

## **Session 5 opening**

**Presented by RTD Head of Unit, Rita Lecbychova**

It is a very exciting challenge for discussion that oscillates between protecting, protecting and innovating.

Two times protecting because radiations help protecting European Citizens against cancer and other physical conditions.

And, it is a priority to protect patients against side effects of radiations for healthy parts of the body.

I am sure Dr Briers, representing the European Society of Radiology Patient Advisory Group, will elaborate on this issue.

Innovation is necessary in both directions for finding new therapies and reducing side effects.

How much protection is necessary without unduly restricting benefits? We look forward hearing from Professor Cozzi about dose computation algorithms, machine learning methods and therapy planning.

The Euratom programme in radiation protection has achieved, so far, remarkable results for the structuration of European research around the health effects of low doses of radiation. This effort is involving the medical community in its endeavour, in particular, with the MEDIRAD project coordinated by the European Institute for Biomedical Imaging Research. This will result to improved protection of patients.

You are well aware that the next Multiannual Financial Framework is under negotiation and Commission's proposal for FP9 is under preparation. Given the success of our current Programme, we could be looking for an evolution not a revolution for FP9. The Post-Fukushima EU political consensus remains the cornerstone on which proposal of FP9 is shaped. We want to build on what we have achieved and introduce improvements where we can.

Thinking about the future, details of the FP9 will be published on 28 May 2018. It is too early to comment but:

1) I see profiling an emphasis on low-dose research and structuration of the research community in this field. Structuration means that the EU needs to speak one voice on radiation protection science. This structuration includes scientific debate to help sorting out between hypothesis and facts. The aim is that the scientific community conveys responsible messages on the latter to European Citizens regarding risk from low doses of radiation.

2) Innovation in commercial sense is also profiling in our minds. This means quality products able to cure European patients and worldwide, without impairing their life with adverse effects. This infers market development of demonstrable safe technologies. We have examples like proton therapy for tumour removal or alpha emitting isotopes grafted on antibodies to deliver locally high efficient metastases clearing, as mentioned in previous sessions.

3) None of the above is achievable without a massive effort on training. This encompasses research perspectives on particle accelerators we will hear about from Doctors Faus-Golfe and Vretenar and training of researchers in this field. Training and education will also be necessary on physics of uncharged particles and photons, I am sure Professor Petrillo will refer to these aspects. Last but not

least, regarding research reactors we are waiting to hear about from Professors Petry how they will contribute to training of the new generation of researchers.

We know that safety is the cornerstone of our programme and that it is based on experience feedback from operation of this kind of installation. When your hand is burnt once, you develop reflexes to avoid burning it twice. It is true for research reactors, as well as for particle accelerators. It is also true for the safe use of radioisotopes in the medical sector, in gauges and radiography equipment of all sorts that are used in the industry and radioisotope tracers in research laboratories.

The cornering of all these uses and their development is the justification principle. This principle says that the introduction of a new practice involving a radiation source must outweigh the health detriment it may cause. Research cannot remain vague about the question of the health detriment as uncertainty in this field means the application of the precautionary principle that, in turn, may unduly restrict applications of nuclear and radiation technology.

In a bottom-up approach, we look forward hearing your views regarding research, development and innovation challenges in the next decade regarding research reactors, applications of particle accelerators and secondary radiations as well as medical applications of radiation technologies. In addition, we would like to discuss mechanisms and ways the aforementioned areas can contribute to the following three key messages:

- 1) We need to continue research in radiation protection and lift uncertainties on the effects of low doses by surfing the wave of the results in this direction that have been achieved so far by our programme.
- 2) We need to support innovation in all practical applications of nuclear and radiation technology for the benefit of European citizens.
- 3) We need to foster practical training of the new generation to use these valuable installations that we have in the EU. The interim evaluation of indirect actions of the Euratom Programme underlined the need to seek synergies in application of Marie Curie Skłodowska Actions in the nuclear field. We work on ways to achieve this.