Lessons from Chernobyl post-accident management

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Abstract:
Although severe nuclear accidents rarely happen, the world is now facing a second one with the accident of Fukushima after the one of Chernobyl. Such accidents show that the long-term management of their consequences is not straightforward. Compared to the situation prevailing before the accident, the new situation is much more complex. It is characterised by key issues which have to be taken into account when implementing protection strategies in contaminated territories.

1 INTRODUCTION
The Chernobyl accident and the Fukushima accident show that the long-term management of their consequences is not straightforward. In both cases, one of the main key issues to deal with for each inhabitant of a contaminated territory is to know if he/she would like to leave or to stay living in this territory. It is also necessary to evaluate the possibility to work and to produce in part of the contaminated territories but with new conditions in comparison to the situation prevailing before the accident. This is the responsibility of the authorities to propose to the population to stay living in contaminated territories, although this decision needs to be derived from a dialog process involving all the concerned people, at the local and national levels.

Once the decision is made, there is a need for the authorities to set up the necessary means to ensure the protection of the population. In that perspective, the lessons from the Chernobyl post-accident management, with its strength and weakness, can help the radiation protection authorities to address these issues.

2 THE COMPLEXITY OF THE LIFE IN CONTAMINATED TERRITORIES
The management of the consequences associated with the Chernobyl accident has revealed the complexity of the situation to be dealt with. The long-term contamination of the environment has affected all the dimensions of the daily life of the inhabitants: health, environment, social life, education, production, distribution of foodstuffs and commodities... This situation has induced a series of questions and worries among the population living in affected territories, notably regarding the potential future health effects associated with ionizing radiation for their children. The surveys undertaken in the early 1990s, in Belarus, Ukraine and Russia, highlighted that this complex situation led to a loss of control for the inhabitants of the contaminated territories and that classical approaches of communication were not efficient to provide them with comprehensive and useful information to deal with their situation.
3 KEY ISSUES FOR THE POST-ACCIDENT STRATEGIES

Due to the complexity of this situation and the failure of classical approaches of communication, new strategies have been experimented notably in Belarus mainly relying on:

- The direct involvement of the inhabitants in their own protection,
- The development of a radiation monitoring system and health surveillance at the local level,
- The development of the radiation protection culture among the population,
- The setting up of economic measures to favour the local development.

3.1 The direct involvement of the inhabitants in their own protection

The experience developed more specifically in Belarus within the ETHOS project and the CORE Programme has shown that the direct involvement of the population in the day-to-day management of the radiological situation was feasible and a necessary approach to complete the rehabilitation programme implemented by the authorities in contaminated territories. In the long-term, it clearly appeared that the individual habits lead to various radiological exposures, mainly through ingestion of contaminated food. In that perspective, the capacity of the inhabitants to participate to their own protection is crucial. Therefore, to be effective protection strategies should include actions implemented by authorities at the national and local levels and by the affected population itself. This is now referred as self help protection actions in ICRP Publication 111.

3.2 The radiation monitoring system and health surveillance at the local level

The establishment of an operational radiation monitoring system including measurement of foodstuffs and whole-body contamination is essential and has to favour the access to the measurements for all the inhabitants. Such a system is crucial for allowing the population to be able to participate to its own protection and to regain self-control on its direct environment. In this spirit, the pluralism of sources of measurement (public and private local, regional and national actors) is a key factor for ensuring confidence of the population in the results and to provide useful information to cope with the local situation.

3.3 The radiation protection culture

In order to allow the inhabitants to cope with the situation, the notion of practical radiation protection culture has progressively emerged as a key component of the post-accident management. This radiation protection culture can be defined as: “the introduction in the daily life of the means and actions to be implemented to ensure the radiological safety of the inhabitants living in contaminated territories”. When inhabitants have a direct access to measurements and understand how they can control their own exposures, contamination criteria for foodstuffs and whole body cease to be blocking factors for their involvement and they become benchmarks to guide their actions and behaviours in the day-to-day life. To favour the development of the practical radiation protection culture, the establishment of places for dialogue is important for the dissemination of information and the development of a common language between all involved stakeholders.

3.4 The economic measures to favour the local development

Regarding social and economic issues, it is interesting to mention the laws adopted in Belarus in 1991 in order to ensure the social protection of the citizens and to define the legal framework for the territories. Although the implementation was not always efficient, the spirit
of these laws was quite significant to provide help and assistance for the populations affected by the consequences of the accident. Nevertheless, progressively, the need to address at the local level the possible future development of the territories emerged. Dedicated accompaniment measures to favour this development were tested in partnership with local, national and international stakeholders. These measures were implemented with the aim of improving the quality of life of the inhabitants and the radiological quality of the production.

4 CONCLUSION

All these key issues identified through the experience following the Chernobyl accident would be useful lessons for the management of the Fukushima accident.