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Assessment of requirements and safety standards

National assessment of Fundamental Safety Principles against:
- German Constitution, Basic Law, Atomic Law, Radiation Protection Law
- German ordinances, Safety Requirements for NPP and KTA Standards

International assessment of Fundamental Safety Principles against:
- New General Safety Requirements
- New Safety Standards
- WENRA Objectives
- Green Booklets NEA

Additional Objectives
Principle 1. Responsibility for safety
The prime responsibility for safety must rest with the person or organization responsible for facilities and activities that give rise to radiation risks.

Is implemented in the German Atomic Act and Radiation Protection Act

Missing under 3.6:

- Adequate financial and human resources shall be permanently provided (see AtG, Council Directive 2009/71/Euratom, IAEA GSR part 2, WENRA SRL)

- Review, evaluation and continuous improvement of nuclear installations shall be performed by the person or organisation responsible; effectiveness and reliability shall be considered; identified potentials for safety improvement must be implemented (see also VDNS Principle 2, RSK Memorandum on safety culture, IAEA SSR 2/1, WENRA SRL, IAEA NEA green booklet “The nuclear regulatory challenge of judging safety backfits”)

- The required quality condition of the facility shall be maintained throughout its entire lifetime. Here, the further development of the state of the art in science and technology, the safety-relevant experience during construction and operation of the own and other facilities, and all relevant ageing phenomena shall be considered (RSK Memorandum on safety culture, WENRA SRL, SSR 2/1)

- Emphasise the peaceful uses of all radioactive material
Principle 2. Role of government
An effective legal and governmental framework for safety, including an independent regulatory body, must be established and sustained.

Is implemented in the German Atomic Act and Radiation Protection Act

Missing under 3.9:
- Radiation protection registry; register of high-active radioactive sources (see StrlSchG)
- Any nuclear fuel whose authorised owner cannot be ascertained or cannot be called upon shall be controlled by the government (see AtG)
- Damage which, in the light of the state-of-the-art of science, has been caused by the effects of radiation emitted by radioactive material, but cannot be traced to any originator, shall be registered and investigated (see AtG)
- International transportations of radioactive material and their monitoring (see AtG)

Missing under 3.10:
- Emphasise bilateral cooperation between the regulatory authority with all neighbouring countries (see GSR Part 1)
Principle 3. Leadership and management for safety

Effective leadership and management for safety must be established and sustained in organizations concerned with, and facilities and activities that give rise to, radiation risks.

Is implemented in the German Atomic Act, Radiation Protection Act, Safety Requirements for NPP and KTA Standards

Missing under 3.13:

– Man, technology and organisation coordinated in such a holistic way that the fundamental safety objective is met. (see RSK Memorandum on safety culture, IAEA SSR 2/1)
– Active safety policy of the operating organisation (see RSK safety philosophy, IAEA GSR Part 2)
– Tracking of the Safety Performance (see RSK safety philosophy, IAEA GSR Part 2, NEA green booklet on "Improving versus maintaining safety")
– A well-developed and efficient scientific and technical infrastructure (see RSK safety philosophy, IAEA GSR Part 1)
– Efficient use of knowledge as a resource (see RSK safety philosophy, NEA booklet “The regulatory goal of assuring nuclear safety”, IAEA GSR Part 2)
– Nuclear safety research required for the safe operation, decommissioning and disposal of nuclear waste (see RSK safety philosophy, IAEA GSR Part 1, NEA green booklet “The regulatory goal of assuring nuclear safety”)
– Maintaining of competence in the field of nuclear engineering (see RSK safety philosophy, IAEA GSR Part 1)
Principle 4. Justification of facilities and activities
Facilities and activities that give rise to radiation risks must yield an overall benefit.

Is implemented in the German Atomic Act and Radiation Protection Act

Missing:
Principle 5. Optimization of protection
Protection must be optimized to provide the highest level of safety that can reasonably be achieved.

Is implemented in the German Atomic Act, Radiation Protection Act and Safety Requirements for NPP

Missing:
- Practical elimination of large or early releases of radioactive material (see also VDNS Principle 1, German Safety Requirements for Nuclear Power Plants, WENRA Safety Objectives for new NPP, WENRA SRL, IAEA SSR 2/1, NEA Green Booklet “Implementation of DiD in NPPs”)

dd.mm.yyyy - dd.mm.yyyy  Meeting Name
Principle 6. Limitation of risks to individuals
Measures for controlling radiation risks must ensure that no individual and the environment bears an unacceptable risk of harm.

Is implemented in the German Atomic Act and Radiation Protection Act

Missing under 3.26:

– To avoid any unnecessary exposition or contamination of man and the environment (see StrlSchG, Council Directive 2013/59/Euratom, IAEA GSR Part 3)


The title shall include environment as well (see Safety objective in SF-1)
Principle 7. Protection of present and future generations

People **Individuals** and the environment, present and future, must be protected against radiation risks.

Is implemented in the Basic Law (Constitution) and German Radiation Protection Act

**Missing:**

- Requirements for the granting of a licence should include issues of radiation protection (such as appointing of radiation protection officer, keeping limits for exposure of persons and discharge of radioactive substances etc) (see AtG and StrlSchG, Council Directive 2013/59/Euratom, GSR Part 3)

Principle 8. Prevention of accidents

All practical efforts must be made to prevent and mitigate nuclear or radiation accidents.

Is implemented in the German Atomic Act and Safety Requirements for NPP

Missing:


- Performing of deterministic and probabilistic safety assessments as well as periodic safety reviews to identify safety improvements (see also VDNS Principle 2, German Safety Requirements for Nuclear Power Plants, IAEA SSR 2/1)

- Performing of national and international peer reviews on a regular basis (See AtG, Council Directive 2014/87/Euratom, IAEA GSR Part 1)

- Ensuring reliability of items important to safety by in-service inspections and maintenance (see German Safety Requirements for Nuclear Power Plants, IAEA SSR 2/1 and 2/2)

- Reporting of IT-Security issues relevant for nuclear safety to a governmental institution (see AtG)
Arrangements must be made for emergency preparedness
and response for nuclear or radiation incidents.

Is implemented in the German Atomic Act and Radiation Protection Act

Missing under 3.35:

- Preventive and mitigative measures in the on-site emergency planning (including such issues as compatibility with the safety concept, applicability for several units, maintenance and in-service inspections, regular reviewing and updating according to lessons learned) (see also VDNS Principle 1, AtG, Council Directive 2014/87/Euratom, Council Directive 2013/59/Euratom, IAEA SSR 2/1 and 2/2, WENRA SRL, IAEA GSR Part 7, NEA Green Booklet “Implementation of DiD in NPPs”)

Missing under 3.37:

- Regular review and amendment of emergency plans (see StrlSchG, Council Directive 2013/59/Euratom, IAEA GSR Part 7)
- Dose estimation for population in case of an emergency to recommend protection actions, assessment of the effectiveness of protective measures, adaptation of emergency planning in case of national and regional emergencies (see StrlSchG, Council Directive 2013/59/Euratom, IAEA GSR Part-3)

Missing under 3.38:

- Regulation for areas contaminated by an emergency (in case of emergency) (see StrlSchG)
- Informing the public and making recommendations to minimise radiation exposure in case of an emergency (see StrlSchG)
Principle 10. Protective actions to reduce existing or unregulated radiation risks
Protective actions to reduce existing or unregulated radiation risks must be justified and optimized.

Is implemented in the German Atomic Act and Radiation Protection Act

Missing under 3.39: