

SRP Workshop on “Communication of Radiation Risk in the Modern World”

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Abstract

Communicating radiation risk is an important part of radiation protection. However, achieving effective risk communication is challenging given the negative public perception of radiation and conflicting views presented by both media and social media.

Noting the importance of building capacity amongst radiation protection professionals to communicate radiation risk effectively, the Society for Radiological Protection (SRP) ran a half-day workshop at its Annual Conference on the 22nd May 2019 in Scarborough Spa, UK.

A number of key factors were identified that should be considered when communicating with the public post a nuclear or radiological incident, communicating with government and local authorities, and communicating with the public as part of public outreach.

The following memorandum provides a summary of the points presented and discussed. It also outlines proposed future activities of the SRP focused on further developing the communications aspect of radiation professionals' practice.

Keywords: Communication, Radiation Risk, Public Perception, Radiological Incident, Outreach, Government, Local Authorities

1. Introduction

Across the radiation protection (RP) profession and its allied fields (e.g. nuclear safety, emergency preparedness, etc) the communication of “radiation risk” is becoming an increasingly important skill [1].

This can be a challenging skill to harness due to a wide range of factors including:

- The range of individuals that may need to be communicated with, such as:
 - Workers directly involved in the use of, or working for a company using, ionising radiation,
 - Patients receiving treatment or diagnosis involving ionising radiation,
 - Members of the public,
 - Government,

- Local authorities, and
- Management.
- Development of Radiation-Phobia. From the initial discovery of radioactivity by Henri Becquerel in 1886 to the 1940's the perception of radiation was fairly positive, with radioactivity being used in a wide range of products from "Tho-radia" face cream, radium chocolate and even children's toys such as the "Atomic Energy Lab". The promise of cheap electricity was also a contributing factor.

Since the time of the atomic bombing of Hiroshima and Nagasaki, the continual threat posed by nuclear weapons, combined with the Windscale, Chernobyl and Fukushima accidents have resulted in an increasing level of radiation-phobia. This is heightened by the conflicting views reported in the media, with many reporters having a tendency to focus on the extreme or sensational claims rather than international scientific consensus.

- Social Media. The introduction of "social media" creates a new challenge as everyone has the ability to communicate to a wide audience, with limited controls on factual accuracy. This has led to increased uncertainty around "What is fact?" "What is fiction?" "Who can you trust?" and "Who is an expert?"

Noting the importance of communicating radiation risk effectively, the Society for Radiological Protection (SRP) ran a half-day workshop at its 2019 Annual Conference on the 22nd May in Scarborough.

This paper summarises the points presented and discussed, with some proposals for future actions.

2. Case Studies

At the start of the workshop, invited speakers with specialist expertise in radiation protection and communication delivered the following presentations:

- 'Lessons Learnt from Fukushima' by Hiroko Yoshida, IRPA [2]
- 'From Media Appearances to Engagement and Outreach' by Mike Wood, University of Salford [6]
- 'Communicating via Social Media and to Government, Local Authorities and the Public' by Martyn Butlin, EDF Energy [7]

A brief summary of the key messages from each of the talks is presented below:

2.1 Lessons Learnt from Fukushima

For RP experts building trust with local residents and their families is essential to improve risk perception after a radiological accident and during post-accident recovery. The talk focused on two experiences related to building trust post-Fukushima.

One experience was based on the measurement of personal dose of children in the southern area of Miyagi Prefecture (2011-2016). The Miyagi Prefecture, which is adjacent to the Fukushima Prefecture, was strongly affected by the deposition of radionuclides released from the Fukushima Dai-ichi Nuclear Power Plant. However, the Fukushima accident has been regarded as the responsibility of the Fukushima prefecture by the government's policy [3], resulting in differences in the management of the Fukushima legacy across these two neighbouring prefectures.

Health surveillance, dose monitoring, and thyroid ultrasound examination have not been conducted by the government in the Miyagi Prefecture. Proposed decontamination methods by the government for this area are not entirely satisfactory for residents' requests as well. These differences raised distrust of the government among local residents in the Miyagi Prefecture. In particular, they were keen to know "How much radiation are we (children and family) exposed to?" since the government only gave them calculated dose from outdoor air dose rate. Therefore, a team from Tohoku University, which included RP experts, started measuring personal dose from 1 Sep 2011. Initially, the team measured dose for 36 residents (mainly children) using Optically Stimulated Luminescent dosimeters (OSLD). The number of children monitored in this way was increased to approximately 1,500 in 2012-2013. Staff and local residents went around schools and nurseries once every 1-1.5 months to collect the dosimeters, read them and then return them to the children. Participation of local residents in the activity, working together with the University team to conduct the dose measurement, was the key to building trust with residents. Personal dose results and relevant information were given to parents or individuals at each readout. The measured dose was much lower than the calculated dose from outdoor air dose rate provided by the government and decreased with time much faster than the physical decay of radio-caesium [4]. Small meetings to share relevant information with local residents and their families were held periodically, which became another important key to deepening mutual understandings and building a trust relationship between local people and the RP experts. Measurements of the personal dose of children continued until parents offered to stop the measurements. Measurements ceased in January 2016.

Development of an "Information booklet for returnees" [5] was another case study. The booklet was developed for the use of Local Counsellors (local experts such as public-health nurses, teachers, local government officials, etc.) and written in a user-friendly style with a narrative approach. At this time most returnees and residents who considered returning to their hometown were the elderly. In order to address their concerns, face-to-face communication was preferable rather than just handing out booklets. In the booklet, practical questions or

concerns raised by local people are addressed by experts' using simple explanations and advice with reflection of diverse viewpoints on radiation effects. The booklet is supported by detailed scientific data, which is the basis for the explanation and advice provided. By keeping in mind the supporting data, Local Counsellors could address people's concerns more precisely and satisfactorily. This booklet is currently being used as an effective tool for the Local Counsellors to build trust with local residents through good communication.

2.2 *From Media Appearances to Engagement and Outreach*

There are diverse publics with whom radiation protection professionals must communicate. The communications goals are also diverse, including: (i) informing/educating; (ii) dispelling myths; (iii) building trust; and (iv) inspiring young people to pursue a career in radiation protection. As a leading Society representing the RP profession, the SRP has a stake in ensuring that all of these communication goals are realised. Whichever goal, some fundamental principles of effective science communication need to be followed to maximise the likelihood of success.

A first question that the communicator must ask themselves is whether they need to disseminate or engage. Dissemination is the spreading of information, often to the largest audience possible. Conversely, engagement aims to open opportunities for two-way communication. Dissemination and engagement are not mutually exclusive; a particular situation may require both strategies to be employed. For example, in an emergency situation, directly affected stakeholders will require mechanisms for engagement to ensure that they are able to voice their concerns and have them addressed appropriately whereas the international community may require dissemination of information about the emergency.

Whether dissemination or engagement is used for communication, the messages need to be clear and delivered in a language that the audience will understand; prior knowledge assumptions need to be minimised. By making messaging accessible in this way, the likelihood of alienating the audience is reduced.

The choice of communication tool(s) also requires careful consideration. From mainstream media appearances to direct public engagement, there is a broad range of tools available to facilitate effective communication. Recognising that audiences are diverse, even within what appears to be the same stakeholder demographic, a variety of communication tools will likely need to be employed. Mainstream media appearances provide an opportunity to reach a large audience rapidly, but the clear messages devised by the RP communicator may become clouded by the journalists' pursuit of sensational stories. It is therefore important that the RP communicator builds trusted relationships with key media

outlets and, where new media contacts may be used, that the reporting style of those contacts is considered before agreeing to an interview. Due diligence on the part of the RP communicator is an important step in mitigating against the propagation of incorrect/distorted messages.

Whilst the audience reach of mainstream media can be extensive, it provides limited opportunity for audience response. This is where social media can be particularly powerful. As well as reaching a large audience, anybody with a social media account is able to post a response or ask a question. This direct feedback mechanism is important, as the RP communicator can ensure that stakeholder concerns are addressed and that misinterpretations of messages are clarified. The use of social media is discussed further in Section 2.3).

Direct public engagement achieves a much smaller audience reach, but provides the greatest opportunity for the RP communicator to tailor messages that directly meet the needs of individuals. Through face-to-face interaction, both verbal and non-verbal cues can be used to inform the communication strategy. Although this has clear benefits in terms of ensuring that clear messages are delivered effectively, it requires the RP communicator to modify their communication approach in 'real time'. This is a daunting prospect for many and is a key reason why role-play activities within RP communicator training events are so valuable.

One final, but important, point is that, whilst all RP experts should recognise the need for effective communication and understand the challenges and opportunities presented by different communication scenarios, it is not necessary for all RP experts to be RP communicators. Individuals have different skills sets and aptitudes. Engaging in RP communicator training is as much about helping individuals recognise when they may not be the most suited to a communication activity as it is to develop the communication skills of those with an aptitude for this aspect of the RP professional's role. Through personal critical reflection, RP experts can identify where they can best contribute to ensuring effective communication of radiation risk.

2.3 *Communicating via Social Media and to Government, Local Authorities and the Public*

Building and maintaining relationships with key stakeholders is vital in communicating often difficult and contentious topics, with RP being one of the more challenging. Every organisation working with radiation, or radiation safety, has a role to play in using the correct communications medium, understanding an audience's need and putting across complex ideas as simply as possible.

This talk touched on examples of how the media, in its many forms, had taken what was a straightforward story or report and, using the radiation aspect, turned them into a much more negative piece.

The examples included situations where those opposed to nuclear had focused on the ‘radiation angle’ to create a more alarming story or report to further their own agendas.

It is vital that all those involved in RP understand that timely clear communications can maintain a more positive narrative around everything with a link to the use of radiation, from medicine to energy.

3. Break Out Discussions

Following the presentations, the attendees of the workshop were split into 3 groups of 10+ people to discuss the case studies and identify what they believed were the key points to be considered when:

- Communicating to the Public Post a Nuclear / Radiological Incident
- Communicating Radiation Protection to Government / Local Authorities
- Communicating as part of Public Engagement Activities e.g. Science, Technology, Engineering and Mathematics Outreach

The outputs of the discussions are summarised below:

3.1 Communicating to the Public Post a Nuclear / Radiological Incident

The group discussed the example of Fukushima accident. It was noted that in the event of an incident “engagement is key”. When engaging the group identified the following factors as being important:

- Speed of response.
 - It was suggested that operators and local authorities should have pre-prepared material e.g. video footage of what will happen with respect to monitoring to show the public what will be happening. This would also reassure the public that something positive is happening;
 - Consideration should include modern technology. For instance, could the use of smart phones / apps provide a mechanism to reach a wide audience.
- Ensuring a consistent message. This will reduce confusion and provide re-assurance.
 - It is important to think about who is best to deliver this message, noting this may not be a radiation protection professional.
 - Could operators and local authorities identify a designated communications officer?
 - Hospital staff should be briefed and consulted to ensure they provide a consistent message on radiological health impacts and emergency response. Noting they may get questions from concerned members of the public and may

need to know to whom to turn for advice or further information.

- Repetition of important messages will help re-enforce the key points.
- The communicator must have empathy and understand where individuals’ concerns may come from.
- Establish Communication Channels and Strategies.
 - It is important to understand the demographics you are communicating with and how, for example the elderly are less likely to have use of smart phones, apps and SMS. So how will you communicate with them?
 - Be reactive to changing situations.
- Outreach - Try to normalise radiation conversations before an incident. This emphasises the importance of outreach programmes delivered by operators, regulators and professional bodies.
- Consider resources. Operators and Local Authorities Emergency Plans are good for a couple of days after an incident, but in the event of a prolonged incident, does this consider sustaining resource for weeks, months, or even years?

3.2 Communicating Radiation Protection to Government / Local Authorities

The group had a general discussion based on personal experiences and highlighted the following key areas:

- Constantly changing personnel within government can cause issues – “person trained up on radioactive issues then moves on and you have to train the next person”.
- Audiences closer to a site in question tend to be more receptive and more invested. The “onion ring” model was mentioned as an analogy. When communicating it is important to:
 - Understand your audience’s motivation
 - Think how best to engage, what methods, what media?
 - Understand that parish councils can influence others; and as such focus on them.
- When explaining basic radiation terms (and only if really required) be sure to use plain English.
 - Compare to conventional risks e.g. cycling
 - Think carefully about what you really need to say
 - Avoid radiation units – confusing to non-scientific audience. If you must use units, stick to same units e.g. mSv, NOT Sv, or other multiples such as μ Sv.
- Translate your message into meaningful terms that everyone can relate to.
- Be aware of political agendas and understand your audience’s agenda.

- Understand then make a plan eg. As if you were planning what to buy your son for his birthday. Communication isn't rocket science.
 - Remain non-confrontational
 - Be open and inviting
 - Remain calm
 - Remember your desired outcome
- Financial investment will be required to have meaningful engagement.
- Building trust over time must be expected – this is vital. You will not win trust after the first meeting.
- Anticipate misunderstanding of risk – How do you answer the question “is it safe”? It can be very hard for Radiation Protection Professions to respond!
 - Get the attention of your audience
 - What training have they got – tap in to their existing understanding to explain
 - Even policy makers attend courses – what have they done that you can usefully use?
- Build on success and consider how to take it forward.

3.3 *Communicating as part of Public Engagement Activities*

Given the broad area of science communication as part of outreach, the group focused on the example of communicating radon awareness to the public. The following key points were raised:

- It's important to engage the public as early as possible (either as children or if in regard to a specific event, the earliest time-point) and remain accessible to be able to continue the conversation
- First step is to identify who you want to communicate with and what is the message you want to get across
- Use of a range of communication mechanisms when you have identified who you want to communicate with, each have pros and cons - e.g. leaflets, radio, video communication, TV, local drop-in sessions, utilisation of local authorities.
- Techniques for talking to the public include asking what they already know and providing a balance between all the facts and minimum information so as not to scaremonger
- Anticipate the likely questions: e.g. google around the subject to see what information or misinformation is being provided and understand the motives behind certain standpoints (e.g. with radon: money, health, stigma)
- Accept that you can't change everyone's minds and allow people to express concerns and vent – there needs to be two-way dialogue
- One of the biggest challenges for radiation protection is working out how to communicate risk – e.g. the type of language used, the use of comparisons such as bananas/flights across the Atlantic

4. Conclusions and Next Steps

Communicating Radiation Risk is an important part of radiation protection. This is an increasingly difficult task due to the negative public perception of radiation and conflicting views presented by both media and social media.

The SRP Workshop on “Communicating Radiation Risk in the Modern World” has identified a number of factors that should be considered when:

- Communicating to the Public Post a Nuclear / Radiological Incident
- Communicating Radiation Protection to Government / Local Authorities
- Communicating as part of Public Engagement Activities e.g. STEM, Outreach

Based on feedback from the event, further work is needed to develop guidance for communicating radiation risk under different scenarios. This guidance needs to be short and succinct (no more than 10 pages per scenario) to maximise usability and should be developed taking on board views of not only radiation protection experts but communication and media specialists.

SRP is developing plans to run a series of workshops to develop this guidance in collaboration with industry and regulators. Given that the recent update to the UK Radiation Emergency Preparedness and Public Information Regulations may result in the introduction of new or larger Detailed Emergency Planning Zones around Nuclear or Radiological Sites, there is the potential for heightened public concern. Questions over the rationale behind the update to the regulations may be expected, including whether the UK was protecting the public adequately before the update and whether the update is in response to a substantial increase in radiological risk. The first workshop and associated guidance will therefore be themed around “Communication of Radiation Risk in Emergency Preparedness”. This is scheduled for November 2019

In addition, SRP is actively supporting the International Radiation Protection Association Task Group on Public Understanding of Radiation Risk. This Task Group consists of representatives from radiation protection societies across the world, sharing and consolidating lessons learnt from radiation protection practitioners involved in communicating radiation risk in different countries and scenarios.

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