

Radiation Protection

Committee on Radiation Protection and Public Health (CRPPH)

Mission

To assist Member countries in the application and further development of the system of radiation protection as well as to identify and address conceptual, scientific, policy, regulatory, operational and societal issues in a timely and prospective fashion, and to clarify their implications.

Highlights

- The CRPPH analysed the system of radiation protection and published a critical review aiming at consensus on how the system of radiation protection should evolve.
- The CRPPH initiated a discussion on stakeholder involvement in radiation protection decision making in order to help achieve a better integration of radiation protection in modern society.
- The INEX 2 series of regional international nuclear emergency exercises was completed, offering many lessons learned and resulting in improved emergency response capabilities worldwide.
- Participation in the ISOE system on occupational exposure at nuclear power plants reached a new high, including some 92% of the world's operating nuclear power plants (see page 28 for more information).

The evolution of the system of radiation protection

The CRPPH became increasingly engaged in the development of a new system of radiation protection intended to be more broadly understood and accepted. A *Critical Review of the System of Radiation Protection: First Reflections of the CRPPH* was published during the year. As a follow-up to this publication, the CRPPH will prioritise the areas identified in the Critical Review and help to develop consensus on improvements to be made. The CRPPH also actively engaged in a direct dialogue with the International Commission on

Radiological Protection (ICRP) regarding new approaches initiated by its Chairman. The CRPPH is thus acting as a focal point for the development of consensus in terms of policy, regulation and application. The concepts developed will be applied to specific case studies to test whether they result in a "clearer", more transparent, and coherent system of radiation protection.

The social process of radiological risk identification, assessment and management

In addition to the above-mentioned work on the system of radiation protection, the CRPPH feels that the "process" of radiation protection decision making must also evolve to better meet the needs of modern society. Society is showing an increasing desire to participate more actively in decision-making processes involving environmental and public health issues. At the same time, industry, governments and regulatory bodies have acknowledged the need to increase

For radiation protection purposes, plant personnel must change shoe covers and gloves before passing the decontamination check.



transparency in their operations. It is in view of this situation that the CRPPH has been examining stakeholder involvement in the identification, assessment and management of radiological risk.

In order to better understand how various players interact in the "process" of radiation protection risk identification, assessment and management, the CRPPH organised the first Villigen Workshop in 1998 to address "Decision Making in Complex Radiological Situations". As a follow-up, preparations were made during 2000 for a Second Villigen Workshop on "Better Integration of Radiation Protection in Modern Society", to be held in January 2001. The workshop was to address the new context of risk governance and modern theories of social conflict resolution; emerging expectations of society towards risk policies; national experiences in stakeholder involvement in radiological risk, assessment and management; and the evolving role of international expertise in structuring the system of radiation protection. Proceedings of this workshop will be published in 2001.

Radiological impacts of spent nuclear fuel management options

An important technical study on *Radiological Impacts of Spent Nuclear Fuel Management Options*, aimed at facilitating informed international discussions on the nuclear fuel cycle, was published in 2000. The study was prepared at the request of the OSPAR Commission, established under the international Convention for the Protection of the Marine Environment of the North-East Atlantic.

The study compares the radiological impacts on the public and on nuclear workers resulting from two approaches to handling spent fuel discharged from nuclear power plants: the reprocessing option, which includes the reuse of the separated plutonium in MOX fuel, and the once-through option, with no reprocessing of spent fuel and its direct disposal.

The report concludes that:

- The radiological impacts of both the reprocessing and the non-reprocessing fuel cycles studied are small, well below any regulatory dose limits for the public and for workers, and insignificantly low compared with exposures caused by natural radiation.
- The difference in the radiological impacts of the two fuel cycles studied does not provide a compelling argument in favour of one option or the other.

The study also points out that other factors, such as resource utilisation efficiency, energy security, and social and economic considerations would tend to carry more weight in decision-making processes.

INEX

The INEX 2 series of four international nuclear emergency exercises was completed at the end of 1999, and the analysis of the lessons learned began in early 2000. Based on the four objectives of the INEX2 series, many specific national and international lessons in operational nuclear emergency planning, preparedness and management were learned. The INEX 2 series resulted in the publication of *Monitoring*

and Data Management Strategies for Nuclear Emergencies, which defines emergency monitoring needs, and proposes strategies meant to assist decision makers by improving the selection of data to be transmitted and the way in which data and information are transmitted and received.

In order to identify how participants have incorporated the lessons learned from the INEX 2 exercises and to test the features of these newly developed strategies, an international nuclear emergency exercise, INEX 2000, was prepared, to be held in France on 22-23 May 2001 at the French Gravelines nuclear power plant (900 MWe PWR), with the participation of at least 36 countries and 3 international organisations. A new objective included in this international nuclear emergency exercise will be to test the mechanisms for the implementation of the Conventions on nuclear third-party liability. This aspect will be covered in a workshop to be held in Paris in October 2001. In parallel to the preparations for the INEX 2000 exercise, the CRPPH Working Party on Nuclear Emergency Matters has begun discussing future international nuclear emergency exercises, INEX 3.

Comparative risk assessment and management

Several years of work on the subject of comparative risk assessment and management culminated in the wide distribution of a report on risks related to public and worker exposure to radiation, asbestos, and nickel aerosols from the petro-chemical industry. The report concludes that the management and assessment issues in the three cases have close similarities. The dose-effect relationships established for ionising radiation based on the follow-up of survivors of the bombing of Hiroshima and Nagasaki are comparable to the dose-effect relationships established for asbestos and certain nickel compounds based on the epidemiological study of various situations involving occupational exposure. It is, therefore, generally accepted, as part of the management of cancer risks, that it is legitimate to extrapolate these relationships to low levels of exposure. Subject to some limitations, protective actions against exposures to both asbestos and nickel aerosols can in principle be taken on the basis of the optimisation principle, as is the case for ionising radiation. In addition, the existence of a level of residual risk is accepted in all three cases, to the extent that protective action is not aimed at achieving zero risk. Other similarities and differences in the assessment and management of these three risks are detailed in the report.

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