NEA international peer reviews of post-accident protection policy

by T. Lazo*

For many years, the NEA has offered international peer reviews of national, high-level radioactive waste management policies and approaches. Until recently, this service had not been requested in the area of radiological protection. However, the 3rd International Nuclear Emergency Exercise (INEX-3, 2005-2006) addressed post-accident consequence management for the first time in a broad, international sense, and helped generate significant national reflections in this area. In particular, in 2005 the French government began an extensive programme of post-emergency consequence management planning, resulting in a draft national policy to address such situations. The Finnish government used the INEX-3 exercise as a vehicle to discuss post-emergency consequence management with a broad group of governmental and private stakeholders, and also began to develop national policy in this area. In order to further refine national efforts, the French Nuclear Safety Authority (ASN) invited the NEA to perform in April 2011 its first international peer review in the radiological protection area focusing on its post-emergency consequence management policy under development. Finnish experts participated in this peer review team, and as a result, subsequently invited the NEA to perform an international peer review of its developing policy in this area in September 2011. These draft national policies and their international peer reviews are briefly presented below.

Methodology

In order to perform these international peer reviews, the NEA developed an approach based on the methodology used for peer reviews of high-level radioactive waste management policies. Once a member country has requested the review of a specific policy, generally a policy document that is being drafted or is in the process of being revised, an international peer review team is formed. The team is usually composed of four to six experts in the field being assessed, as well as one or two members of the NEA Secretariat. The independence of the team members from the development of the document being reviewed is verified, and validated by the organisation requesting the review. The organisation requesting the review covers the travel costs for the international peer review team members as well as the travel costs and working time of the NEA Secretariat.

The document to be reviewed is provided to the NEA and the international peer review team members who then perform a preliminary review of the document and submit questions of clarification to the requesting organisation through the NEA Secretariat. These questions are used by the requesting organisation as preliminary feedback, but also as an indication of which national experts will be most needed for discussions with the international peer review team. The team then meets on site with members of the requesting organisation to discuss details of the document. This includes a word-by-word, line-by-line review of the document, noting questions, identifying areas requiring clarification and providing suggestions for changes to the text. Each question and suggested change is accompanied by a clear rationale as to why the team feels the comment is necessary. At the end of the two- to three-day meeting, the team will have produced a list of general comments, as well as an annotated version of the document including all comments and suggestions. The team then holds a short seminar for the requesting organisation in order to present its preliminary results. The team's final report, presenting general and specific comments on the text, is prepared by the NEA Secretariat, approved by the international peer review team members, and submitted to the requesting organisation. With the permission of the requesting organisation, the report is made available to the full membership of the NEA Committee on Radiation Protection and Public Health (CRPPH) for information.

It should be noted that the members of the peer review team provide comments based on their experience with their own national approaches. It is not the intention of these reviews to perform a comparison against an existing standard, for example the IAEA Safety Standards.

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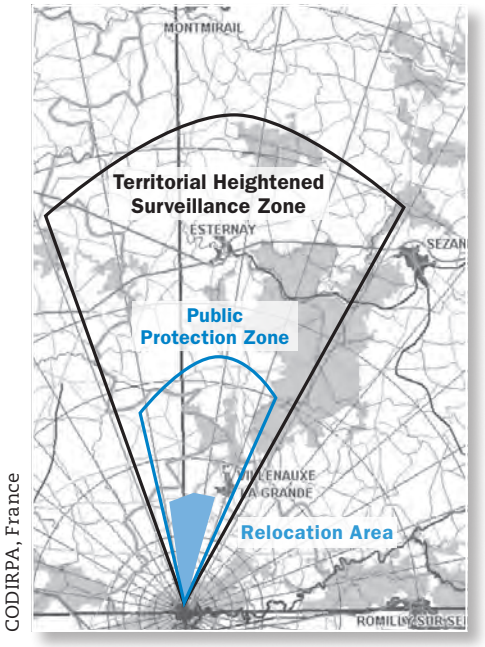
French policy for managing the transition to the post-accident phase

The first radiological protection peer review was requested by the French Nuclear Safety Authority (ASN). The ASN was tasked in 2005 with developing French policy for the management of the post-accident phase of a nuclear or radiological accident situation. To accomplish this, the *Comité directeur pour la gestion de la phase post-accidentelle d'un accident nucléaire ou d'une situation d'urgence radiologique* (CODIRPA: Steering Committee for the management of the post-accident phase of a nuclear or radiological incident) was established. This work mobilised more than 200 people, including members of relevant national administrations and their local representatives, utility and industrial representatives, technical service organisations, nuclear safety authorities from countries bordering France, NGOs and local elected officials. As a result of this work, the ASN developed a guide for exiting the emergency phase, describing French policy for this process, and began transposing this generic guide to the specific needs of four pilot-project areas, each being home to a nuclear installation or other radiological risk.

To complement activities addressing policy at the national level, several dialogues were engaged with organisations and officials from local government, relevant services from the agricultural ministry and civil society representatives in order to test ideas and approaches against local realities. In this context, the NEA was requested by the ASN to organise an international peer review of the CODIRPA Guide for Exiting the Emergency Phase. The review was to provide the ASN with comments on the CODIRPA Guide in order to help the ASN improve its policy in this area and to finalise the guide.

The CODIRPA Guide is a broad, national-level document that is intended to serve as a framework within which procedures and plans can be developed in detail for each area in France where such plans are needed. For example, each French region that is home to a nuclear power plant, a radioactive waste management facility or a research laboratory using radionuclides is required to have an emergency management plan. The intention of the CODIRPA project is to provide a common framework such that national-level assistance can be optimised, and that inter-regional plans can be complementary and compatible.

Simply stated, the CODIRPA policy is based on the establishment of "zones" that bound the management of consequences of a nuclear or radiological incident. The Public Protection Zone (ZPP) is identified as the area that has been or could be contaminated as a result of the accident to such an extent that populations living in the area will be required to shelter for some period. In those cases, bans on the consumption of locally grown food and milk, and entering the area will also be implemented. Beyond this zone, the French define a Territorial Heightened Surveillance Zone (ZST), where contamination levels that have occurred or might occur do not warrant sheltering, but do require food monitoring and other bans. The key to this policy is that these zones are established based on predictive assessments, and are intended to evolve as information (e.g. contamination measurements, food monitoring, etc.) becomes available, as well as to form the framework within which particular protective actions will be developed.



CODIRPA, France

The zoning strategy of the French CODIRPA policy.

The international peer review team found that the CODIRPA work was well-constructed and presented very useful and innovative thinking on the important question of consequence management during the period of transition following the emergency phase. The team broadly agreed with the principles presented in the guide, in particular the use of zoning as a central strategy for managing a constantly evolving situation. It was noted that the implications of the Fukushima accident on emergency preparedness and on post-accident consequence management would need to be assessed and appropriately taken into account.

Finnish intervention policy

The Finnish Radiation and Nuclear Safety Authority (STUK) is in the process of developing new guidance on intervention policy for protective measures for the early and intermediate phases of any nuclear or radiological emergency situation, including malicious acts. During the preparation of this guidance, feedback and comments from public- and private-sector organisations were solicited at national, regional and local levels, and experts from the STUK responsible for preparing the draft policy worked extensively with stakeholders to

achieve an approach that is broadly viewed as acceptable. The usefulness of this guidance was tested during the INEX-4 exercise conducted in Finland (mid-2011), as well as during the Finnish response to the Fukushima accident in terms of evaluating measures for recommendations to Finnish citizens potentially exposed to fallout from the Fukushima accident, and in terms of issuing advice and monitoring goods imported from Japan. In order to continue to refine this guidance and the Finnish approach to its implementation, the STUK requested that the NEA perform an international peer review.

The key to the Finnish policy is the use of operational intervention levels, or OILs. Operational intervention levels are defined as some physically measurable quantity (e.g. dose rate, surface contamination level, airborne contamination level) that has been measured or is predicted to be possible, above which it is recommended to implement a specific countermeasure, such as sheltering or taking stable iodine tablets. Accordingly, should a nuclear or radiological accident occur such that gaseous and/or liquid radioactive material has been or could be released, and if a dose rate, in micro-Sieverts per hour, exceeds a given OIL, or if models suggest that it will exceed a given OIL, then the countermeasure associated with this OIL should be implemented. The OILs are calculated to ensure that individuals who might be exposed under such circumstances would not receive an annual dose higher than a selected value. As such, this approach is based on implementing a series of countermeasures within areas where contamination levels may breach, or have already exceeded, a particular level.

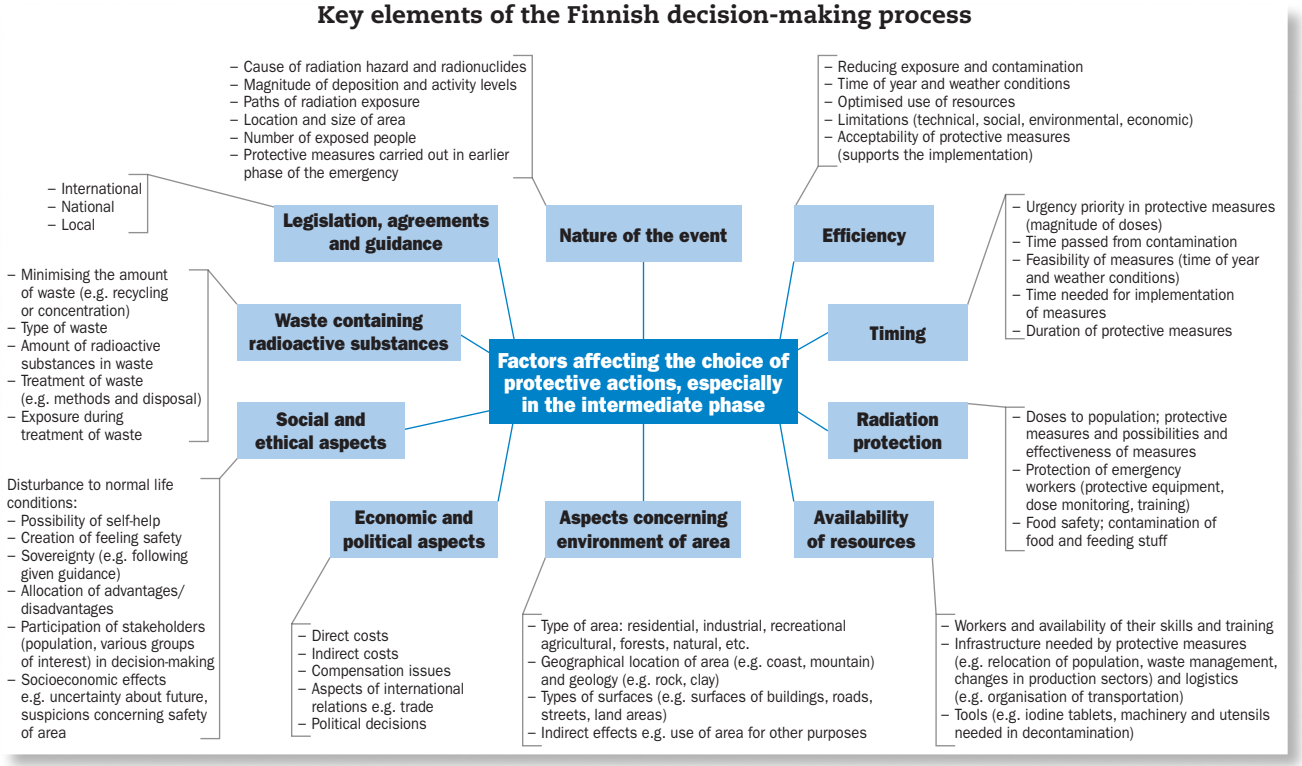
Functionally, the international peer review team found this approach to be very practical and based on a clear operational procedure. The team broadly agreed with the principles presented, in particular the use of OILs as a central strategy for managing a constantly evolving situation. It was noted that a more detailed description of how OILs fit into an overall protection strategy would provide a complete picture of the approach being taken in Finland.

Conclusions

Feedback from both the French ASN and the Finnish STUK suggests that the detailed, external input provided by the international peer review teams have been extremely valuable in refining the content of the guides so that they are more clear, concise, understandable and implementable. It should be recalled that both national policy documents reviewed are far more detailed and extensive than described here. The intent of this article was not to provide a review of the national policies themselves, but rather to give an overview of the review process and the main results of this NEA service to member countries.

In addition to being of value to the organisation that invites the review, the NEA peer review teams felt that their reviews had provided each of them with useful insights that could be of value in their own national approaches. In this context, the NEA is grateful to the ASN and the STUK for having requested these reviews. In order to allow all NEA members to take advantage of the extensive thinking undertaken in France and Finland on the important topic of post-accident consequence management, the results of these reviews will be published as reports of the NEA Committee on Radiation Protection and Public Health and made widely available.

Key elements of the Finnish decision-making process



STUK, Finland