

# Case study in the field of Emergency Preparedness and Response

*P. Croüail, M. Maître, C. Schieber, T. Schneider (CEPN)*

*ENGAGE WP3 meeting*

*Fontenay-aux-Roses, 25-26 October, 2018*

- Lessons learned from Chernobyl accident:
  - **Great complexity** of the situation which goes far beyond the single radioactivity issue
  - **Profound disturbances** affecting every aspects of populations' lives, including economy of a territory
  - Need to **address long-term contamination of the environment** and **emphasize stakeholder involvement**
- Mission given to the French safety authority (ASN) to set up **CODIRPA process in 2005** for elaborating **policy elements for post-accident management** of nuclear accident:
  - **3 main objectives** to address for the **3 post-accident phases** (e.g. exit of the early phase, transition period, long-term period):
    - **Protect the population** from the dangers of ionising radiations,
    - **Provide support** to the population victim to the consequences of the accident,
    - **Reconquer the affected territories**, from the economic and social standpoint.

- Composition and structure of CODIRPA:
  - Creation of a **Steering Committee**;
  - Creation of **thematic working groups** involving **pluralistic stakeholders** and dealing with various issues: Waste management, Economic issues, RP Culture, Health considerations, *etc.*
- Work Organisation of CODIRPA:
  - Strong **need to fully understand the multiplicity of issues at stake** in post-accident situations;
  - CODIRPA has been **based on concrete feedbacks** from Chernobyl situation.  
Participation of its members to:
    - European projects dedicated on these aspects (ETHOS, CORE, SAGE, PREPARE), sharing of testimonies, visits to Belarus, *etc.*
  - + on going work aiming to integrate the feedbacks from Fukushima.

- Usefulness to develop RP culture for the stakeholders involved in the CODIRPA allowing them to:
  - Make their mind on **what is at stake in case of a nuclear accident** from the radiological point of view and for the daily life of affected populations
  - **Identify which policy framework, tools, guidelines...** could be developed in preparedness to favour the post-accident management
- RP culture is fostered within the CODIRPA doctrine on:
  - **The technical issues** directly related to RP (dose assessment, radiological characterization);
  - As well as on the management of **the complexity of the situation** (multidisciplinary approach)
- Considerations in the CODIRPA on **the role of RP culture in the stakeholder involvement process** (from local to national and international).

- 3 Working Groups (WG) of CODIRPA have been analysed:
  - **Working Group on RP Culture (2010-2011) & development of RP culture for high school students**
    - **Target SHs:** High school students, teachers, health professionals
  - **Working Group on “Questions and Answers to Health Professionals”**
    - **Target SHs:** Health professionals
  - **Working Group on Guidance for Population**
    - **Target SHS:** local population that might be impacted by a nuclear accident, including elected people, NGOs, farmers, economic actors or teachers

- **For the stakeholders participating in the various CODIRPA WG:**
  - Raise awareness about the various and complex issues of a post-accidental situation and explore how RP Culture can help to cope with these issues;
  - Acquire knowledge about their possible role in the event of a nuclear accident;
  - Capacity building to interact and participate to the process of elaboration of EP&R plans.
- **For the high school students**
  - Initiate a civic approach as part of an appropriation of scientific, ethical and societal dimensions related to ionizing radiations;
  - Acquire knowledge on radiation protection;
  - Share experiences with students for whom radioactivity is a daily issue (Students from Japan and Belarus).

- **For the general population / specific professionals (after an accident)**
  - To build a practical RP Culture to understand what is at stake in their environment and be able to act in their day-to-day life or fields of activities in emergency or late phase of an accident for their own protection;
  - With their community, be able to implement their own protective actions, with the support of local authorities and professionals ;
  - Take informed decision, participate to decision-making processes where other aspects than the only radiation protection issue might be addressed (well-being , economic issues, future of the territory, etc.);
  - Help to better discern what belongs to the consequences of exposures as such and what belongs to other consequences, other disturbances of the « well-being » related to the accident.
- **For health professionals:**
  - disseminate RP culture and raise awareness about radiological risk,
  - answer to concerns of population and try to limit anxiety

- RP Culture starts with practical questions:
  - Where can radioactivity be found?
  - Need to associate measurement of radioactivity with reference scales
- Question of quantitative dose-effect relationship is not systematically addressed (by students, population, health professionals,..)
- Environmental effects are rarely addressed
- Several topics are questioned, without any chronological or logical order



Many issues at stake in post-accident situation

Type of questions asked to health professionals	Type of questions raised by the population
<ul style="list-style-type: none"> <li>• Worries and concerns about children and pregnancy</li> <li>• Generic pathologies</li> <li>• Iodine and thyroid</li> <li>• Food-stuff management</li> <li>• Social relationships</li> <li>• Animals</li> <li>• Occupational risks</li> <li>• Actions to be taken</li> <li>• ...</li> </ul>	<ul style="list-style-type: none"> <li>• General aspects (who is doing what? who can be contacted? ...)</li> <li>• Measurements (Tools, By who? For which reasons? radiation quantities, ...)</li> <li>• Health (health effects, health surveillance, individual protections...)</li> <li>• Water (drinkable water, other use of water, ...)</li> <li>• Food (vegetable garden, local markets, picking, hunting, fishing, food control, feeding of livestock and domestic animals, ...)</li> <li>• Everyday (wood and ashes, clothes, garden, household waste, pets, ...)</li> <li>• Travels (personal and professional travels, sports and leisure, means of transport, ...)</li> <li>• Citizenship and mutual help</li> </ul>

- **For School / Education professionals – “High school students workshops”**
  - Addressing radiological protection culture in the context of each school
  - Favoring approaches to **address practical issues** rather than theoretical knowledge
  - Difficulties to fit with the existing program but existence of multidisciplinary projects
  - **Key role of exchange of experiences** with high school students and professors from Belarus and Japan
  - **Support of RP experts** to build the projects and analyzing/interpreting the results
  - Usefulness to **put into perspective** with other exposure situations
  - Need to consider how to share the approach with other students and parents
  - Difficulties to be focused on preparedness for a nuclear accident

- **Working group on ‘*Questions and Answers to Health Professionals*’**
  - **A pluralistic sub-group of health professional**, chaired by a Health Regional Agency representative has been set up. It is composed of 13 persons, **from the local area** of Civaux (city closed to a nuclear power plant), from various health professions (emergency medicine, pediatrics, family doctor, nuclear medicine, occupational health, pharmacist,...). The missions of this group are:
    - To **identify and express the needs of health professionals** in terms of knowledge (health issues, but also in other fields if necessary);
    - To **request the hearing and debate with the experts** according to the needs expressed;
    - To **receive the answers to the questions** and answers table and give an opinion on their relevance, comprehension, readability;
    - To **formulate training and training format requirements**, before the crisis and during crisis

- **Working group on ‘*Questions and Answers to Health Professionals*’**
  - **Another sub-group of around 15 experts** has also been set up.
    - **Scientific experts** (epidemiology, medicine, radiation protection, sociology) and **persons familiar with the context of post-accident management** and existing reference documents on which the expert group can base its response to the question raised by the health professionals. This group of experts has two very distinct missions:
      - at first: write the answers to the questions asked;
      - in a second step: reflect on the rise in competence of health professionals.

- **Working Group on Guidance for population**

- **Members from civil society** (farmer, cheese producer, teacher), **NGOs** (Consumer protection, environment protection, promotion of decent living conditions), **experts in radiation protection** (IRSN, ASN, CEPN, Health Regional Agencies), **Local Commission of Information around NPPs**.
- All those members **have skill and competences in the management of radiation protection and/or post accident situations**, having been involved in previous European Projects (ETHOS, CORE, SAGE, PREPARE) or in the first step of CODIRPA.
- **Identification of questions raised by the population largely relying on feedback experience** from Chernobyl and Fukushima (visits to Belarus and/or Japan and testimonies from local people)

- **Depending on the groups of stakeholders:**
  - Need to understand the situation as a whole and its complexity;
  - RP Culture **does not provide individual solution without support behind**, and is not there to justify any exposure to ionizing radiation;
  - RP Culture **is part of a process of global understanding of the complex situation** and allows everyone to contribute to a collective process of optimisation of the situation, with the support of authorities and experts;
  - Feedback from Chernobyl and Fukushima shows the **difficulties for stakeholders to put the results into perspective and catch their meaning**;
  - **Importance of practical experimentation** to understand the meaning of the RP culture components;
  - **No formalized evaluation process**;
  - Possibility to **rely on social network** for constructive exchange and self-verification of the understanding (Ex. Safecast).

- Need to **be connected to concrete experience** to better catch the complexity of PA situations with:
  - Experts, but also other stakeholders: national and local authorities, health professionals, local population, local elected people, specific professionals, etc.
- RP Culture is not there to help local population to cope with their situation alone. In post-accident situations, co-expertise is still needed;
- There is **no predetermined model for developing RP Culture in a PA situation**. RP Culture should be adapted to the specificities of the territory and the local needs;
- RP Culture is disseminated at the individual level but is part of collective actions;
- **Ethical considerations have to be taken into account**: respect autonomy, dignity of affected people, maintain and promote long term vigilance, acknowledge the responsibility of the experts and authorities, etc.