

Tolerability and Reasonableness in Post-Accidental Situation

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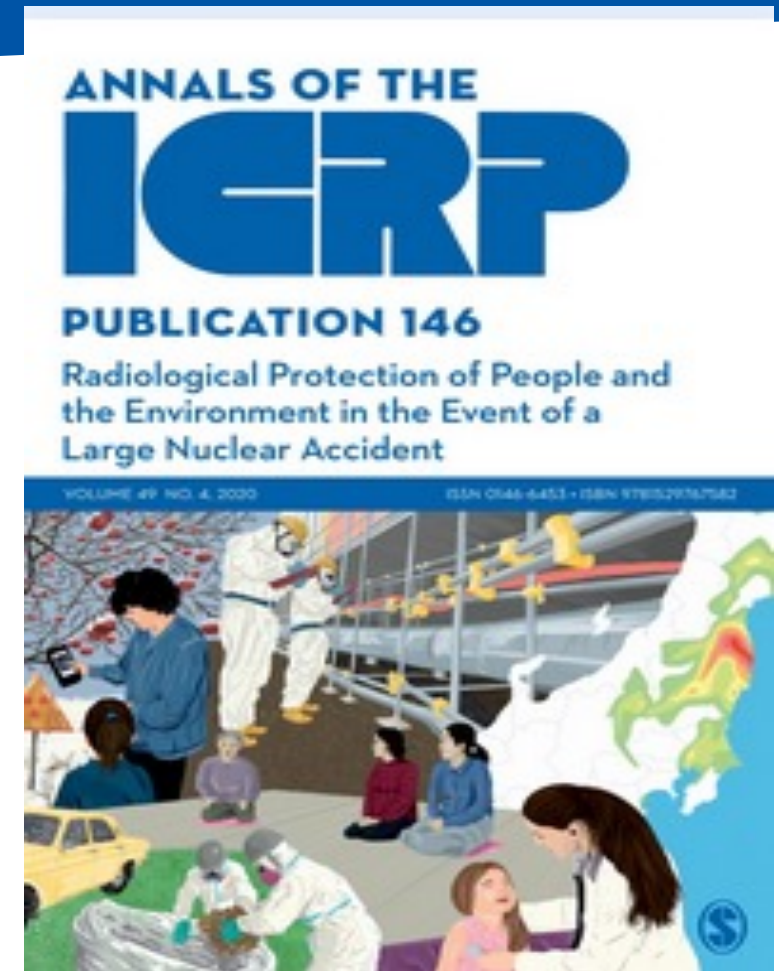
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Introduction (1)

- **Tolerability** of risk and **reasonableness** at the heart of the optimisation process with the **ALARA** approach
- Questions to be addressed for a specific exposure situation:
 - Can the doses received or potentially received by exposed people be considered **tolerable, with regard to the radiation-induced risk?**
 - Are all exposures maintained or reduced as low as **reasonably achievable**, taking into account **economic, societal and environmental factors?**
 - How to account for the harm related to the **change in lifestyle?**
- **Long history!** Concepts were on the agenda of ICRP Publication 1 (1959) and are largely developed in Publication 60 and Publication 101b
- On-going discussions at national and international levels for clarification and creation of **ICRP TG114** in 2019

Introduction (2)

- Some **key issues** from ICRP Pub 146 (2020) and feedback from Fukushima Daiichi NPP accident
 - Tolerability for the involvement of **responders**
 - Debate on the selection of reference levels for the order of **evacuation** and for its lifting
 - Discussion on the criteria for the selection of the **protective actions**
 - Food management; Decontamination; ...
 - Key issues for the management of soil issued from **decontamination**
 - Dealing with **treated water** from Fukushima Daiichi NPP



Revised framework (1)

Tolerability of risk is a combination of:

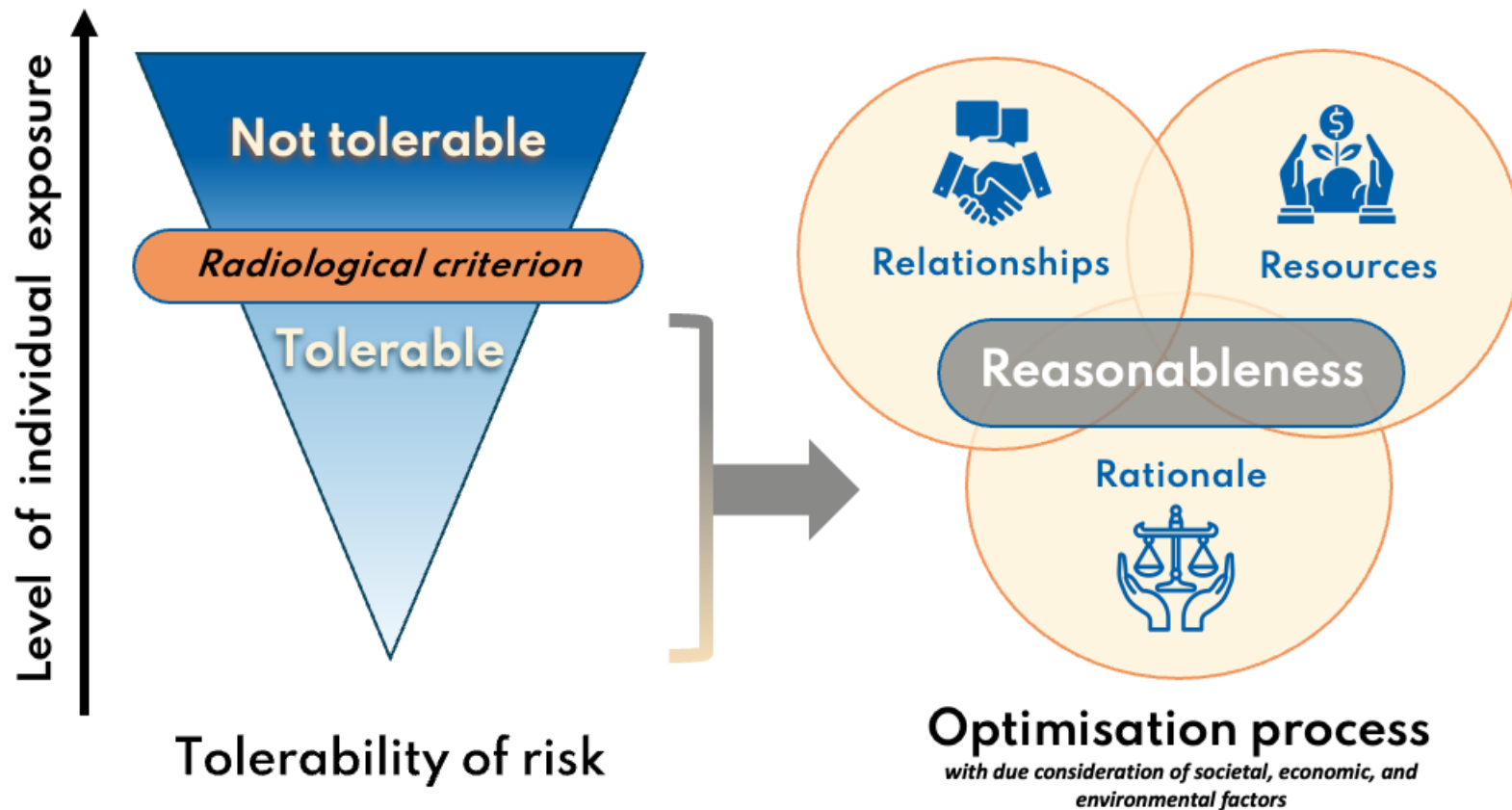
- Risk that is bearable in a specific context based on the current values of society
- Individual and societal level of risk (including considerations on the “construction of the health detriment”)
- Qualitative judgement (depending on various components and on the specific exposure situation and context)

Revised framework (2)

Reasonableness refers to:

- Good judgement, fairness, practicability, moderateness, appropriateness
- Optimisation as a deliberative process involving stakeholders to achieve a workable approach
- Integrating economic, societal, environmental and ethical considerations in the process

Application of Tolerability and Reasonableness for the different types of exposure situation

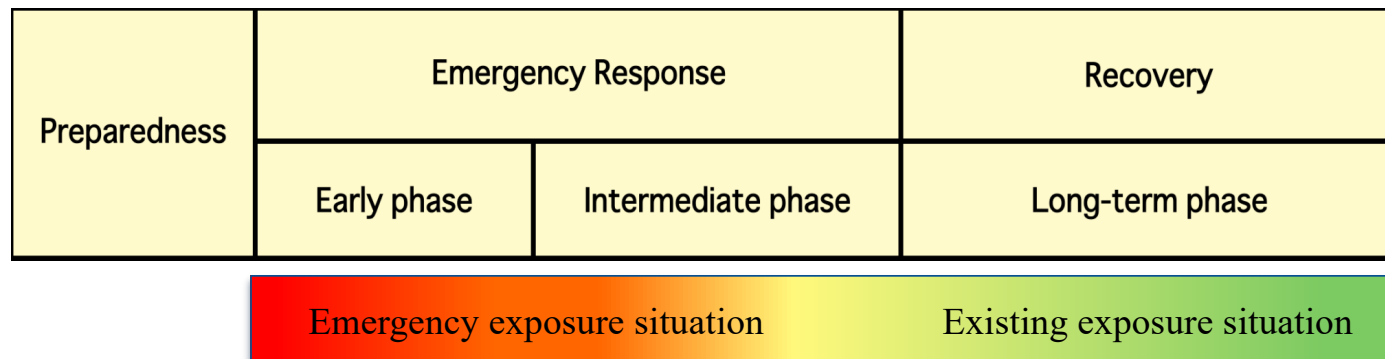


Current Reflections by TG114

- The aim is to reach a “**good and proportionate level of protection**” with due consideration given to the **individual and societal level of risk** associated with ionising radiation under the specific circumstances, but not only.
- To address the **societal, economic and environmental factors**, considerations should be given to the concepts of well-being, sustainable development, and an all-hazards approach.
- To ensure the respect of **ethical values** and to rely on **stakeholder involvement** to achieve a **sustainable protection**.

Considerations on tolerability and reasonableness for the management of nuclear accident

- Key role in the selection of **reference levels** to guide the optimisation and set up the border for tolerability
- Importance of the **dynamics** from early phase to recovery
- Decision relying on **multifactor considerations**



Key role in the selection of the reference levels to guide the optimisation and set up the border of tolerability

3 key values under considerations:

100 mSv, 20 mSv/a and 1 mSv/a: better explain the rationale in terms of tolerability

Possible considerations on lifetime risk (or risk for specific period of time)

Take into account exceptional circumstances notably for responders

	Early Phase	Intermediate Phase	Long-Term Phase
Responders on-site	100 mSv or below* Could be exceeded in exceptional circumstances [†]	100 mSv or below* May evolve with circumstances* ^{†‡}	20 mSv per year or below
Responders off-site	100 mSv or below* Could be exceeded in exceptional circumstances [†]	20 mSv per year or below [‡] May evolve with circumstances	20 mSv per year or below in restricted areas not open to the public Lower half of the 1 to 20 mSv per year band in all other areas [¶]
Public	100 mSv or below for the entire duration of both the early and intermediate phases [§]		Lower half of the 1 to 20 mSv per year band with the objective to progressively reduce exposure to levels towards the lower end of the band, or below if possible [¶]

Importance of the dynamics from early phase to recovery

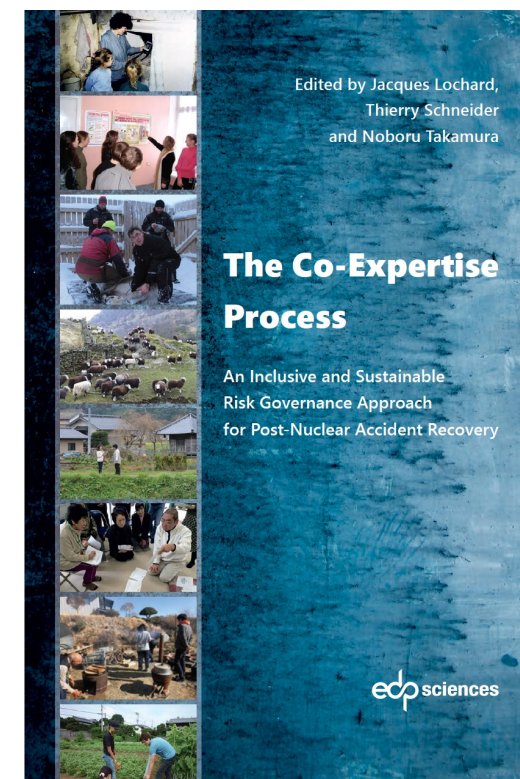
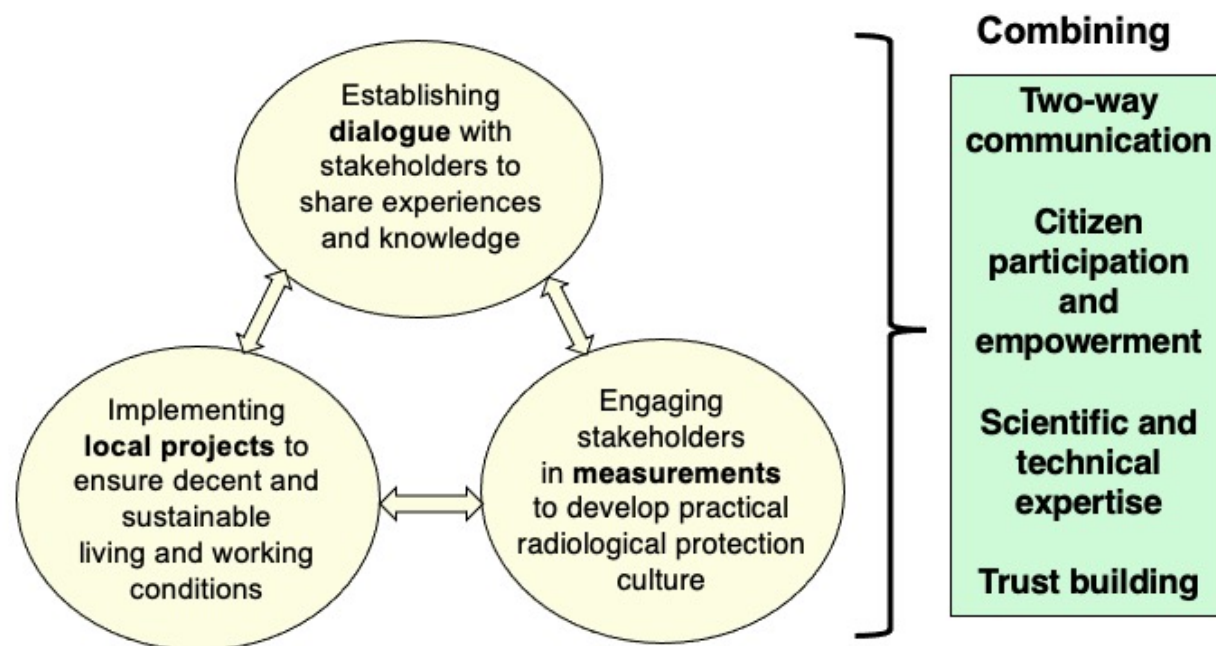
- Coping with **exceptional circumstances** in early phase
 - Specific consideration to secure the installations or to save life leading to tolerate higher level of exposure
 - Quick decision to be taken but with relevant information and consent
- Aiming at ensuring **decent and sustainable living and working conditions**
 - Tolerability and reasonableness should evolve with time including “value judgement” to cope with the specific circumstances
 - Need to consult and inform on the rationale for the evolution of tolerability and reasonableness
 - Evolution to be anticipated to avoid loss of trust and misinterpretation
 - Require clear explanation and discussion on the selected radiological criteria and characteristics of the implementation of protective actions

Decision relying on multifactor considerations (1/3)

- ICRP recommends that the **first priority should be the avoidance of cases of direct severe tissue/organ damage** (deterministic effects) for few people more exposed because of their duties both on-site and off-site.
- For affected areas with a lower level of contamination, the authorities may decide to **allow people to stay or return** to their homes and to live there permanently, considering the expected levels of exposure and the ability to recover sustainable and suitable living and working conditions in a reasonable timeframe.
- Such decisions **should be duly justified based on all the information available** concerning the radiological situation, and the state of infrastructure and services in these areas.

Decision relying on multifactor considerations (2/3)

- Importance of co-expertise and stakeholder involvement



<https://buff.ly/kXOgKWT>

Decision relying on multifactor considerations (3/3)

- Key role of **ethical values** to respect dignity and autonomy of citizens and ensure decent living and working conditions
- The rehabilitation of decent and sustainable living conditions must be based on a '**long term vision of the territory**' co-negotiated between all the actors concerned
- **The challenge is to articulate a sustainable framework:**
 - To promote constant **improvement of the radiological protection** of people and the environment
 - To restart **social and economic activities**
 - To accompany the emergence of **new and innovative activities** in line with the local context
 - To **support local projects** led by individuals or communities



In Summary

- Crucial role of **tolerability and reasonableness** to manage emergency and post-accident situations
 - Coping with **exceptional circumstances** in early phase
 - Selecting the **relevant radiological criteria** adapted to the prevailing circumstances
 - Key role of **stakeholder engagement** and **co-expertise** process
 - Ensuring radiological protection of people and the environment with due consideration on **sustainable development**

The logo for the International Commission on Radiological Protection (ICRP). It features the letters 'ICRP' in a bold, blue, sans-serif font. The 'I' is a simple vertical bar. The 'C' is a thick, rounded shape. The 'R' and 'P' are also thick and rounded, with the 'R' having a small horizontal bar across its middle and the 'P' having a small horizontal bar across its middle. The logo is set against a white background with a blue geometric shape on the right side.

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