Practical radiological protection culture: a challenge for professionals

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Foreword

• The following presentation is a first attempt to bring together the main elements that constitute the practical radiological protection culture and contribute to its development.

• It builds on the experience accumulated by the author and his colleagues over the past 20 years in relation with the Chernobyl and the Fukushima accidents.

• Its ambition is to contribute to lay the foundations of what could be a general approach to practical radiological protection culture while highlighting the challenges for the professionals in order to promote this culture among the general public.
A reminder concerning the definition of culture

- Generally speaking, the concept of culture relates to the set of attitudes, behaviours and social practices associated with a particular field or activity shared by people in a society.

- Culture is a complex whole, which includes knowledge, values, experience and any other capabilities and habits, acquired by people as members of a society that determine their appropriate attitudes and behaviours.
A possible definition of practical radiological protection culture

• The knowledge, know-how and means enabling citizens to make informed choices and behave wisely in situations involving potential or actual exposure to ionizing radiation

• Such a culture allows citizens:
  – To interpret the results of the measurements of radiation
  – To build their own benchmarks in relation to the radioactivity present in their daily life
  – To make their own decisions to protect themselves and their loved ones (self help-protection)
  – To assess the effectiveness of the protective actions implemented by themselves or by authorities and organisations

• In other words, this culture aims to make people as much as possible autonomous with respect to radiation i.e. able to make informed decisions given the prevailing circumstances
Emergence and consolidation of the concept of practical radiological protection culture

• The concept of practical radiological protection culture emerged in the late nineties in the context of the first experiences of involving the population in the management of the Chernobyl post-accident situation and of the contaminated sites at former military and nuclear-weapons facilities in United States.

• It was preceded by the concept of safety culture which appeared just after the Chernobyl accident that had brought to light the effects of managerial and human factors on safety performances.

• Long regarded as a curiosity or at best as a minor aspect of safety culture the concept of practical radiological culture has raised a renewed interest after the Fukushima accident thanks to positive experiences of some affected communities but also because of the difficulties encountered by the classical risk communication.
What are the key constituents of the practical radiological protection culture?

- A **narrative** on the situation faced by the affected people including references on **past experience** and the **history** of radiological protection

- A set of **values** derived from the **ethical foundations** of the radiological protection system

  - A **radiation ‘alphabet’** associated with the **measurements** carried out to **characterize** the radiological situation
How to develop the practical radiological protection culture?

• By engaging stakeholders with the objective to empower them about the radiological situation they are confronted with.

• By favouring cooperation between experts and persons affected by an exposure situation (the co-expertise process).
  • Experts bring their scientific and technical knowledge as well as their experience.
  • Affected people bring their knowledge about their activities, habits and the characteristics of the place where they live.

• By putting radiation protection at the service of the quality of life and well-being of people.

• The direct access of people to individual measurements with suitable devices is critical to ensure the development of the practical radiological protection culture.
The key steps and constituents of the co-expertise process (1)

• To establish a **place of dialogue** to engage with those concerned
  – Relying on **local leaders**
  – Adapted to **local** circumstances and constraints
• To **listen** about the questions, concerns, challenges and expectations of people
  – To **ask questions** to understand the local situation rather than to respond immediately to questions and deliver knowledge
  – To elicit **testimony** and encourage participants to **share** their **personal experiences**
Listening about concerns of villagers
*ETHOS Project, Olmany, Belarus, 1996-2001*
The key steps and constituents of the co-expertise process (2)

- The dialogue must rely on **common language** using as much as possible a **narrative** to answer questions and give explanations. This implies to:
  - put **words** on the situation faced by the stakeholders
  - tell **stories** based on **past experience**
  - include the **ethical values** of radiological protection in the narrative

- For risk-sensitive questions, it is important to insist that **risk depends on individual behaviour** and that it is therefore essential to characterize and assess **together** (affected people and experts) the situation of each concerned individual
Dialogue with citizens
Fukushima Prefecture, Suetsugi village, 2013
About narrative

- A narrative is a story or an account of a series of events or experiences. It can be a fiction or a nonfiction.

- As professionals we have to develop **nonfiction narratives** i.e. true stories with real people and events.

- The key component of a narrative are the characters, the setting, the plot and the narrator. The narrator can either share his/her personal experience (first-person narration) or tell a story in which he/she was not part of the plot (third-person narration).

- In the co-expertise process **first person narration** is very effective to establish **trust** and to transfer experience.
About ethical values

- The system of radiological protection is founded on the ethical values of **beneficence/non maleficence**, **prudence**, **justice and dignity**
- This implies that professionals and experts should act with the desire to:
  - do **more good than harm** (beneficence/maleficence)
  - keep or reduce risk **as low as reasonably achievable** (prudence)
  - seek for a **fair distribution of exposures** and not exceed **tolerable levels** of exposure (justice)
  - treat people with **respect** (dignity)
- These values and their goals must be part of the **dialogue with the stakeholders**
The key steps and constituents of the co-expertise process (3)

- To develop the **radiation ‘alphabet’** through the **characterization of the radiological situation** conducted together with people
  - Identify individual **behaviours** and **habits**, local **uses** and **customs**
  - Perform relevant **measurements** going step by step **from causes to effects** to characterize the exposure situation (where, when and how people are exposed?)
  - Use the **collective results** to discuss individual situations and identify **margins of manoeuver**
- To implement **protective actions** taking into account individual and collective prevailing circumstances
  - **Evaluate** their effectiveness together with the concerned persons
  - **Disseminate** the experience and results among the community
Sharing data and building a radiological scale for external exposure adapted to the local situation

ETHOS Project, Olmany, Belarus, 1996-2001
Measuring and sharing information together
Fukushima Prefecture, Suetsugi village, 2013
About the radiation ‘alphabet’

• The idea is to familiarize people with the basic concepts and units of radiological protection

• Experience shows that the most effective way to do this is:
  • On the occasion of individual measurements in which people are directly involved and interact with experts to interpret the results
  • To proceed step by step starting from the source and going down to effects through exposure pathways and the exposures conditions

• The basic concepts and units:
  • Ambient dose rate, level of contamination,
  • External and internal exposure
  • Becquerel and Sievert
  • Ambient dosimeter, personal dosimeter, whole body counter
  • Etc…
The key steps and constituents of the co-expertise process (4)

- Throughout the process experts must:
  - **Regularly visit people** or the community involved to build trust and confidence that is essential to the success of the process
  - Identify and train **local facilitators** so that they gradually take over
  - Keep in mind that characterizing the situation at stake and developing adapted responses **takes time**
  - Mobilize the **resources** (expertise and equipment) needed to solve the problems identified during the process
  - Never lose sight of the fact that radiological protection must be at the service of the **well-being** of the persons concerned. Protection against radiation is not an end in itself
Concluding remarks (1)

- Radiological protection has for a very long time been confined to the protection of workers in medical, industrial and nuclear installations. The exposure of the public due to the latter being remained very marginal.

- But gradually the radiation had to integrate a set of exposure situations in which the public was directly confronted with potentially much more significant exposure levels: radon in dwellings, contaminated sites and territories, NORMs in the environment, cosmic radiation in aviation.

- The consequence of this evolution is that it is no longer possible for radiological protection professionals to confine themselves to simple explanations. They must now involve the persons concerned and give them the means to control critical situations themselves.
Concluding remarks (2)

• The experience, in particular that of Chernobyl and Fukushima, has shown that it is possible to involve people concerned and empower them to become autonomous in the control of their exposure.

• To do so radiological protection professionals should enhance their expertise to go beyond the traditional risk communication and engage in co-expertise processes which implies among other things that they:
  
  • develop their expertise in counselling, mediation and facilitation
  
  • and incorporate into their discourse:
    
    – a narrative that integrates the events that have marked the history of radiological protection
    
    – the ethical values that underpin the radiological protection system
Concluding remarks (3)

- In summary the keys to the success of the **co-expertise process** appears to be the ability:
  - to put oneself **in the place of others**
  - to **dialogue** with stakeholders by remaining as much as possible in the **common language**
  - to **work with** people not for them

- My wish is that, in the near future, using all the positive experiences that are similar or can be considered as co-expertise, it is possible to develop a **theoretical, methodological and practical corpus** concerning the practical radiological protection culture that could apply to **all exposure situations**
Thank you for your attention

Stakeholder visit to the decontamination waste repository site in Suesugi, Japan