Protection strategies - National and Regional Experience

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Norway: Nuclear and Radiological Threats
Protection strategy for an emergency

GRS Part 7:

«…protection strategies … for taking protective actions and other response actions effectively in a nuclear or radiological emergency.»

«On the basis of the … protection strategy, national generic criteria for taking protective actions and other response actions, expressed in terms of projected dose or dose that has been received, shall be developed…»

«… justified …, with account taken not only of those detriments that are associated with radiation exposure but also of those associated with impacts of the actions taken on public health, economy, society and the environment.»
Protection strategies in emergencies

Scope:
- Life
- Health
- Environment
- Society

Objectives:
- Avoid deterministic effects
- Reduce stochastic effects
- Reduce psycho-social effects
- Reduce other consequences

Strategies:
- Protective actions
- Communication
- Crisis Committee for Nuclear Preparedness
- Situation assessment
Norway: Nuclear and radiological EPR

Crisis Committee for Nuclear Preparedness:
- Norwegian Radiation Protection Authority (leader, secretariat)
  - Norwegian Radiation Protection Authority (member)
  - Norwegian Directorate for Civil Protection
  - Norwegian Armed Forces
  - Norwegian Directorate for Health
  - Norwegian Coastal Authority
  - Norwegian Food Safety Authority
  - National Police Directorate
  - Ministry of Foreign Affairs

Advisers to the Crisis Committee for Nuclear Preparedness:
- Norwegian Institute for Agricultural and Environmental Research
- Directorate of Fisheries
- Norwegian Defence Research Establishment
- Institute for Energy Technology
- Institute of Marine Research
- Norwegian Meteorological Institute
- Norwegian Environmental Agency
- National Institute for Public Health
- Geological Survey of Norway
- Norwegian Polar Institute
- Norwegian Center for NBC Medicine
- Norwegian University of Life Sciences
- Norwegian Veterinary Institute
Mandate of the Crisis Committee

Delegated from the Government (August 2013)

• Give coordinated advice or order implementation of protective actions to protect life, health, the environment, and other important public interests in the acute phase of an event.

• Order and process information, prognoses and monitoring data to assess the situation and its development.

• Provide information to authorities, media and the public.

• Advises ministries and other authorities in all phases of events.
Planning scenarios

Scenario 1
Large airborne release from foreign facility

Scenario 2
Large airborne release from domestic facility

Scenario 3
Local event with mobile source

Scenario 4
Local event developing over time

Scenario 5
Release to marine environment

Scenario 6
Accident abroad affecting Norwegian interests
Challenges in EPR

Status
• Good organisation and planning basis
• Formalized co-operation with stakeholders
• Positive development

Challenges
• Protection strategies
• Maintaining competence
• Maintain and develop crisis management capabilities
Strategy for managing radioactivity in food, drinking water and feed

National co-operation:
- Norwegian Radiation Protection Authority
- Norwegian Food Safety Authority
- Advisors

Governmental responsibilities:
- Monitoring capacities
- Regular control and monitoring
- EPR
Cornerstones of Nordic cooperation

1. Nordic cooperation
   • Joint Nordic working group on EPR (NEP)
   • Joint Nordic working group communication (NPC)
   • Nordic meteorological co-operation (METNET)
   • Nordic Nuclear Safety Research (NKS)

2. Joint Nordic Manual for co-operation in EPR (NORMAN)

3. Joint Nordic Guidelines and Recommendations

[Altonen: Nordic Approach to EPR, CA Meeting 2014]
Protective measures

Early phase:
- Population and emergency workers
- Foodstuff and other goods

Intermediate phase:
- Population and workers
- Environment and industry
- Foodstuff and water

Criteria for implementing and lifting:
- Dose in defined time period
- Triggers
- Operational intervention levels

http://www.nrpa.no/filer/56bc06c397.pdf
Factors affecting decision making

Efficiency
- minimizing amount of waste (e.g., recycling or concentration)
- type of waste
- amount of radioactive substances in waste
- treatment of waste (e.g., methods and disposal)
- exposure during treatment of waste

Nature of the event
- cause of radiation hazard and radionuclides
- magnitude of deposition and activity levels
- paths of radiation exposure
- location and size of area
- amount of exposed people
- protective measures carried out in earlier phase of the emergency

Legislation, agreements and guidance
- international
- national
- local

Factors affecting choice of protective measures especially in the intermediate phase

Waste containing radioactive substances

Social and ethical aspects

Economical and political aspects
- direct costs
- indirect costs
- compensation issues
- aspects of international relations (e.g., trade)
- political decisions

Aspects concerning environment of the area
- type of area: residential, industrial, recreational, agricultural, forests, natural, etc.
- geographical location of area (e.g., coast, mountain) and geology (e.g., rock, clay)
- types of surfaces (e.g., surfaces of buildings, roads, land areas)
- indirect effects (e.g., use of area for other purposes)

Radiation protection
- doses to people; protective measures and possibilities and effectiveness of measures
- protection of emergency workers (protective equipment, dose monitoring, training)
- food safety: contamination of foodstuffs and feeding stuffs

Timing
- urgency priority in protective measures (magnitude of doses)
- time passed from contamination
- feasibility of measures (time of year and weather conditions)
- time needed for implementation of measures
- duration of protective measures

Availibility of resources
- Workers and availability of their skills; training
- Infrastructure needed by protective measures (e.g., relocation of people, waste management, changes in production sectors) and logistics
- tools (e.g., iodine tablets, machinery and utensils needed in decontamination)

Disturbance to normal life conditions
- possibility of self help
- creation of feeling safe (e.g., information received)
- sovereignty (e.g., following given guidance)
- allocation of advantages / disadvantages
- participation of stakeholders (population, various groups of interest) in decision-making
- socioeconomic aspects (e.g., uncertainty about future, suspicions concerning safety)
Exposure vs other factors

Proportions of various factors

Exposure

Other factors

0.1 - 1 mSv
1 - 10 mSv
10 - 100 mSv

Dose/year
The reference level

Background:
• Norway non-EU member.
• Not defined in the Nordic guidelines and recommendations.

National approach (so far):
• Not defined in regulations or plans
• Viewed as a planning goal

The overall strategies are important to Norway.
Conclusion

Protection strategies includes **protective actions and other response actions**:

- Protective actions
- Communication
- Situation assessment.

Protection strategies should be developed through national and regional co-operation

- Promotes mutual understanding and trust
- Promotes compatible response
- Saves resources
Thank you for your attention!