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Swiss Federal Nuclear Safety Inspectorate ENSI

The justification principle for nuclear facilities

KSR Radiation Protection Workshop

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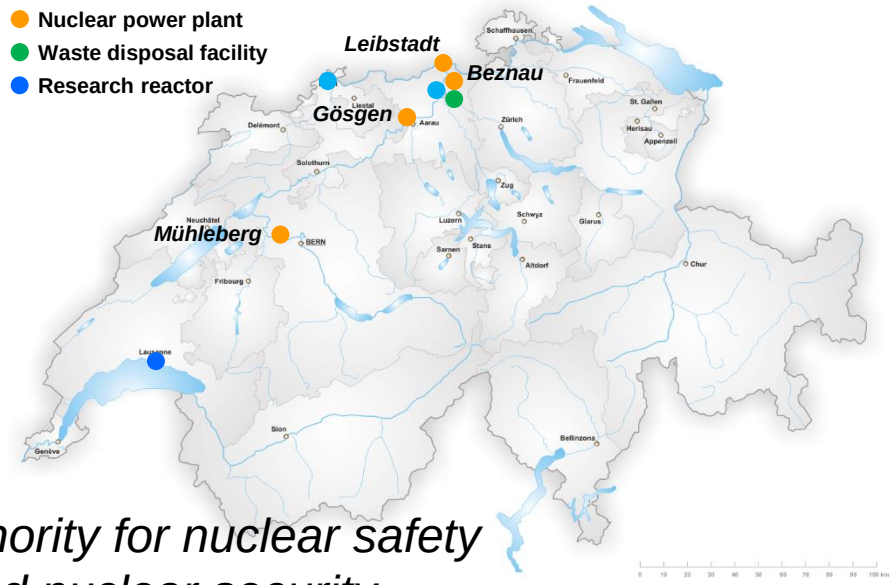
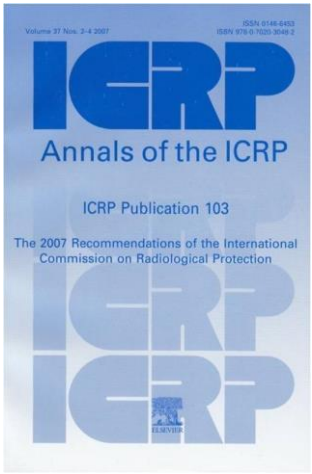


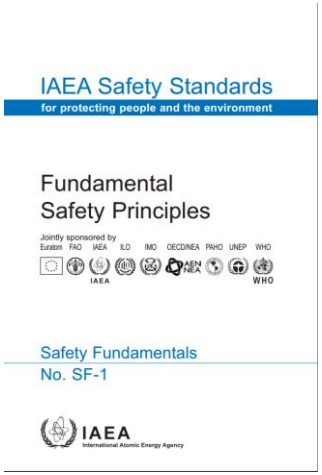
ENSI is the Swiss supervisory authority for nuclear safety including radiological protection and nuclear security

International framework



- ICRP 60, and later ICRP 103
  - Three general principles of radiation protection: **justification**, optimization and limitation

- IAEA Fundamental Safety Principles
  - **Principle 4: Justification of facilities and activities** Facilities and activities that give rise to radiation risks (planned exposure situations) must yield an overall benefit



Swiss legal framework - RPA

- Radiation Protection Act (RPA 814.50)
  - **Art. 8 Justification of radiation exposure**
    An activity that involves the exposure of people or the environment to ionizing radiation (radiation exposure) may only be carried out, if it can be justified in terms of the associated benefits and risks
  - **Art. 43 Unjustified radiation exposure of persons**
    [1] Anyone who wilfully subjects someone to manifestly unjustified radiation exposure shall be liable to…
- Radiation Protection Ordinance (RPO 814.501)
  - **Art. 5 Justification**
    [1] An activity is justified … if the associated benefits clearly outweigh the radiation-related drawbacks…

Swiss legal framework - NEA

- Nuclear Energy Act (NEA 732.1)
  Nuclear Energy Ordinance (NEO 732.11)
  - No explicit mention of justification
    → please refer to RPA
  - That the overarching **benefits** of the peaceful use of nuclear energy outweigh the **detriments** it causes has been implicitly accepted with the approval of the NEA by the Swiss Parliament (and optional referendum)

Licensing according to NEA

- In compliance with IAEA GSR Part 3, Req. 10
  - The government or the regulatory body shall ensure that only justified practices are authorized.
- Licensing authority (Federal Council, DETEC)
  - **All necessary and immediate activities** related to the peaceful use of nuclear energy during the commissioning, normal operation, maintenance, dismantling of a nuclear facility including waste disposal are implicitly justified with the granting of the general, construction and operating licenses as well as the decommissioning order

Supervising according to NEA

- ENSI
  - For **all necessary and immediate activities** no justification to be checked, but compliance with legal requirements and license conditions to be ascertained
    - Minimization of probability of exposure
    - Limitation of exposure
    - Optimization of provisional measures

- Handling of fissile material in a reactor
- Use of a starting source
- Non-destructive testing of safety-relevant SSCs
- Handling of contaminated tools
- …

Further activities licensed acc. to RPA

- ENSI grants licenses acc. to RPA
  - For **all non-(necessary and immediate) activities** they are not covered by licenses acc. to NEA justification needs also to be checked

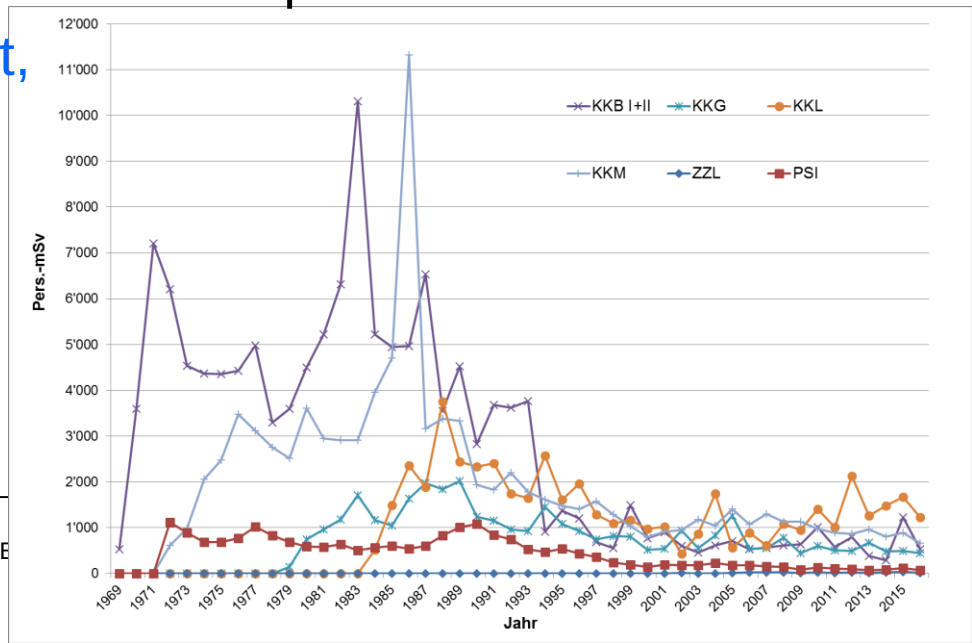
- Monitoring, calibration and non-destructive testing of SSCs without relevance to safety using x-ray and gamma sources
- Welding using thoriated electrodes
- Dispatching of staff to other nuclear facilities
- …

ENSI's approach

- Graded approach
  - Old NPP fleet →
    ageing management includes adequate NDT
- Legal aspects
  - Backfitting requirements enshrined in the law (NEA) →
    safety improvements must be implemented

→ if there is a safety benefit, then the activity is justified

  - Efforts put on optimization and limitation



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Thank you for listening!