IRSN INSTITUT DE RADIOPROTECTION ET DE SÛRETÉ NUCLÉAIRE

Enhancing nuclear safety

Emergency preparedness and response capability: a national, regional and international challenge

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IRSN: science and values (knowledge, independence, proximity) in support to nuclear safety





IRSN: enhancing nuclear safety through 4 key missions

- Provide scientific and technical support to public policies for nuclear safety, security and radiation protection
- Provide radiological monitoring for people and the environment
 - In the event of a nuclear or radiological emergency,
 - provide to public authorities real time independant assessments of the situation (plant safety; radiological situation), based on expert analysis, modeling, and field measurement results
 - Propose appropriate counter measures in order to optimize the protection of the public and of economic and agricumtural activities
 - Contribute to public information
- Develop research and training programs in support to nuclear safety and radiation protection
 - Nuclear fuel safety, severe accidents, source term modelling (ASTEC)
 - Radioecology (species and ecosystems approaches)
 - Stem cell treatment of radiological burns
 - Epidemiology, and radiobiology of low dose effects (MELODI)
 - Emergency preparedness, economics of nuclear accidents



Is nuclear emergency preparedness a « real » issue?

- Yes: core melt accidents leading to large releases cannot be totally eliminated with current power reactor technologies,
- As a consequence, nuclear safety policies must vigorously address not only accident prevention issues, but also emergency management (avoiding or delaying releases) and mitigation issues (reducing radiological consequences)



Is preparedness robust enough?? (1)

Typical nuclear emergency preparedness measures include:

- Sheltering and evacuation of population within a maximum preset distance from the plant
- Providing stable iodine to relevant populations within this radius in order to mitigate health consequences of exposure to early releases
- Providing specialized hospital care in the event of severe irradiation or contamination cases



Is preparedness robust enough?? (2)

Lessons learnt show however that:

- The execution of planned measures can prove difficult in unforeseen complex situations,
- Significant releases may cover significantly larger distances than expected, potentially affecting several countries
- Lack of timely data and situation analysis may lead to communication problems and a loss of confidence by the public

A need to be « prepared », not only in accordance with text books and regulations, but also to confront the unforeseable



Improving preparedness: The way forward is national, regional, and international

- Emergency response is a national prerogative
- When several neighbouring conutries are involved, cross border coordination is nevertheless a key success factor
- Access to information and to expertise could be facilitated by innovative international programmes under the aegis of IAEA/IEC
 - To provide a framework for the flow of appropriate data towards the international community
 - To provide, through dedicated networks, real time expert analysis of the ongoing situation
 - To propose added value information for use by member states



Nuclear Accidents need not be a fatality

- Nuclear technology research should focus more on safety; a vital issue, because the perception of risks by the public is growing faster than the safety achievements of the nuclear industry.
- The huge societal and economic costs of large nuclear accidents are in part due to a lack of understanding the radiobiological effects of chronic exposure to very low levels of radioactivity, which leads to exacerbate regulatory and societal requirements. Multidisciplinary research on low dose effects is another top priority.



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IRSN looks forward to enhanced international cooperation on emergency preparedness

Thank you for your attention



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