Stakeholders participation in nuclear and radiological Emergency Preparedness and Recovery in Spain: benefits and challenges of meeting and working together

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Highlights

1. Different stakeholder voices help define gaps and challenges in Emergency Preparedness and Recovery plans
2. Working together has several benefits, such as creating networks, understanding others' views, and facilitating coordinated action
3. In Spain, research institutions (CIEMAT¹, UPM², ISGlobal³); governmental stakeholders (CSN⁴; DGPCE⁵) as well as SEPR⁶ play a crucial role in organizing workshops and gathering stakeholders together

Abstract

Emergency preparedness and response (EP&R) to radiological or nuclear accidents depends on many different stakeholder groups: European and national legislative bodies and authorities; institutions and ministries concerned by health, environment and consumption; first-line responders including the military, firemen and health workers; as well as local authorities and nuclear industries. NGOs or civil associations/societies can also be involved in radiation monitoring and protection. Stakeholders also include the general public such as people living near NPPs or affected by previous nuclear or radiological accidents and incidents. Educational workers and journalists, bloggers and other social media figures also play a key role in effective dissemination of knowledge and information.

The present study describes the role of different research institutions (such as CIEMAT, UPM and ISGlobal) and of the Spanish Radiation Protection Society in bringing together the above-listed stakeholders in Spain to discuss EP&R and identify benefits and challenges of working together.

¹ CIEMAT: Research Center on Energy, Environment and Technology

² UPM: Universidad Politécnica de Madrid

³ ISGlobal: Barcelona Institute for Global Health

⁴ CSN: Spanish Nuclear Safety Council

⁵ DGPCE: General Directorate of Civil Protection and Emergencies of the Spanish Ministry of Home Affairs

⁶ SEPR: Spanish Society of Radiological Protection

Stakeholder opinions on EP&R, collected mainly in the framework of several European-funded projects, are provided. Remaining barriers and examples of good practices in radiation protection are discussed, as well as recommendations for improving nuclear and radiological emergency preparedness in Spain.

Key words: stakeholders; engagement; nuclear emergency; preparedness; post-accidental recovery

1. Introduction

Involvement of stakeholders, including the general population, together with citizen science initiatives, are key aspects to improving nuclear and radiological emergency preparedness. The necessity and benefits of such involvement for the affected population and society were already observed in the aftermath of the Chernobyl and Fukushima accidents (Alexander, et al., 2005; Brown et al., 2016; Monteiro Gil et al., 2017; Liutsko & Cardis, 2018; Lochard et al., 2019).

Research institutions in different European countries have undertaken efforts to bring together different stakeholders – professionals of different areas that are directly or indirectly related to nuclear emergency response and recovery – in the framework of international research projects with the aim of fostering decision-making processes in preparedness to and recovery from nuclear and radiological emergencies (EP&R).

The ENGAGE⁷ project has led an evaluation of the impact of past or ongoing participatory activities in radiation protection decision-making processes and a comparative analysis of stakeholder engagement in practice, identifying broader lessons that can be learned.

This publication summarises lessons learned from the work realised so far in Spain by research institutions (CIEMAT, UPM and ISGlobal) and the professional radiation protection association SEPR, with local stakeholders on EP&R; based on findings of an observational study of seminars; the analysis of stakeholder discussions during several events; and individual interviews.

2. Experience in working with local and international stakeholders on RP issues, preparedness for post-accident management and recovery

Different research activities, mainly in the framework of European projects but also under national initiatives, have addressed the development, improvement and application of methods and tools, including the engagement of stakeholders, to strengthen the preparedness for post-accident management and recovery.

A joint effort between research institutions in Spain (CIEMAT and UPM) and the Nuclear Safety Council (CSN) was initiated in the framework of the Euratom research programme, with the EURANOS⁸ project and continued in NERIS-TP⁹, allowing to develop a coherent framework for post-accident rehabilitation by involving national, regional and local stakeholders (Dubreuil et al., 2010; Montero & Gallego, 2013).

⁷ ENGAGE (2017-2019) Enhancing stakeholder participation in the Governance of radiological risks. Funded under H2020 EJP CONCERT_JTC2016, GA 662287. <https://engage-concert.eu/en>

⁸ EURANOS (2004–2009): European approach to nuclear and radiological emergency management and rehabilitation strategies. Funded under FP6-EURATOM-RADPROT, contract No. FI6R-CT- 2004-508843

⁹ NERIS-TP (2011–2014): Towards a self-sustaining European Technology Platform on Preparedness for Nuclear and Radiological Emergency Response and Recovery. Funded under FP7-EURATOM-FISSION, GA 269718

This framework has been tested and disseminated in preparedness exercises, dedicated workshops, and stakeholder panels under those projects and along with successive research including CURIEX 2013¹⁰, organized by DGPCE, PREPARE¹¹ (Gallego & Montero, 2014; Gallego & Montero, 2016) and CONFIDENCE¹². Other national actors concerned, such as ISGlobal or SEPR, have joined later on contributing with their research in other areas, to support the dissemination of the results obtained among stakeholders.

The first attempts to engage Spanish stakeholders started with the multi-national European project EURANOS (Raskob et al., 2010), where a national decision-making exercise allowed to discuss with stakeholders the requirements to progress from centralised management of emergencies towards coordinated assessment and decision-making (Gallego & Montero, 2016).

The establishment of the European Technology Platform NERIS¹³ (Schneider et al., 2016), in which CIEMAT and UPM participated as founding members, and the launch of the NERIS-TP (Liland & Raskob, 2016), further encouraged EP&R efforts in Europe. In Spain, CIEMAT and UPM, in close interaction with CSN, explored tools and strategies for information and communication to foster cooperation between local, national and international stakeholders (Gallego & Montero, 2016).

During the PREPARE project (Duranova et al., 2016), relevant stakeholders from different European countries were engaged to contribute to the development of strategies, guidance, and tools for better management of the contaminated products (Charron et al., 2016). In Spain, a panel of stakeholders was established bringing together national authorities and public agencies with scientific and professional associations, research centers and universities to discuss on these issues for the first time (Montero, Trueba & Sala, 2015).

Currently, under the CONFIDENCE project, different national stakeholder panels have been organised (Montero et al., 2019). In Spain, the panel on “The articulation of stakeholder participation in the process of preparation for nuclear or radiological post-accident recovery” was organised and conducted by CIEMAT with the main goal of facilitating the engagement of relevant stakeholders in this national post-accident preparedness process and obtain their feedback in terms of critical aspects and uncertainties that arise during the transition phase, in order to better manage the consequences of the accident and plan the recovery (Salas et al., 2019). Two sessions have been performed in July 2018 and April 2019, bringing together national stakeholders who had already participated in previous panels related to the preparedness and response in a nuclear emergency.

In recent years, the Barcelona Institute for Global Health (ISGlobal) has led some European research projects on radiation protection (SHAMISEN¹⁴ and SHAMISEN-SINGS¹⁵) in addition

¹⁰ CURIEX (2013): Cáceres Urgent Response International Exercise. Coordinated by DGPCE in cooperation with the Central Government Representative’s Office in Cáceres, and the European Commission.

¹¹ PREPARE (2013-2016): Innovative integrated tools and platforms for radiological emergency preparedness and post-accident response in Europe. Funded under FP7-EURATOM-FISSION, GA 323287.

¹² CONFIDENCE (2017-2019): Coping with uncertainties for improved modelling and decision making in Nuclear emergencies. Funded under H2020 EJP CONCERT_JTC2016, GA 662287.
<https://portal.iket.kit.edu/CONFIDENCE/index.php>

¹³ NERIS: European Platform on preparedness for nuclear and radiological emergency response and recovery. <https://www.eu-neris.net/>

¹⁴ SHAMISEN (2015-2017): Nuclear Emergency Situations: Improvement of Medical and Health Surveillance. <http://radiation.isglobal.org/index.php/nl/shamisen-project>

¹⁵ SHAMISEN-SINGS (2017-2019): Stakeholders INvolvement in Generating Science.
<http://radiation.isglobal.org/index.php/es/shamisen-sings-home>

to contributing to ENGAGE⁷, with the purpose of bringing relevant stakeholders together to prepare for disasters' management (Oughton et al., 2017; Liutsko et al., 2018).

A meeting held by SHAMISEN in Paris, on October 2017, provided the opportunity to actively discuss with relevant stakeholders and obtain feedback for the *Recommendations and procedures for preparedness and health surveillance of populations affected by a radiation accident*, which were later published (Oughton et al., 2017). Since these recommendations include cross-cutting issues common to other types of accidents, such as communication during emergencies, evacuation, socio-psychological and ethical consequences, the SHAMISEN recommendations can be easily transferred and adapted to other cases (natural, chemical and biological disasters, for example) (Liutsko et al., 2018b) and involve a large circle of stakeholders, professionals and experts of different areas.

A synthesis of work done so far on stakeholders' involvement and improving radiological protection in Spain was presented during the *Workshop on Preparedness to Nuclear and Radiological Emergencies: Keys for Improvement*, organised by SEPR with collaboration of UPM, CIEMAT and ISGlobal in September 2018 in Madrid (hosted by UPM).

Past and ongoing international projects were presented to local stakeholders - about 40 participants representing a wide spectrum of organizations and stakeholders involved in Emergency Preparedness and Response - followed by discussion in groups on challenges and key issues related to radiological protection issues in Spain.

From the recommendations issued from the workshop, it was clear that efforts must be made to increase the radiation protection culture of the different stakeholders and the population in general, for example, through periodic exercises and analysis of realistic accident scenarios. It was suggested that experts and other stakeholders must interact and cooperate through open networks. Apart from certain technical aspects, the improvements in emergency preparedness and response mainly depend on the participation, motivation and commitment of all parties involved (Gallego et al., 2019).

3. Challenges and point of improvement for stakeholders' participation in EP&R in Spain

The workshops and individual interviews revealed a series of challenges and issues to be improved, including:

- Better define the role of relevant authorities and stakeholders in case of a nuclear emergency
- Improve the networking between relevant stakeholders including the general public, NGOs and journalists or mass media agents.
- Provide more adequate and transparent communication between different stakeholder groups to reduce misinformation.
- Prepare communication and provide education / training on the basics of radiation and radiation protection culture to enhance efficiency and inclusiveness of all groups (NGOs, general public and journalists),
- Reduce the gap between theory and practice by working together on emergency plans and simplifying them, with clear priorities for human lives. The opinion of first responders was that it "seems that those who are writing plans will never try to implement them in practice"¹⁶. In one of the discussion groups, firemen noted that

¹⁶ Citation provided from firemen team in the group discussion (Personal communication, 2018).

theoretical or “ideal” emergency plans frequently do not fit reality since when firemen are in an emergency, they have little time to consider all aspects. Thus, priorities should be clear and the documents shortened to allow timely action in an emergency.

- Address lack of “continuity” of work performed at the local authority level due to rotation and possible changes that occur every four years (after political elections).
- Consider demotivation of the general public in issues related to EP&R radiation due to lack of knowledge on radiation and its risks.
- Demotivation of some professional stakeholders to put efforts in EP&R due to projections to reduce nuclear power plants in Spain (no new NPPs are planned to be constructed in the future).
- Training in radiological protection among other professionals involved in emergencies is sufficient in theory, but in practice there is lack of motivation and resources. The lack of interest of some producers of goods and food was pointed out, despite their potential role in promoting a radiological protection culture.
- Not all invited stakeholders attended the workshops, due to agenda problems and possible lack of appeal. And, in parallel, not all stakeholders (including general public representatives) could be invited. This may be due to fear of possible conflicts and lack of constructive dialogue with certain stakeholders such as some journalists or NGOs members. To avoid these situations, previous preparatory work should be done with the different stakeholders and the moderator’s role during the discussions should be reinforced.

4. Good practices and benefits of stakeholders’ joint work

- The work done already – efforts to put different stakeholders together and create a network in Spain – was positively assessed by both organisers and participants. “Before we did not know each other in face; and now it is easier to communicate when you know people personally”.
- Previous positive experiences by attending stakeholders (The Red Cross) underlined the important role of working with the general public to provide reliable channels of information and alert on possible false sources or misconduct in providing information.
- Concise and clear messages (involving a careful selection of what should be transmitted and how) when working with the general public was mentioned as a good practice to follow.
- Examples like the training courses and information by the Polytechnic University of Valencia addressed to all first responders (firemen, health workers, civil protection, environmental agencies), with 2-3 editions per year, was considered beneficial.

5. Conclusions

Spanish research institutions and SEPR, with the help of European-funded projects, play an important role in organising workshops and other actions related to engagement of relevant stakeholders in issues of EP&R. These joint exercises helped create a network of different stakeholder groups that should work together in case of a nuclear or radiological emergency, even if they normally do not interact. Joint participation of professionals from different areas, and backgrounds, from state and non-governmental institutions, promotes a better mutual comprehension and more efficient work in case of a real emergency situation. Notwithstanding, other challenges remain, such as providing a basic knowledge on radiation and its risks to other

stakeholders including journalists and the general public, and doing so in the most inclusive manner.

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