



SSM Colloquium, Stockholm, 18 October 2018

### **IRPA Contribution to the Panel Discussion on 'Future Perspectives on Radiological Protection'**

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IRPA is delighted to be invited to contribute to this important discussion. The thoughts are based on the recent IRPA consultation on the system of protection, which has been published in the Journal of Radiological Protection and is available through the IRPA website.

We have a system of protection which essentially hangs together, even if quite complex and relying on a lot of 'fine print'. Whilst we can suggest some detailed changes, we recognise that the system provides a good basis for protection. Our main focus is on how it works at the level of the practitioner - those of us who deal with day to day activities, whether as regulators or front line practitioners in the medical field, industry or research, where we believe that there are some challenges in always delivering good outcomes for society.

Firstly we would like more recognition of the context of the normal radiation world, where each and every one of us receives a dose of at least 2mSv/y from natural sources, with many doses at much higher levels. We do not always recognise that any additional dose we consider in the profession is not an absolute dose. When we discuss a dose of say 0.3 mSv/y, the real situation is that it increases a person's overall dose from at least 2mSv/y to 2.3mSv/y. And as well as the large variation in natural background, we should recognise that individual lifestyle decisions by all of us can change this dose significantly, for example through moving house, where we go on holiday (eg to a scenically attractive high natural background area) and whether we choose to fly. This adds an extra 'Delta' to our dose which could easily be a significant fraction of a mSv/y, and these decisions are made without any interest or concern (and usually without knowledge) of radiation by the persons involved.

And quite right – these should not be issues of concern. But within our profession we agonise over much smaller contributions to dose, and sometimes ensure that society has to spend a lot of money to reduce exposures to much lower levels still – often well within the 'Delta' of variable exposure discussed above. The overwhelming majority of our RP decisions involve consideration of doses at a few mSv/y or lower, which in practice do not make a material impact on the overall dose received by an individual – it is still within the 'few mSv/y' range which is inescapable in our normal lives, and well within the variability of natural exposures.

Perhaps we have to reset the way in which we make decisions around the 'few mSv/y' range, where all that we really know about radiation risk is that 'if there is a risk, it is quite small'.

Having set this scene I would like to come on to what our profession can do to help us be more realistic and relevant, and avoid the drive towards unnecessary ever lower doses. The first thing is to be more conscious of how we address prudence and conservatism. We need to recognise that what may be reasonable prudence at high doses may be over-conservative at much lower doses. The degree of precaution should be proportionate to the risk. Conservatism usually multiply

together in our assessment studies and regimes. As an example, the basis for the clearance process was set at  $10\mu\text{Sv}/\text{y}$ , but because of multiple conservatisms in the assessment processes the impact of material being released is around one hundred times lower – at most a small fraction of a  $\mu\text{Sv}/\text{y}$ . And this comes at a very significant expense to society – many hundreds of millions of dollars if all aspects are added up. Is this good value for society? For me it is not something I can be proud of as an outcome from my profession. No-one has set out to deliberately achieve this outcome, we have just sleepwalked into it. But we must wake up!

Secondly, we must give more attention to what 'Reasonable' means in ALARA. Of course, optimisation has been a great success story – just look at the downward trend in nuclear industry occupational exposures. But there are now hints of an expectation of 'ever lower doses', with more attention on 'As Low As' rather than 'Reasonable' and a trend towards minimisation rather than optimisation. We therefore need to give more conscious thought to 'how low is low enough' in the various situations we address.

Thirdly, we must move towards a more effective application of the Graded Approach, especially in regulation. This would ensure a more proportionate use of society's resources, focussing greatest attention onto the higher dose activities.

So what does my future world of radiation protection look like? When additional doses are around the 'few  $\text{mSv}/\text{y}$  range and lower, where the total dose to an individual remains within the common range of natural background, then we should address protection issues within the framework of a radiation protection culture which is integrated within the wider safety culture of an organisation. This would ensure the leadership, engagement with affected parties, learning from experience and integration within effective procedures and QA which are equally important to all aspects of safety. For such exposures which impact on members of the public then of course there needs to be careful stakeholder engagement, such is the sensitivity of radiation, but we should not always presume that this would lead to ever lower doses.

For exposures above this dose range, this is where we should really focus our positive attention. This would include the upper ranges of occupational exposure, the higher natural background exposures (especially radon) and in particular the increasingly important medical exposures - e.g. in CT scans, radiotherapy and related areas.

In summary, the future challenge is to make the system of protection work in practice and ensure full benefits and value for society. We should focus our attention on the higher exposures, where there are so many clever and important developments taking place of which we can indeed be very proud. We should not ignore the lower doses, but integrate these into 'normal life', be proportionate, and don't seek to chase out every last microsievert at great expense to society.