

# Over a decade of nuclear emergency management at the NEA

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The OECD Nuclear Energy Agency has a long tradition of expertise in the area of nuclear emergency policy, planning, preparedness and management. Through its activities in this field, the Agency offers its member countries unbiased assistance on nuclear preparedness matters, with a view to facilitating improvements in nuclear emergency preparedness strategies and response at the international level. The 1986 Chernobyl accident demonstrated that nuclear accidents can have international consequences, highlighting the need for international co-operation, and leading to improvements in the areas of international communication, information exchange and harmonisation of response actions between countries.

From its inception, the NEA Working Party on Nuclear Emergency Matters has focused on improving the effectiveness of international nuclear emergency preparedness and management. Part of its work programme is set on exploring and developing new concepts and future procedures to enhance national and international preparedness and response management. A central approach to this has been

the preparation and conduct of the International Nuclear Emergency Exercise (INEX) series.

## The role of exercises

The effectiveness of existing nuclear emergency response plans and procedures needs to be regularly tested and proven. In most countries, nuclear emergency exercises, drills and tests are regularly performed at the local, regional and national levels. To explore the international aspects of nuclear accidents, the NEA initiated and established an international nuclear emergency “exercise culture”, starting with the 1993 INEX 1 table-top exercise, the first such exercise to be carried out at the international level. This table-top exercise brought together national nuclear emergency response organisations to address a simulated accident at a hypothetical reactor near the border of two fictitious countries. The results of this exercise highlighted the need for more detailed study of international issues, leading to

the development of the INEX 2 series.

Conducted between 1996 and 1999 and involving the simultaneous play of over 30 countries and 4 international organisations, the four INEX 2 exercises were built upon pre-planned national level exercises at existing power plants in Switzerland, Finland, Hungary and Canada. The INEX 2 exercises used real national and international emergency response centres, their hardware, procedures and personnel to address in real-time, a simulated accident at a real reactor. In addition to testing existing emergency management arrangements, procedures and communications in real-time, these exercises were intended to investigate processes for decision-making based on limited information, as well as the management of public and media information.

A fifth exercise, INEX 2000, was carried out in 2001, and involved 55 countries and 5 international organisations.

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Similar in scope to INEX 2, this exercise was organised under the auspices of the Inter-agency Committee on Response to Nuclear Accidents. It was designed to test the implementation of concepts and lessons learnt from the INEX 2 series, including the testing of new web-based data management and monitoring strategies, and the co-ordination of media information. This exercise also addressed for the first time, through an international workshop, questions of civil liability following a nuclear emergency.

INEX 2000 was successful in showing that significant improvements in response effectiveness could be achieved through improved data management, and resulted in increased efforts in this area within national emergency preparedness programmes. It also showed that there is still a need to improve efforts to co-ordinate information provided to the media and the public, as conflicting information can cause public confusion and lead to a loss of confidence in decision makers. On a national level, many countries participating in these exercises used the experiences and lessons identified to modify and improve national procedures for nuclear emergency preparedness and management. The INEX data management strategy is now being used in several NEA member countries as well as the international community in general.

Without question, the great majority of exercises conducted by either national authorities or international organisations have focused on the response arrangements for dealing with the early phase of a nuclear emergency. However, within the past few years, and particularly since the 2001 terrorist

attacks in the United States, there has been a growing desire among those involved in nuclear emergency management to master more thoroughly response in the later phases following a nuclear or radiological emergency. This can be loosely defined as the period after the crisis phase has passed and radioactive contamination has been released into the environment. The characterisation of contamination deposition may not be fully complete at the beginning of this phase. During this period, agricultural aspects will be increasingly important, and the involvement of stakeholders in decision-making processes will be significant. Evacuees will want to return to their homes, businesses and normal lives; individuals from the affected areas will wish to know with certainty their exposures and risks, and recovery activities will begin. A multitude of practical questions will arise during this period. Policy, structural and procedural aspects of consequence and recovery management must be in place for governments to respond appropriately. Social trust in government and its institutions could well be threatened should responses inadequately address the needs of stakeholders. For this reason, nuclear emergency management specialists are now focusing on identifying the details of the types of issues that will arise, and on developing effective implementation processes and structures for their resolution.

In order to investigate and address these "later-phase" issues, exercises involving consequence and recovery phase management have begun to be organised and conducted. These exercises are helpful in better understanding the nature and the dynamics of the coun-

termeasures to be taken after the early phase, and provide the room for extensive stakeholder involvement. This is true at both the planning stage and during the course of the exercise, due to the fact that decision making in the recovery stage needs to be closely adjusted to the local situation by a deliberation process involving national and local stakeholders.

In response to interest from member countries in later-phase issues arising after an emergency event, the NEA has now developed a third generation of exercises, INEX 3. The INEX 3 table-top exercise focuses on consequence management issues in the medium to late phase following the discovery of serious radiological contamination which may or may not be accidental in nature. Exercise objectives include an investigation of decisions on agricultural countermeasures and food restrictions, countermeasures in other areas such as travel and trade, recovery management and public information. The evaluation will compare national practices and aim to identify "best practice", aspects of national decision making which would benefit from international co-operation, and mechanisms for stakeholder involvement.

Given the table-top format, countries can perform the exercise individually or with neighbouring countries, depending upon strategic national interests. The NEA has developed and made available to interested countries a set of technical materials to assist in the development of their local exercise scenario. INEX 3 has been conducted by about 20 countries during 2005. Following completion of the national exercises, the NEA will host an

international evaluation workshop in the spring of 2006 to examine the collective outcomes, lessons and implications raised during these national exercises, and to consider areas for further investigation.

The INEX 3 exercise series has, in specific cases based on national decisions, involved a much broader range of participating organisations and representatives than in previous exercises. This has helped to broaden the scope of stakeholder involvement in emergency management, and to identify issues affecting emergency and post-emergency management that must be resolved through an inclusive emergency management process. As such, it will facilitate the development of mechanisms for incorporating these processes into emergency preparedness and response. Follow-up analyses will focus on issues relevant to managing and recovering from large contamination events, and the role of a broad range of stakeholders in this process, including the investigation of mechanisms for incorporating stakeholder involvement processes into emergency management arrangements.

### Exercise strategies

While international nuclear emergency exercises, such as the new INEX 3 exercise, are crucial for improving the effectiveness of nuclear emergency preparedness and response management, there is a complementary need to address the strategy of emergency exercises from the broader perspective of their role, value and effectiveness within emergency management programmes.

The INEX programme has been built upon the collective experience of its members

within their own national emergency preparedness programmes, as well as their emergency response experience. The NEA Working Party on Nuclear Emergency Matters is analysing this experience to develop key strategies for developing and holding national nuclear emergency exercises. This work will provide national emergency management authorities with strategies for their exercise programmes. Such policy-level considerations could include:

- identification of key issues;
- reasons for and objectives of exercises;
- types and frequency of exercises, and links to objectives;
- maximising value and efficiency;
- types and levels of involvement; and
- role of stakeholders in exercise development, conduct and analyses.

It is envisaged that this work will find practical applicability among national and international emergency authorities, providing strategies and insights on exercise justification, design, conduct and evaluation based on the collective experience of the Working Party.

### Future directions

While recognising the major role of emergency exercises within the Working Party activities, this group is now in the process of identifying other specific areas of nuclear emergency management that would benefit from its attention. In addition to the above-mentioned development of strategies for emergency exercises, potential topics could include an analysis of appropriate levels of harmonisation among national approaches, the implementa-

tion of lessons learnt in national and international training programmes, “best practices” in nuclear emergency management, decision-making strategies, and mechanisms for stakeholder involvement in emergency management issues.

The NEA Working Party on Nuclear Emergency Matters has developed its exercise series over the past 15 years to facilitate a practical investigation of issues in nuclear emergency management within a unique international context. As the Working Party considers its future programme of work, interest has been expressed in moving towards a full-spectrum understanding of all relevant technical and social issues in emergency management, from response planning to rehabilitation. Collaborative work and joint undertakings between the NEA Committee on Radiation Protection and Public Health and the NEA Nuclear Law Committee will play an important role in ongoing analyses of the link between emergency management decisions and long-term post-accident recovery, including mechanisms for stakeholder involvement. International exercises will continue to provide an important venue for investigating and testing such mechanisms in an interactive and international setting. ■