine environment would be longer term and thus not require such urgent action.

Regarding the report on economic consequences, there were comments regarding health impacts from a Committee member - that there is evidence that where there is public awareness of an event this can result in medically unexplained physical symptoms that can persist for years and lead to an increase in hospital visits. For example, in the Netherlands a number of incidents resulted in concerns regarding exposure to depleted uranium. Was this aspect of a potential severe accident considered in the report? The member added that it is reassuring that the main pathway is through the food chain as this is relatively straightforward to control. The presenters clarified that increases in the costs due to health concerns were not considered by the ESRI as the larger costs would come from losses of exports and tourism. This is noted in their report.

It was noted that highly unlikely events do occur referring to a mortar strike during the construction of a French nuclear plant during the 1980s. It was also noted that the two assessments (economic and radiological) are not linked and that each of the reports needs to make this clear.

Regarding the economic impact of an accident, for the first two scenarios considered it is expected that this would be a very short term impact and that the economy would bounce back quickly. The Chair noted that even where the radiological consequences of an accident are minor, the potential economic consequences could be significant for Ireland. He added that the Office of Radiological Protection will meet with the UK Office for Nuclear Regulation twice before the end of 2016 and that there is a good level of information sharing between the two organisations.

4. A path towards implementation of the Basic Safety Standards (BSS).

Dr Jack Madden, Scientific Officer, Radiation Protection Regulation presented the results of a gap analysis regarding the implementation of the BSS.

This item generated a number of queries including who would take on responsibility to educate Radiological Protection Officers (RPOs) as this would be a significant undertaking. Ms Tanya Kenny responded that it is expected that the legislation will set out which body will have

responsibility for training RPOs but that it wouldn't usually fall to the regulator to provide training, however the EPA will feed into the process of establishing the required competencies.

Dr Ciara McMahon presented on the potential areas of input from the Committee regarding implementation of the BSS. A list of thematic areas for input were set out for the Committee with a view to exploring particular themes in more detail at future meetings. The matter of addressing non-medical imaging was raised as being urgent. Even though the dose is very low, some countries consider its use unjustified. At present airports and prisons are investigating the use of non-medical imaging for security/smuggling screening. The issue of the dose to the lens of the eye and the fact that it can be very difficult to assess this dose to those radiologists working across a number of sites was also raised.

The Chair concluded that the broad range of issues presented will require further discussion and that this will be facilitated at future meetings of the Committee.

5. The journey to graded authorisation of the regulatory process.

Ms Tanya Kenny, Regulatory Change Project Manager, Radiation Protection Regulation, presented on the work towards graded authorisation of the regulatory process. It was noted that universities tend to hold a diverse range of sources and that it would be useful to be able to split the way in which these sources are regulated. It was confirmed that it will be possible to do so. The fact that in hospitals there are also a wide range of activities undertaken with radiation sources, for example imaging and diagnostic procedures was also raised. It was noted that both these activities will continue to require licencing.

It was also clarified that for lower risk activities where registration rather than licencing will be required, these activities will continue to be subject to inspections and the registration process will ensure that the EPA has a full inventory of equipment and that registrants have the relevant Codes of Practice. This is consistent with the approach taken in other parts of the EPA such as Waste Water Treatment Plants. Regarding whether licences can be withdrawn, it was clarified that this does not generally happen, however, a licensing exception can be used to denote a particular piece of equipment out of use.

6. AOB

There was some discussion regarding the length of the meeting and whether two hours is sufficient for the material to be discussed. It was agreed that the two hours allocated is an appropriate duration to ensure that the meeting remains sharply focussed and that members are in a position to balance the time required to attend the meeting with other commitments.

There was also some discussion regarding the possibility of more in-depth discussions on topics outside meetings of the Committee. It was felt that it would be difficult for staff to engage in this way with Committee members due to other work commitments, and so all queries should be submitted through the scientific secretariat.

The mechanism for ensuring that the different interests of the various Committee members can best be represented at meetings was raised. The Chair clarified it is the role of the Committee to advise the Board of the EPA and consequently, agenda items will be chosen according to the advisory needs of the Board. The Chair also clarified that the views of the Committee are reported to the Board through the meeting minutes. These minutes are also made available on the EPA website. He added that the diversity of views within the Committee are very useful in supporting the ORP in its functions.

7. Dates of next meeting:

It was agreed that the next meeting would be held on Wednesday 1st March 2017.