

CONDITIONS FOR AND MEANS OF DEVELOPMENT OF A PRACTICAL RADIATION PROTECTION CULTURE WITHIN THE POPULATION IN A POST-ACCIDENT SITUATION

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In June 2005, ASN set up a steering committee (CODIRPA) for management of the post-accident phase of a nuclear accident or radiological emergency situation. It was given the task of drawing up a national policy for the management of radiological risk in a post-event situation. To begin with, the work was done by topic-based working groups to facilitate the launch of the discussions. However, because the problems to be addressed are completely intertwined, this segmentation into separate topics was rather contrived. CODIRPA's organisation was therefore changed, and two cross-cutting committees were set up. Their role is to integrate the conclusions of the topic-based working groups in respect of two phases:

- The 'transition phase' committee;
- The 'long-term phase' committee.

The 'long-term phase' committee proposed the establishment of a 'Practical Radiation Protection Culture' working group to identify the conditions necessary for developing a radiation protection culture within the population and among education and health professionals.

1. Why promote the development of a practical radiation protection culture?

A practical radiation protection culture can be defined as all the knowledge, experience and know-how enabling the general public to make valid choices and adopt legitimate behaviours in situations involving potential or actual exposure to ionising radiation. This culture relies on the knowledge currently available and should take account of changes in this knowledge over time.

In the long-term phase, while some of the population living in contaminated areas may wish to leave these areas, others may prefer to stay, seeking on the one hand to protect themselves from the contamination and on the other to rehabilitate their living conditions. The doses received by populations living in contaminated areas over the long term can be limited, provided that action is taken to keep their exposure as low as reasonably achievable and that they are supported in their exposure-protection actions. This assumes that the residents of these areas learn basic radiation protection rules and identify how to incorporate these rules into their everyday lives because of the long-term contamination of these areas. The public authorities should set up the necessary means to support these populations. In areas contaminated following a nuclear accident, in addition to action by the public authorities, one of the requirements for rehabilitating people's living conditions is stakeholder involvement in their own protection.

This requires that, at local level, people can:

- find out how the risks associated with the radioactivity in their environment affect them;
- through measurement, assess their contamination level and that of the land and the food produced on it (plant-based foods, animal-based foods, industrially produced foods, etc.)
- acquire and update their knowledge of the risks associated with radioactivity dispersed in the environment, and implement means of keeping their own exposure as low as reasonably achievable;
- know the reasons for and be able to evaluate the usefulness of the protective action they are taking.

2. How is a practical radiation protection culture developed?

- *In normal times*

For a practical radiation protection culture to function effectively in the emergency phase of a nuclear accident, its development must be envisaged now. On the one hand, the concepts and know-how that constitute a practical radiation protection culture are complex and can take time to learn. On the other, this allows those concerned to gain a better understanding of the issues and the protective action required in the emergency and post-accident phases and enables them to engage actively with the post-accident preparations.

Outside of a real contamination situation, the involvement of local stakeholders in action to develop a radiation protection culture can extend beyond post-accident situations only. Other local problems involving radiation protection issues can sometimes provide an easier point of access for people, because these problems are part of their daily lives and their local reality. These problems can arise from issues related to natural radioactivity (e.g. radon emissions in buildings), industrial radioactivity (e.g. releases from nuclear facilities in normal operation) or medical use of ionising radiation (e.g. radiology, nuclear medicine, radiotherapy, releases from hospitals, etc.).

The various scientific debates on the evaluation of the health effects of low doses of radioactivity, particularly when these have accumulated over long periods, are worth explaining. They provide a better understanding of the principles of the radiation protection system and, as a result, the tools used to implement these principles (reference levels, standards, etc.).

An understanding of post-accident issues can be encouraged, particularly among those who are unfamiliar with the subject, by studying radiological accident scenarios of differing levels of severity. These scenarios, especially when their consequences are adapted to physical places, can also help some people to become aware of the choices they would have to make and the new responsibilities they would have to shoulder in a post-accident situation, putting them in a better position to think about what they would need to do.

- *In a post-accident situation*

Feedback from managing the consequences of the Chernobyl accident shows that, in addition to expertise and knowledge-building, one of the conditions for developing a territorial response to a long-term radioactive contamination situation is the involvement of the population itself: a practical radiation protection culture then develops on the basis of results obtained by the population where this population has grasped the problems facing it by developing specific know-how with appropriate tools. This is particularly effective where the basic elements of a radiation protection culture have been integrated with the realities of local life.

The ability of individuals to access means of measurement of their environment is therefore important because it enables populations living in contaminated areas to assimilate the reality of a

danger that is imperceptible without special equipment and because it gives them the necessary information (contamination levels of foodstuffs, living quarters, etc.) to make choices and take day-to-day action on their environment and their own exposure. The aim is to develop inbuilt know-how rather than simply providing access to information put together by others. In this context, it is important to respect people's freedom to make their own decisions at all times about matters that affect them.

To consolidate and reinforce the action taken by the public authorities in a post-accident situation, it is important for residents, who have a direct knowledge of the local situation, to play an active role in the response to the contamination situation and in the monitoring system.

3. Who are the local partners in the development of a radiation protection culture?

In a post-accident situation, the population will need to be listened to, guided and advised. There are many institutional players active in the radiation protection field, but they are rarely in direct contact with the population. The development of a practical radiation protection culture among the population in advance of an accident, as well as in a post-accident situation, would therefore be fostered by the action of local partners who were able, particularly through their professional or community activities, to spread that culture and provide a direct link with the population. These people should have some interaction with radiation protection experts in order to provide an interface between these experts and a broader local public.

Several categories of people have been identified as potential vectors for the development and spread of a radiation protection culture among the population in preparation for and during a post-accident situation. The main categories are:

- *teachers and those involved in promoting scientific culture*

The results of various experiments have shown that schools are a particularly important forum for developing and spreading a practical radiation protection culture¹. Teachers are genuinely concerned about the health of children living in contaminated areas. By educating children, schools can also pass on the practical radiation protection culture to parents and prepare new generations to cope with such situations in areas with long-term contamination. Moreover, the involvement of teachers from different disciplines (science, literature, economics, social sciences, etc.) means that a multidisciplinary approach can be taken to promoting a radiation protection culture, facilitating people's understanding of the complexity of the post-accident situation and the associated radiation protection issues.

The working group also identified that those involved in promoting scientific culture through the Centres for Scientific, Technical and Industrial Culture (CCSTIs)², are well placed to encourage the development of a radiation protection culture through initiatives conducted outside schools, combining art, science, practical experience and the social dimension, in a local or regional context.

- *health professionals*

¹ Following the Chernobyl accident, schools in Belarus were extensively involved in the public programme set up to manage the post-accident situation. This involvement focused mainly on the problem of the chronic internal contamination of children living in the contaminated areas.

² CCSTIs are local facilities aimed at encouraging interaction between the scientific community and the general public, particularly by collecting and making available information that could contribute to a better approach to the spread of scientific and technical knowledge.

The experience of recent health crises has shown that local health professionals provide an essential link for public health systems at local level and can contribute significantly to spreading a practical radiation protection culture (the term 'health professional' is used in its broadest sense, i.e. to mean doctors and nurses, particularly those working in schools, midwives, pharmacists, and also professionals with less direct involvement such as radiographers, medical secretaries, etc.).

- *local associations, residents' associations, environmental protection associations*

Because of their activity among local populations, those involved in community groups can be key players in organising events to spread information about radiation protection and to discuss local issues. They are also well placed to help the population understand the information provided by operators, public authorities and others. Lastly, those involved in community groups can facilitate the organisation of networks of informed citizens and, where appropriate, of those engaged in environmental monitoring.

- *local information commissions for nuclear facilities*

The role of Local Information Commissions (CLIs)³ is to disseminate information about nuclear facilities to local politicians and populations, to favour exchanges among local stakeholders and to identify the questions they are asking. In a post-accident situation their role would be maintained and undoubtedly reinforced. This would particularly be the case for local politicians, who make up half the members of these commissions, and who would be in the front line for responding to the questions and concerns of their constituents. It is therefore important that, in addition to the information they traditionally pass on, they can take on board elements of the practical radiation protection culture and spend time addressing the issues of a post-accident situation.

Recommendations have been made to facilitate the introduction and development of a practical culture of radiation protection among the population and among those involved in post-accident management. Initiatives, many of them developed locally but also some national initiatives, do currently exist in France but, being run by different agencies, they remain fairly independent from one another and would certainly benefit from becoming more integrated. Little is known about many of them at national level, despite the fact that the progress they could make with developing a radiation protection culture could be enhanced with better use.

Lastly, it seems important to facilitate access to training and awareness-raising actions on radiation protection for local partners in the development of a radiation protection culture.

³ CLIs are structures for information and consultation in the fields of nuclear safety, radiation protection and impact on the environment and humans of basic nuclear facilities. In particular they spread information supplied by operators and experts to local populations.