ALARA in the IAEA Safety Standards which are applicable to radioactive waste management

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Safety Fundamentals

basic objectives, concepts and principles of safety and protection

Safety Requirements

must be met to ensure the protection of people and the environment, both now and in the future

Safety Guides

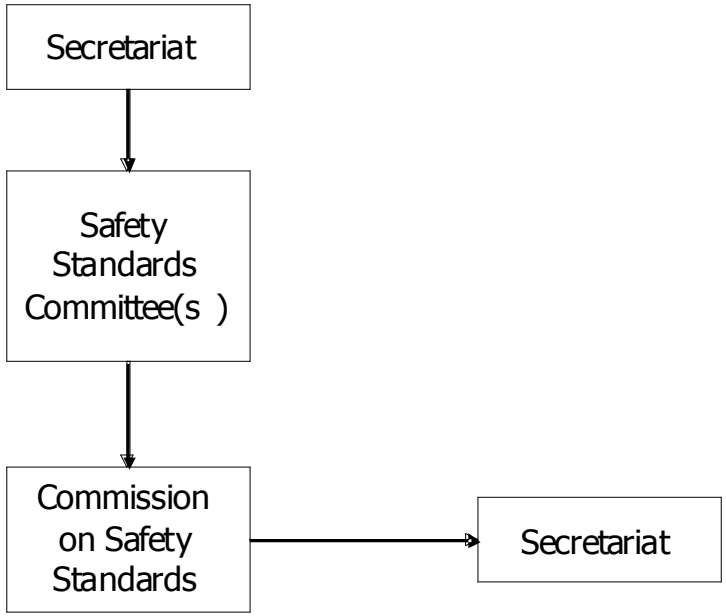
on how to comply with the safety requirements

Safety areas

Nuclear safety (installations)	NUSSC
Radiation safety (radiological protection)	RASSC
Transport safety	TRANSSC
Waste safety	WASSC
General safety	ALL SC's

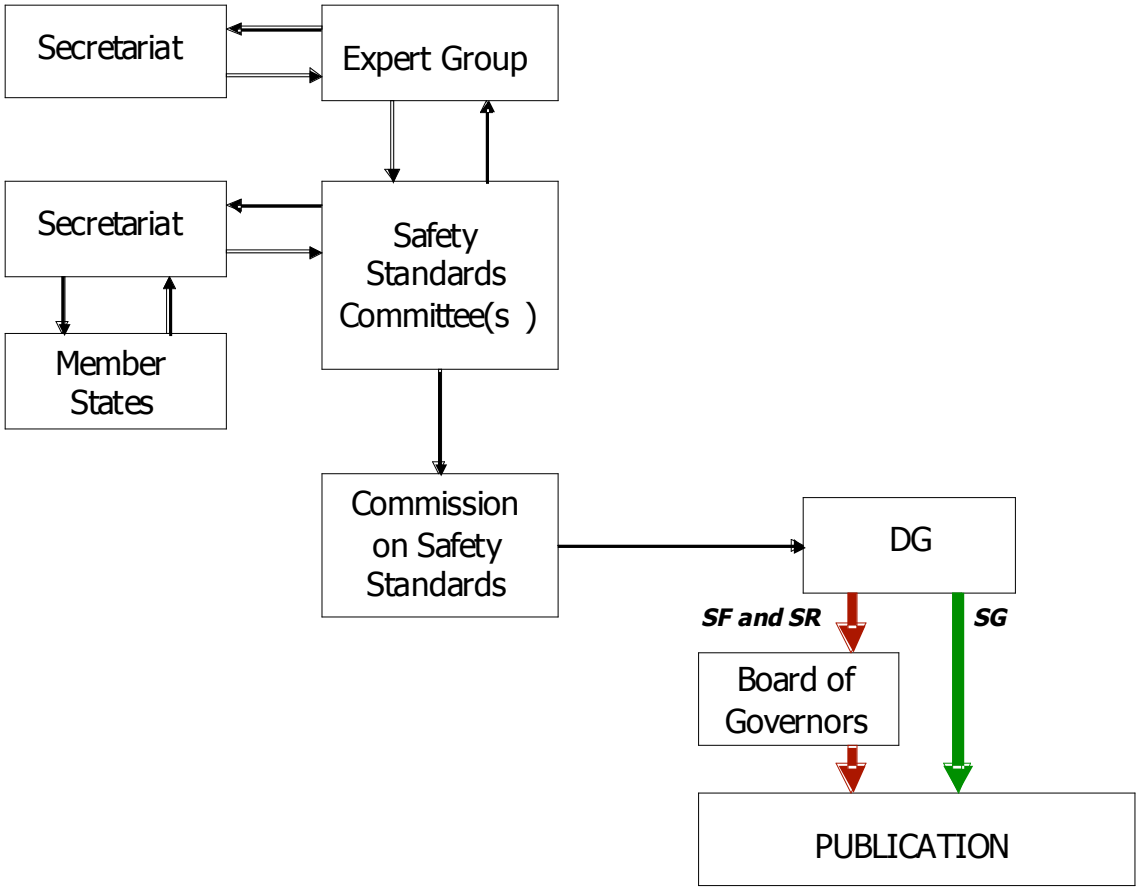
Development process (1)

Document Preparation Profile



Development process (2)

Safety Standard



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Overall structure (1)

General safety requirements

Facility/Activity specific requirements

Overall structure (2)

General safety requirements

1. Legal and regulatory system
2. Leadership and management of safety
3. Nuclear and radiation safety technical provisions and criteria
4. Integrated safety assessment
5. Radioactive waste management
6. Decommissioning and termination of activities
7. Remediation of existing situations
8. Emergency preparedness and response

Overall structure (3)

Facility/Activity specific requirements

A. nuclear power plants
B. research reactors
C. fuel cycle facilities
D. waste disposal facilities
E. facilities and activities using radiation sources
F. transport of radioactive material
G. mining and milling of radioactive ores

Safety Fundamentals

Fundamental safety objective

to protect people, individually and collectively, and the environment from harmful effects of ionizing radiation, without unduly limiting the operation of facilities or the conduct of activities that give rise to radiation risks

10 safety principles

Safety Principles (1)

(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.

(2) Role of government

An effective legal and governmental framework for safety, including an independent regulatory body, must be established and sustained.

Safety Principles (2)

(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.

(4) Justification of facilities and activities

Facilities and activities that give rise to radiation risks must yield an overall benefit.

Safety Principles (3)

(5) Optimization of protection

Protection must be optimized to provide the highest level of safety that can reasonably be achieved.

(6) Limitation of risks to individuals

Measures for controlling radiation risks must ensure that no individual bears an unacceptable risk of harm.

Safety Principles (4)

(7) Protection of present and future generations

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

Safety Principles (5)

(8) Prevention of accidents

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

Safety Principles (7)

(9) Emergency preparedness and response

Arrangements must be made for emergency preparedness and response for nuclear or radiation incidents.

(10) Protective actions to reduce existing or unregulated radiation risks

Protective actions to reduce existing or unregulated radiation risks must be justified and optimized.

Basic Safety Standards (1)

Protection and safety shall be optimized

in order that the magnitude of individual doses, the number of people exposed and the likelihood of incurring exposures all be kept as low as reasonably achievable, economic and social factors being taken into account, within the restriction that the doses to individuals delivered by the source be subject to dose constraints.

Basic Safety Standards (2)

From intuitive qualitative to quantitative analyses

All relevant factors to be taken into account, in a coherent way, to:

- determine optimized protection and safety measures for the prevailing circumstances
- establish criteria for the restriction of the magnitudes of exposures and of their probabilities

Responsibility of the licensee

SR for near surface disposal

The principles of optimization and dose limitation are applicable.

In particular, during the operational phase, the radiation protection of persons who are exposed as a result of operations at the waste repository shall be optimized.

SR for predisposal management

radiation protection of any persons who are exposed as a result of activities in predisposal management of radioactive waste shall be optimized, with due regard to dose constraints

SR for geological disposal

Operational phase: to be considered in the design of the repository and the planning of operations

Post-closure period: to be considered in the siting, design, construction, operation and closure

Constrained optimization: judgemental process

Responsibility of operator

Outlook

Revision of safety requirements is ongoing:

- ensure coherence with safety fundamentals
- incorporate 2007 recommendations of ICRP
- ensure coherence with new structure