

RECENT RECOMMENDATIONS ON EMERGENCY EXPOSURE SITUATIONS & A DISCUSSION ON SETTING REFERENCE LEVELS

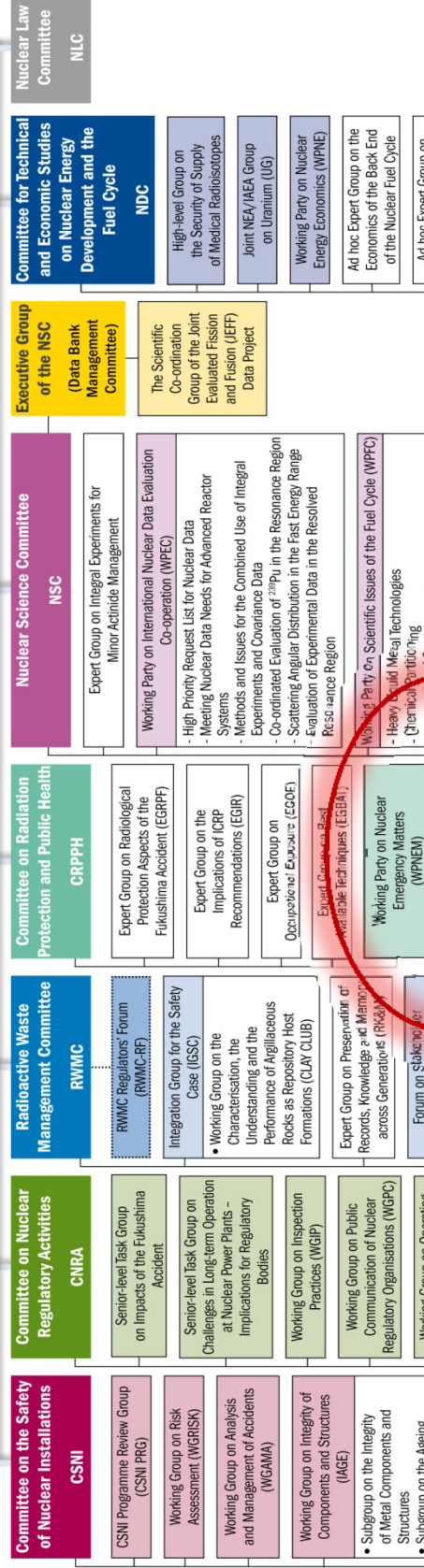
P. MILLIGAN (USNRC), O. ISNARD (IRSN), H. AALTONEN (STUK),
J. M. MARTIN CALVARRO (CSN), D. RAUBER (FCOP), M. L. PERRIN (ASN),
E. WIRTH (Bfs), T. HOMMA (JAEA), L. HUBBARD (SSM),
B. AHIER (Health Canada), A. LITTLE (HSE), W. RASKOB (KIT),
W. WEISS (BMU), H. B. OKYAR (OECD/NEA)

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Committee Structure of the OECD Nuclear Energy Agency (NEA)

Steering Committee for Nuclear Energy



Mission of the WPNEM

- to improve nuclear emergency management systems within member states
- to share its knowledge and experience widely.
- WPNEM activities focus on identified needs in planning, preparedness and response for the “early” and “intermediate” phases of a nuclear/radiological emergency with a view towards preparation of recovery actions.
- The programme of work is developed in co-ordination with member states and other international organizations.

Committee on Radiation Protection and Public Health (CRPPH)

Expert Group on Radiological Protection Aspects of the Fukushima Accident (EGRPF)

Expert Group on the Implications of ICRP Recommendations (EGIR)

Expert Group on Occupational Exposure (EGOE)

Expert Group on Best Available Techniques (EGBAT)

Working Party on Nuclear Emergency Matters (WPNEM)

- Expert Group on the Implementation of International Recommendations for Emergency Situations (EGIRES)

- Proposed during the WPNEM 33rd Meeting (4-5 May 2010)
- Approved by the CRPPH during the 68th meeting (18-20 May 2010)

OECD/NEA joint projects in the area of radiological protection:

- Information System on Occupational Exposure (ISOE)

EGIRES Report

- **EG on International Recommendations for Emergency Exposure Sit'ns:**
 - Investigate issues in, and approaches to, implementation of the new ICRP recommendations and revised BSS in emergency exposure situations.
 - Draft detailed outline for a report on issues in and approaches to implementation
- **Title:** Implementation of ICRP Recommendations – Discussion on Optimization in emergency preparedness and response with special focus on reference levels
 - Optimization / Process of stakeholders / More practical issues / Intervention levels- termination of protective actions
- Supporting Survey: Questions on National Experiences
 - Optimization of Protection
 - Use of Reference Levels

EGIRES Report

Scope	<ul style="list-style-type: none"> • Category of events (nuclear and radiological emergencies and incidents including malicious acts)
Chapter 1: Recommendations on Emergency exposure situations	<ul style="list-style-type: none"> • ICRP recommendations and revised BSS in brief and emergency exposure situation (phases) • Definition of optimization and reference levels
Chapter 2: Emergency exposures for urgent and intermediate phases	<p>Process and optimization of the overall strategy for urgent and intermediate phases including impact on protection strategies for longer term</p>
Chapter 3: Reference Levels	<ul style="list-style-type: none"> • Establishment and use of reference levels <ul style="list-style-type: none"> ◦ Age dependent reference levels ◦ Event specific • Dose quantities • Process to adjust the reference level in transition from early to intermediate and to long term phase • National criteria in setting reference levels (feedbacks from the EGIRES survey)
Chapter 4: Optimization in emergency preparedness and response	<ul style="list-style-type: none"> • Establishment of process for optimization of the protection strategy for emergency exposure situations and existing exposure situations resulting from an emergency • Optimization in terms of ALARA in emergency exposure situations (optimization of urgent / intermediate protective actions) • Role of stakeholders (in preparedness and response) • Preparing for an optimized response • Member State experiences (feedbacks from the EGIRES survey)
Chapter 5: Conclusions	

EGIRES – Survey on National Experiences (1)

1. Optimisation of Protection Strategies

- Have you established a process for optimization of protection strategies for emergency exposure situations and existing exposure situations resulting from an emergency?
 - If No: Why not?
 - If Yes: How do you define optimization strategy as used in your country?
- Do you optimize protective actions within your strategy separately or in combination?
- Do you optimize urgent protective actions? If yes, how?
- What process do you plan to use for optimization?
- For whom and by whom will the plans be “optimized”?
- Do you have any specific triggers for optimization and their use?

EGIRES – Survey on National Experiences (2)

2. Reference Levels

- Do you use reference levels (RLs)?
 - If No: Why not?
 - If Yes: What are your national criteria in setting RLs?
- How are they used? (in planning, in response phase, etc)?
- What process/authority establishes the RLs?
- Who uses RLs and to what extent? (regulators, operators, response planners and decision makers, etc)
- What quantities are used (projected residual, averted, received)?
- Do you have any specific triggers for specific RLs?
- Are RLs “event specific”?
- Do you have any process to adjust the RLs in transition from early to intermediate and to long term phase?

Survey Results

- Two rounds: Oct 2011 – Dec 2011
 - Response from 13 countries
- General responses (not specific to questions)
 - Processes often governed by legislation (eg, Euratom, adoption of new BSS, intervention levels)
 - Country-specific arrangements
 - Intervention measures (adjustment and termination) – competent authority
 - Use of reference levels (different translations in languages)
 - Projected dose without interventions
 - Initiation of urgent protective actions based on pre-defined protection strategy and respective triggers for various types of emergencies

Survey Results

Range of responses

- NO formal process for optimization or RLs, but working on a strategy for optimization; the concept of optimization is ingrained in the approaches used to develop advice and guidance
- NO for optimization of protection, but YES for RLs;
 - Used in planning phase to determine planning zones
 - Used in response phase to determine if protective actions should be taken
- Some countries have some specific legal documents addressing optimization strategy
 - US: Protective Action Guidance (risk-based action levels)
 - Finland: Guides concerning protective measures during early and intermediate phases of a nuclear or radiological emergency

Processes for optimization of the protection strategy

- Involvement of large group of stakeholders (governmental, regional and local authorities, licensees and private sector)
- Details in guidelines (concerning protective measures/ short-term countermeasures)
- Guides: emphasize optimization process in recommending and deciding upon protective measures, and comparing residual dose to chosen reference level.
- However, during an emergency there are many factors effecting decision making and radiation exposure is only one of them (e.g. prevailing circumstances, timing, resources, capabilities, social and ethical factors, financial consequences).

Do you optimize protective actions within your strategy separately or in combination?

- **Both approaches reported**
 - Each protective measure has its own criteria above which action is needed, but this does not mean that below the specific criteria of an action, protective measure will not be initiated.
 - Protective measures may be carried out even on low level of exposure especially when they are easy and sensible.
 - During response phase protective measures will be carried out in combination, for example:
 - Early phase: sheltering indoors, iodine prophylaxis, access control, measures concerning agriculture and production.
 - Intermediate phase: combination of protective measures including short term evacuation, decontamination, access control and measures concerning agriculture and production.

What process do you plan to use for optimization?

- Competent authority / regulatory body makes safety assessments with respect to safety of population, environment and society.
 - Recommendations and advice on what protective measures should be considered to carry out
 - Recommendations and advice are always supplemented by reasoning (including magnitude of exposure and effectiveness of protective measures) for decision making process.
- In decision making process, other factors are included in optimization.

For whom and by whom will the plans be “optimized”?

- Competent authority / regulatory body - key advisor body in recommending protective measures to all organizations having responsibility to take care of the situation

Do you have any specific triggers for optimization and their use?

- The reference levels themselves serve as triggers
- Triggers such as plant conditions, duration of sheltering etc.

Use of Reference Levels (RLs)

- Influenced by relevant legislation and recommendations.
- Also consider practicality of implementation, international guidance, projected doses from scenarios considered in planning, RLs adopted by neighboring countries.

How are they used? (in planning, in response)

- Mainly both, and used for facility regulation, for emergency response preparedness exercises and drills
- In planning only, but would be used in early phase of response as a metric for determining if enough is being done to protect population.

Who uses RLs and to what extent?

- Authorities, operators, planners, responders, etc
- Used mostly by response planner/advisors in RP. Also considered by other Government Departments (including response planners and potential decision makers)

Do you have any specific triggers for specific RLs?

- RLs themselves serve as triggers, if dose projections approach what is set.
- However, no official operational intervention levels derived from the RLs itself are in use at the moment.

Are reference levels “event specific”?

- No, general and applied to all kind of situations.

Dose quantity used?

- Mainly averted and protected dose
- Averted dose is used for emergency response, and projected residual dose is used for final cleanup decisions.

Do you have a process to adjust the RLs in transition from early to intermediate and to long term phase?

- Formal processes generally not defined

Discussion

WPNEM website: <http://www.oecd-nea.org/rp/wpnem/>
EGIRES website: <http://www.oecd-nea.org/rp/egires.html>