IAEA
International Atomic Energy Agency

An Introduction to the IAEA Safety Standards

Safety Standards and Nuclear Security Guidance Development Section
Office of Safety and Security Coordination
Department of Nuclear Safety and Security

Webinar
Tuesday 15 December
14:00-15:30 (CET)

Programme

Topic	Presenter
Opening Remarks	Dominique Delattre, Section Head SSDS, IAEA
Overview of the IAEA Safety Standards	Katherine Asfaw, SSDS, IAEA
Accessing and Navigating the IAEA Safety Standards (*Demo*)	Tatiana Karseka-Yanev, SSDS, IAEA
Q&A Session	All participants Moderator: Maria Nikolaki SSDS, IAEA

Objectives

The objectives of the webinar are:

- To enhance the understanding on the IAEA safety standards (purpose, scope, target audience, structure, status), as well as how Member States can apply the standards
- To provide information on how the standards are developed, established and revised
- To increase awareness of the available resources for accessing the safety standards and the newly developed e-learning materials

IAEA
International Atomic Energy Agency

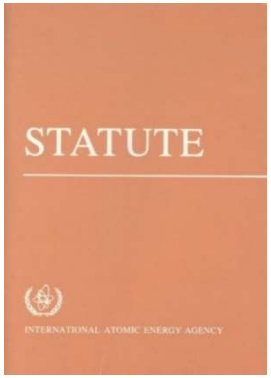
Overview of the IAEA Safety Standards

Ms Katherine Asfaw
Senior Standards Specialist
SSDS, IAEA

IAEA
International Atomic Energy Agency

The IAEA safety standards: origin, purpose, structure and scope

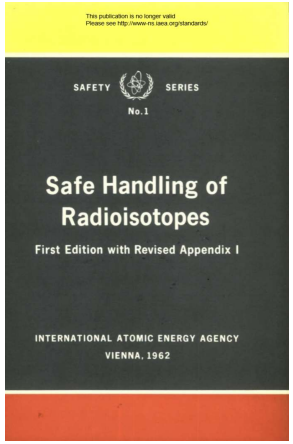
Origin



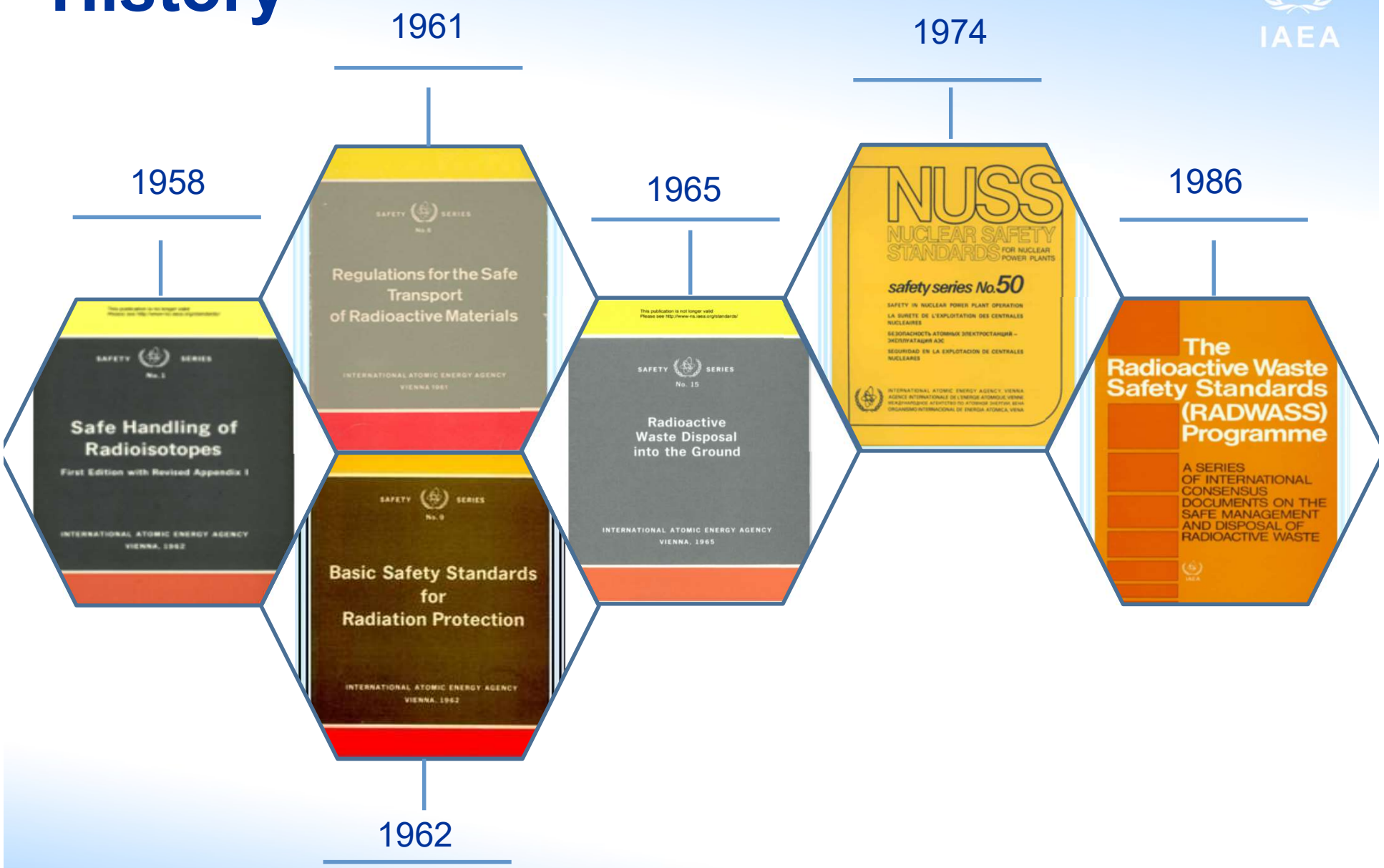
Under Article III.A.6, the IAEA is authorized:

"To establish or adopt … standards of safety for protection of health and minimization of danger to life and property… and to provide for the application of these standards…"

The IAEA published its first safety standard, Safety Series No. 1, Safe Handling of Radioisotopes, in 1958, just one year after the Agency was established

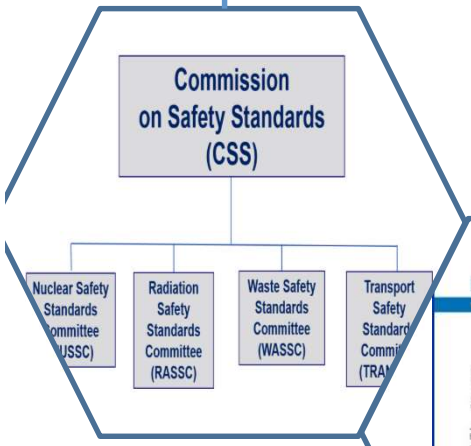


History

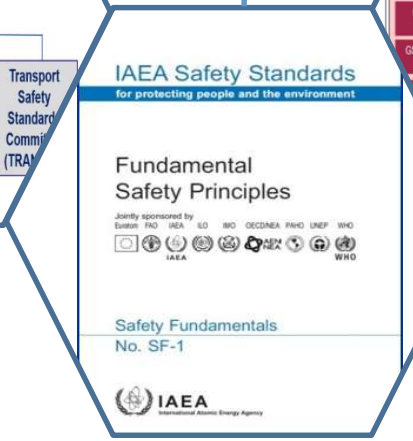

1958
Safe Handling of Radioisotopes
First Edition with Revised Appendix I
INTERNATIONAL ATOMIC ENERGY AGENCY
VIENNA, 1962
1961
Regulations for the Safe Transport of Radioactive Materials
INTERNATIONAL ATOMIC ENERGY AGENCY
VIENNA 1961
1962
Basic Safety Standards for Radiation Protection
INTERNATIONAL ATOMIC ENERGY AGENCY
VIENNA, 1962
1965
Radioactive Waste Disposal into the Ground
INTERNATIONAL ATOMIC ENERGY AGENCY
VIENNA, 1965
1974
NUSS
NUCLEAR SAFETY STANDARDS FOR NUCLEAR POWER PLANTS
safety series No.50
1986
The Radioactive Waste Safety Standards (RADWASS) Programme
A SERIES OF INTERNATIONAL CONSENSUS DOCUMENTS ON THE SAFE MANAGEMENT AND DISPOSAL OF RADIOACTIVE WASTE

History

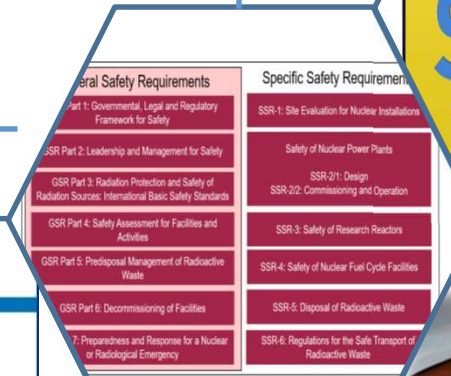
1996



2006



2008



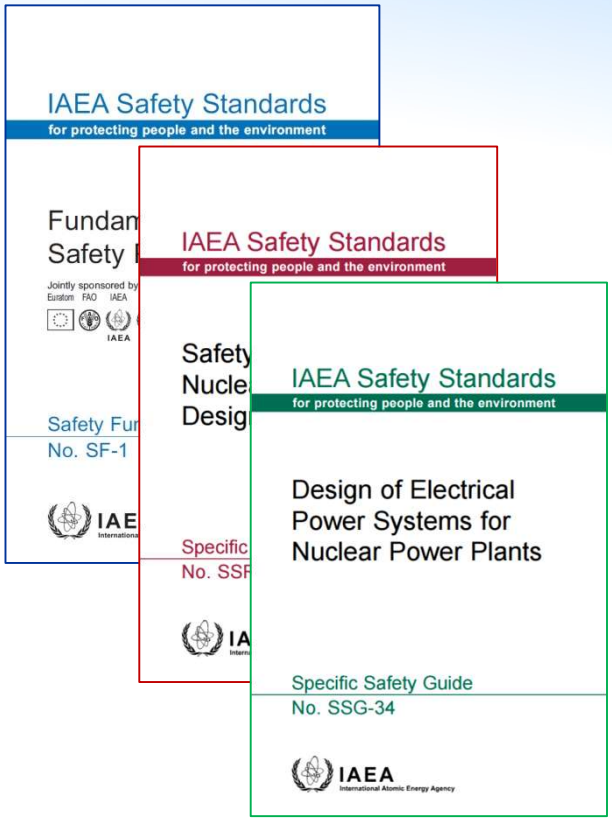
2011

2014

2020

Purpose

- An integrated, comprehensive and consistent set of up-to-date, user friendly and fit-for-purpose safety standards of high quality
- They provide for a high level of protection for people and the environment from harmful effects of ionizing radiation
- They present international consensus on a level of safety



Scope

IAEA safety standards are primarily addressed to national regulatory authorities and cover all regulatory and operational aspects of nuclear and radiation safety.

They cover all facilities and activities that can give rise to radiation exposure (only peaceful facilities and activities are covered)

Safety standards are:

- Non binding on IAEA Member States but may be adopted by them
- Binding for the IAEA's own activities
- Binding on States in relation to operations assisted by the IAEA or States wishing to enter into project agreements with IAEA

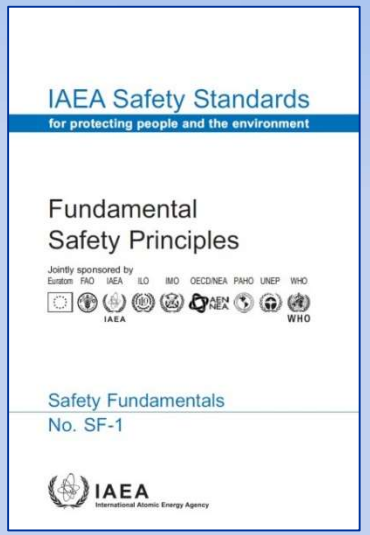
The hierarchy

Fundamental safety objective and ten principles for protecting people and environment

Requirements that have to be met to ensure protection of people and environment

Recommendations on how to comply with the safety requirements

The fundamental safety objective is to protect people and the environment from harmful effects of ionizing radiation



Principle 1: Responsibility for safety
Principle 2: Role of government
Principle 3: Leadership and management for safety
Principle 4: Justification of facilities and activities
Principle 5: Optimization of protection
Principle 6: Limitation of risks to individuals
Principle 7: Protection of present and future generations
Principle 8: Prevention of accidents
Principle 9: Emergency preparedness and response
Principle 10: Protective actions to reduce existing or unregulated radiation risk


General Safety Requirements
GSR Part 1: Governmental, Legal and Regulatory Framework for Safety
GSR Part 2: Leadership and Management for Safety
GSR Part 3: Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards
GSR Part 4: Safety Assessment for Facilities and Activities
GSR Part 5: Predisposal Management of Radioactive Waste
GSR Part 6: Decommissioning of Facilities
GSR Part 7: Preparedness and Response for a Nuclear or Radiological Emergency
Specific Safety Requirements
SSR-1: Site Evaluation for Nuclear Installations
Safety of Nuclear Power Plants
SSR-2/1: Design
SSR-2/2: Commissioning and Operation
SSR-3: Safety of Research Reactors
SSR-4: Safety of Nuclear Fuel Cycle Facilities
SSR-5: Disposal of Radioactive Waste
SSR-6: Regulations for the Safe Transport of Radioactive Waste

GSR Part 1: Governmental, Legal and Regulatory Framework for Safety

Requirement 3: Establishment of a regulatory body

The government, through the legal system, shall establish and maintain a regulatory body, and shall confer on it the legal authority and provide it with the competence and the resources necessary to fulfil its statutory obligation for the regulatory control of facilities and activities.

Requirement 4: Independence of the regulatory body

The government shall ensure that the regulatory body is effectively independent in its safety related decision making and that it has functional separation from entities having responsibilities or interests that could unduly influence its decision making.

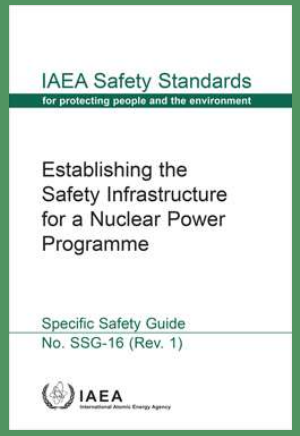
2.7. An independent regulatory body will not be entirely separate from other governmental bodies. The government has the ultimate responsibility for involving those with legitimate and recognized interests in its decision making. However, the government shall ensure that the regulatory body is able to make decisions under its statutory obligation for the regulatory control of facilities and activities, and that it is able to perform its functions without undue pressure or constraint.

Safety Guides provide recommendations and guidance on how to comply with the requirements

Safety Guides form a matrix structure:

General Safety Guides provide recommendations for a particular topic and can be applied to all types of facility or activity

Specific Safety Guides provide recommendations for a particular type of facility or activity



Financial aspects

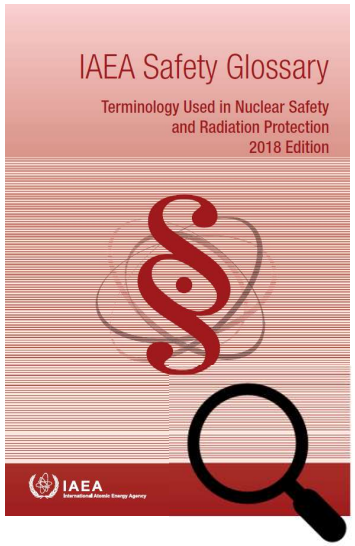
2.11. Adequate and stable financing for all regulatory activities is fundamental to independence. The financing mechanism should be clearly defined in the legal framework. The budget for the regulatory body may include the fees levied for regulatory activities, but should not depend on fines or other penalties arising from enforcement actions, nor should it be decided by or be subject to the approval of those parts of the government that are responsible for the development, promotion and operation of nuclear technologies.

2.12. Although the overall budget of the regulatory body may be fixed by the government, the regulatory body should have the authority to distribute financial resources to its various regulatory activities for the greatest effectiveness and efficiency.

2.13. Specific provisions to fund the regulatory body should be established in the national legal framework or through the national fiscal process. How this is best accomplished will depend on a number of considerations, including the following:

— Precedents for the funding of other national regulatory organizations;
— The types and scale of regulated facilities and activities, and the associated workload based on the application of a graded approach to the execution of the functions of the regulatory body;
— How the regulatory body is structured, including its use of in-house and outsourced competences.

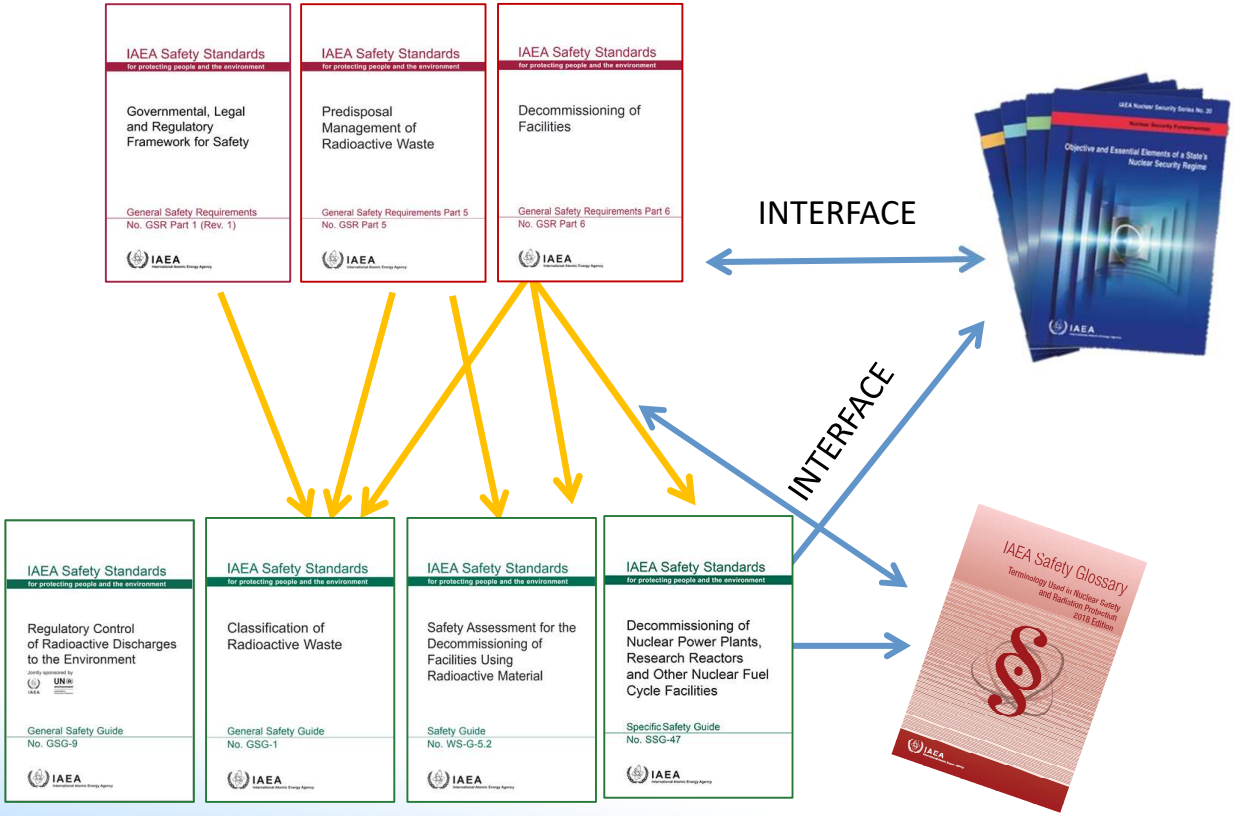
The IAEA Safety Glossary



- To explain the meanings of technical terms that may be unfamiliar to the reader
- To explain any special meanings ascribed to common words or terms
- To explain the specific meanings of the same technical term in different contexts
- To recommend terms that should be used in IAEA publications and documents (and those that should not)
- To harmonize terminology and usage in the IAEA safety standards, and in their application

Relationships in the Safety Standards

The safety standards are a set of publications. They are consistent with one another and are interrelated.



Publications in the IAEA Nuclear Security Series provide recommendations and guidance on nuclear security and are consistent with the safety standards

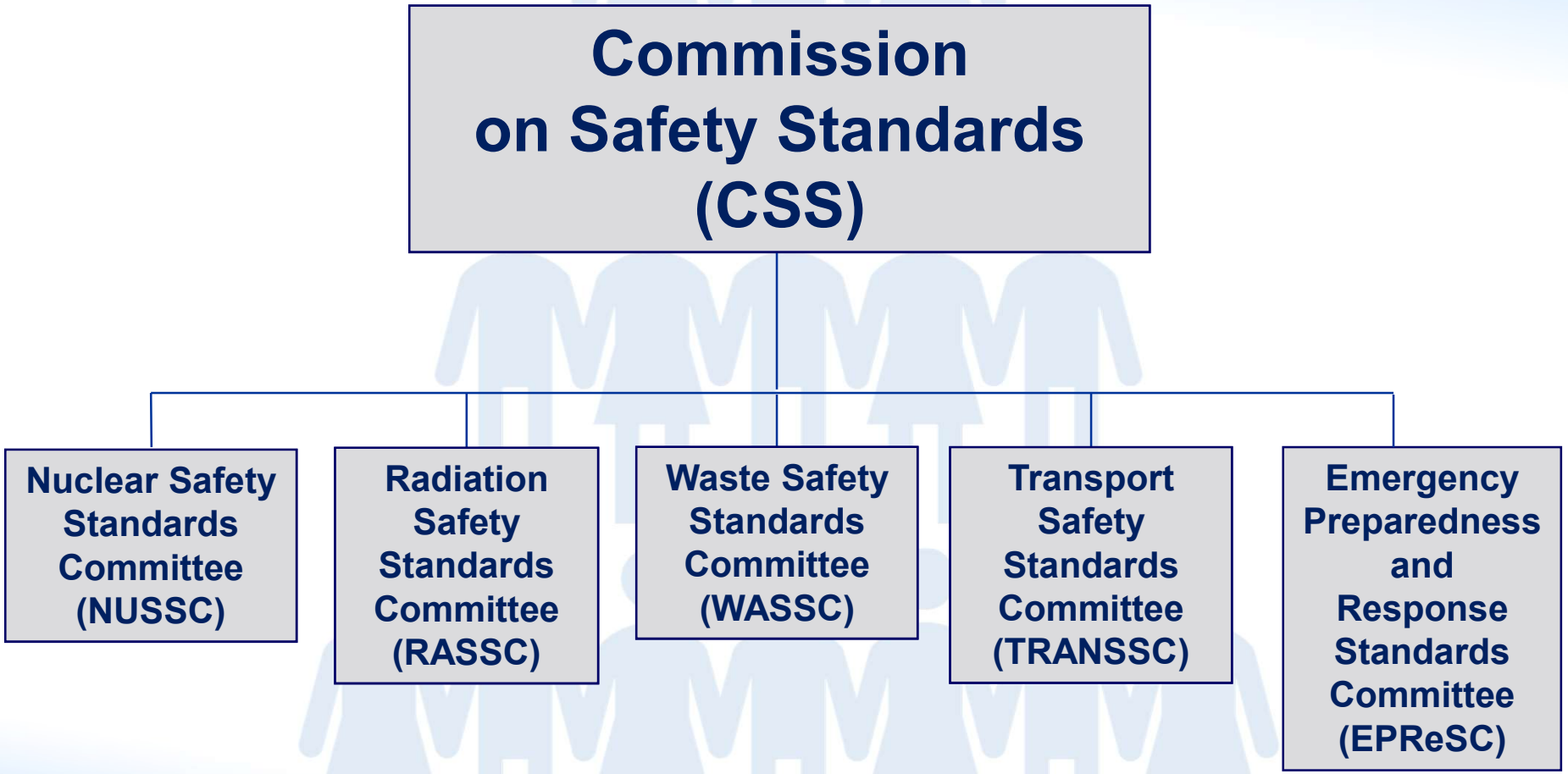
IAEA
International Atomic Energy Agency

How the IAEA safety standards are developed, established and revised

Who is involved in the development of IAEA safety standards?

- The IAEA Secretariat
- Member States
- The Commission on Safety Standards
- The Safety Standards Committees and the Nuclear Security Guidance Committee
- The IAEA's Board of Governors
- The United Nations, its specialized agencies (such as the FAO, ICAO, ILO, IMO, WHO) and other intergovernmental organizations
- International experts
- Users

Commission & Committees



Strategies and Processes for the Establishment of IAEA Safety Standards

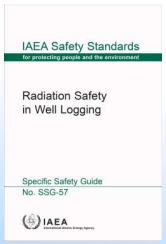
Prepared by Secretariat and experts
Reviewed by the Committees and Commission on Safety Standards

Reviewed by the Member States

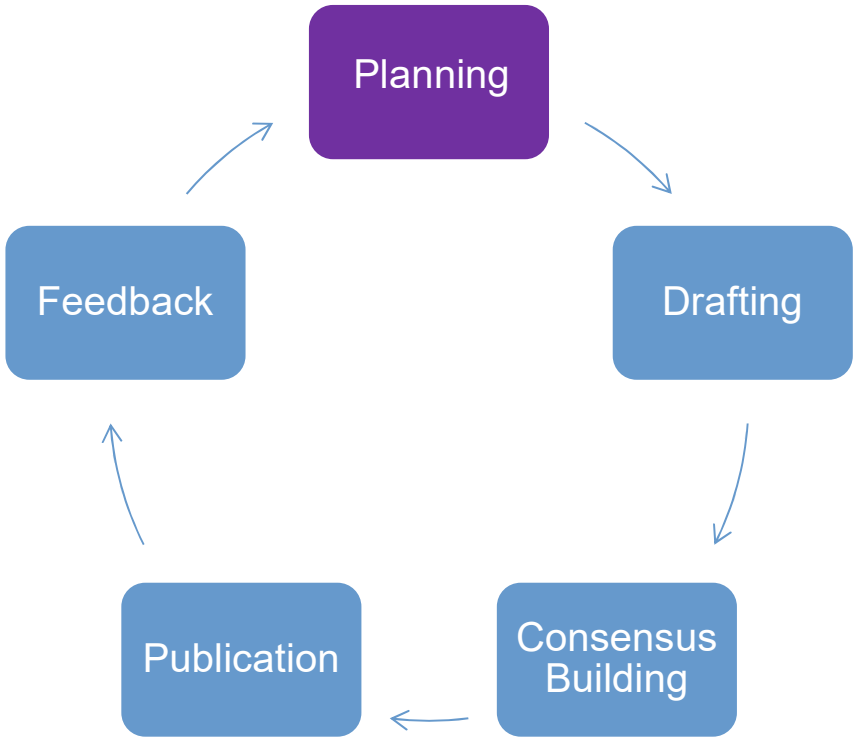
Reviewed for consistency

Reviewed by the Committees and Commission on Safety Standards

Endorsement by the IAEA's Director General or BoG

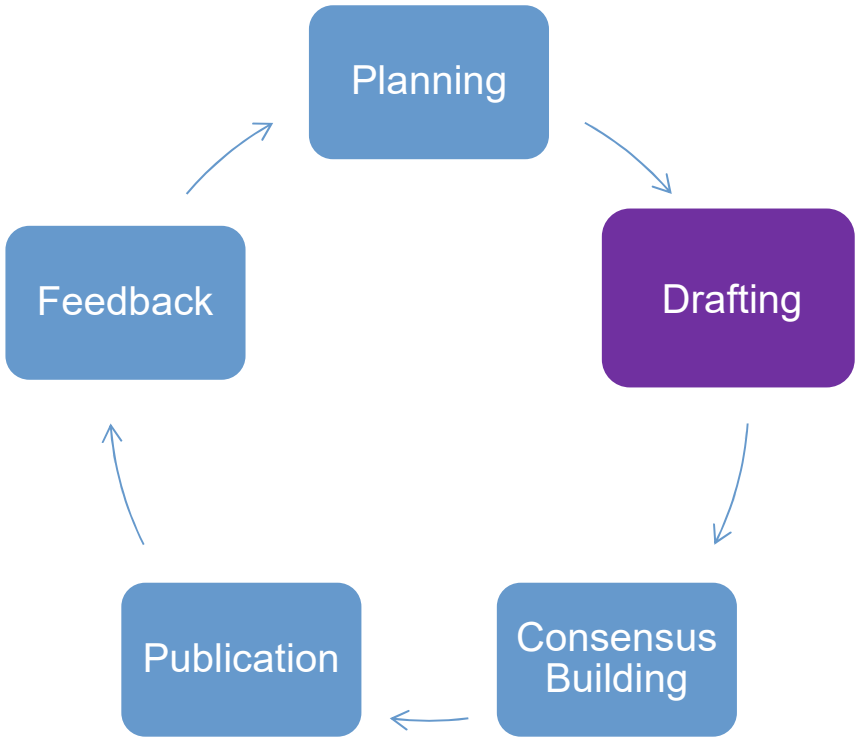


The process



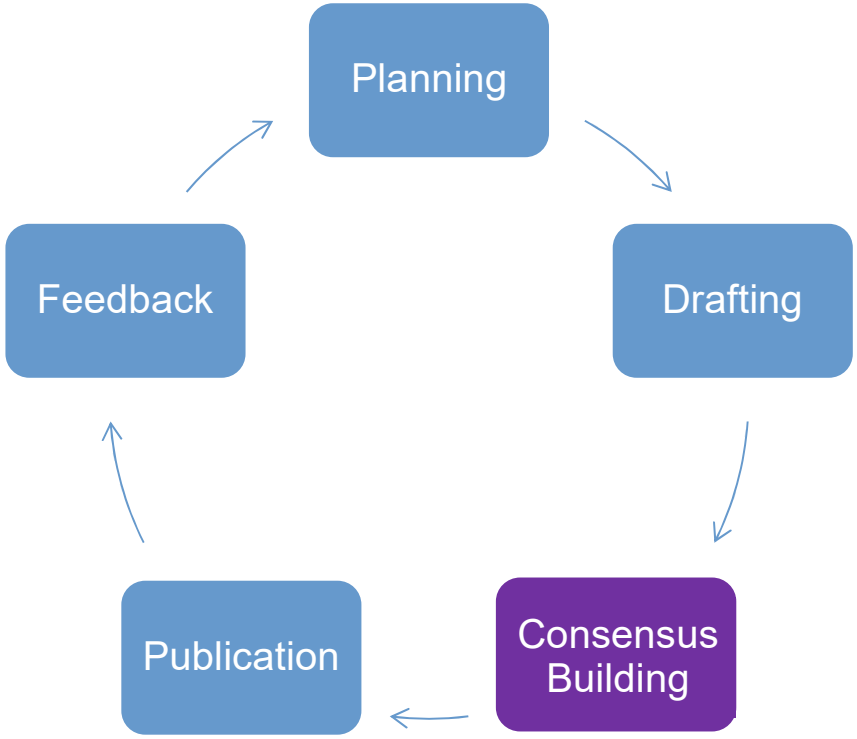
- ✓ The need for a new or revised standard is identified
- ✓ A Document Preparation Profile (DPP) is prepared
- ✓ The relevant Committees review the DPP
- ✓ The CSS reviews the DPP and confirms its place in the Safety Standards Series

The process



- ✓ IAEA staff and experts from regulatory bodies, industry and other interested parties in Member States draft the standard
- ✓ The Safety Standards Committees review the draft standard to ensure it meets the specifications of the DPP and that it is of sufficient quality to be sent to Member States for comment

The process



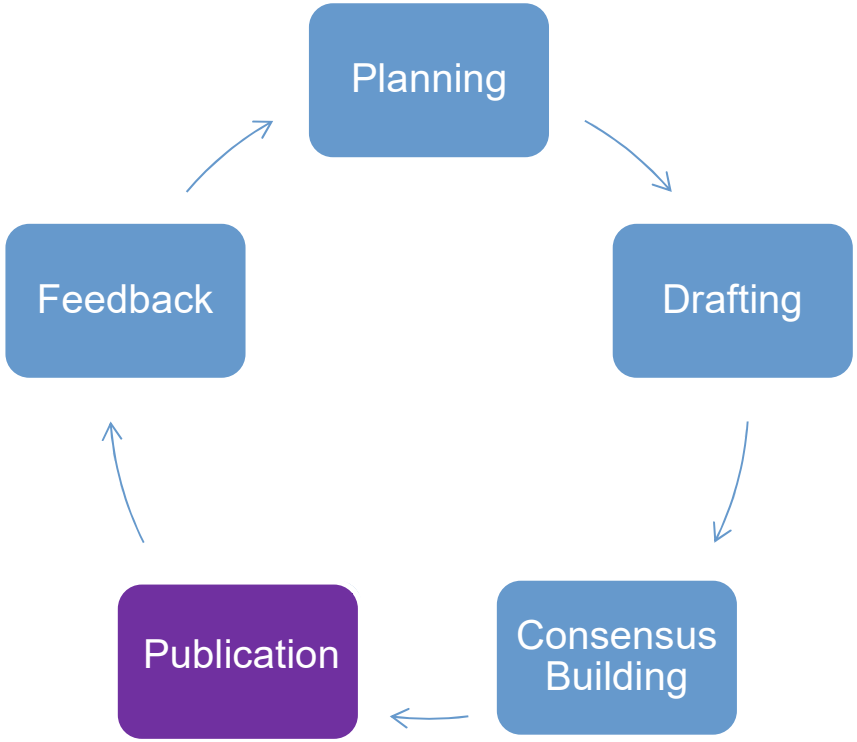
Member States Review

- ✓ Member States have 120 days to review the draft standard and provide comments

Standardization and refining

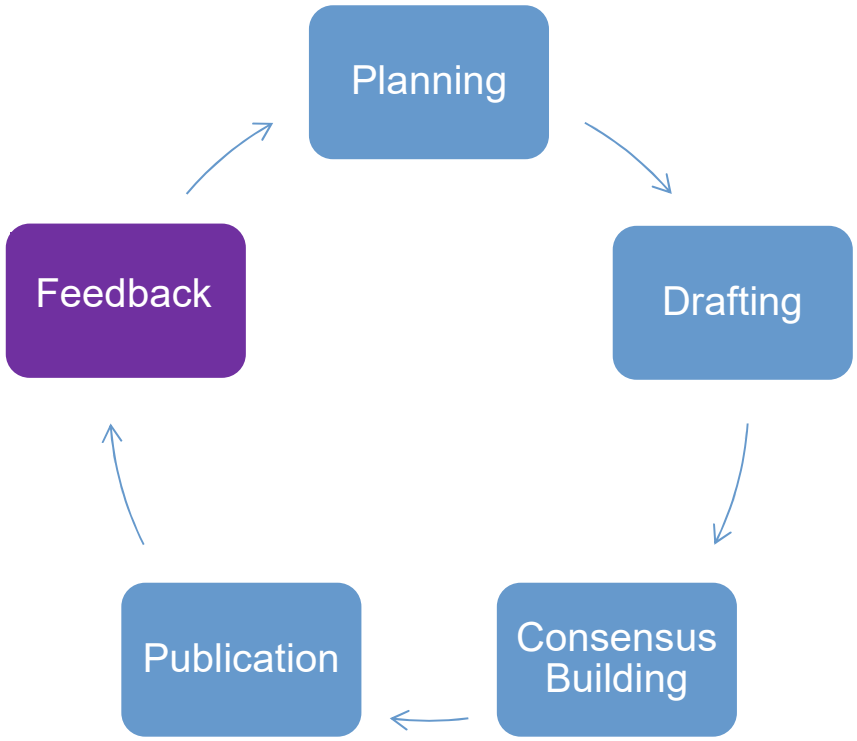
- ✓ The Secretariat carries out a comprehensive review of the text of the draft standard
- ✓ The Safety Standards Committees review the resolution of Member State comments and the revised draft
- ✓ The IAEA's professional editors edit the draft
- ✓ The final edited draft is presented to the CSS for their endorsement for publication

The process



- ✓ The IAEA Board of Governors approves Safety Requirements and Safety Fundamentals for publication
- ✓ The IAEA Director General approves Safety Guides for publication
- ✓ New standards are published online and in printed format
- ✓ New standards are included in the online user interface NSS-OUI

The process

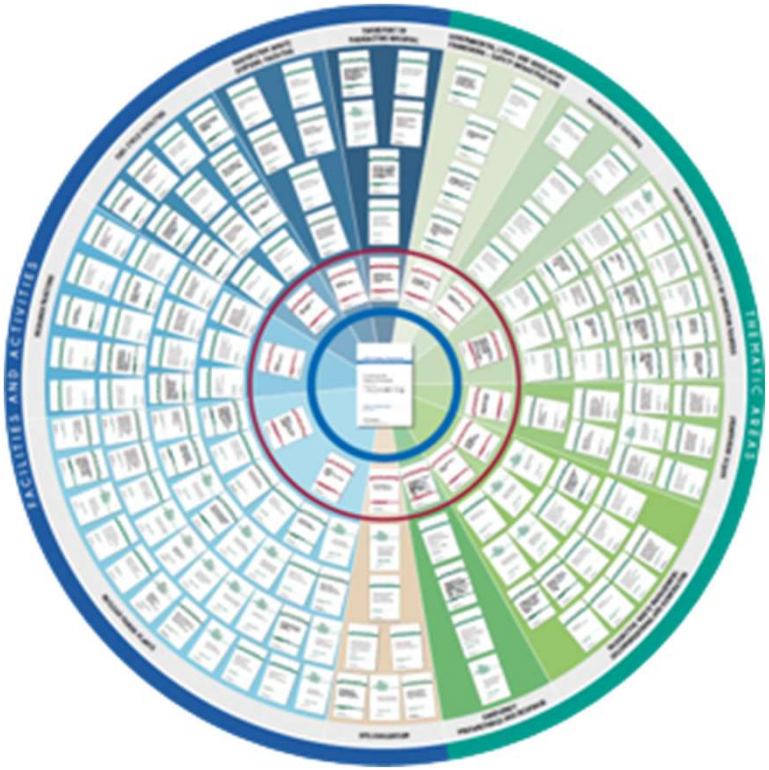


- ✓ Feedback is used to identify areas where new standards need to be developed or where improvements are needed
- ✓ The IAEA Secretariat collects feedback from safety review missions, lessons learned from events, and experience in the use and application of the safety standards
- ✓ The NSS-OUI tool enables users to easily and quickly provide feedback

IAEA
International Atomic Energy Agency

Publications in the IAEA Safety Standards Series

Current Status of the Safety Standards



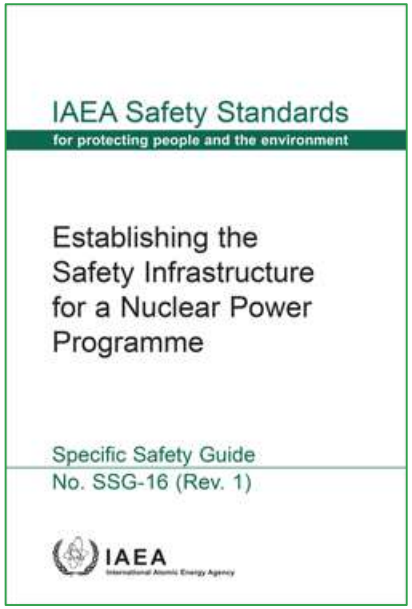
131 safety standards published

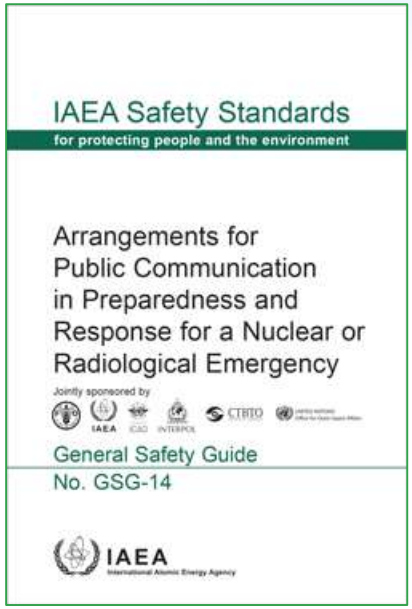
Fundamentals and Requirements issued in all official languages

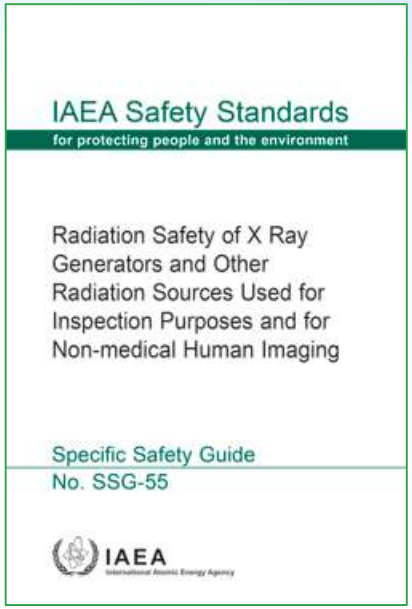
40% of standards are under revision

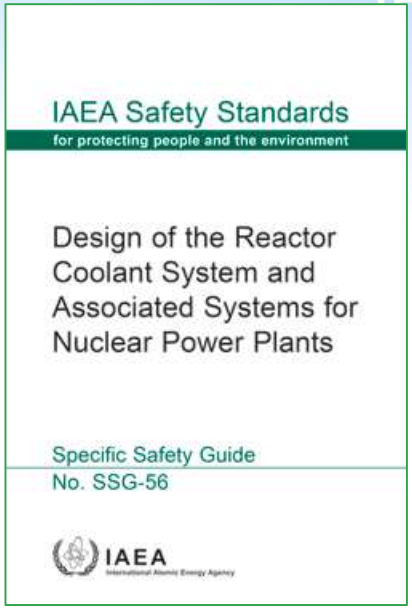
The expected total number of standards is 136

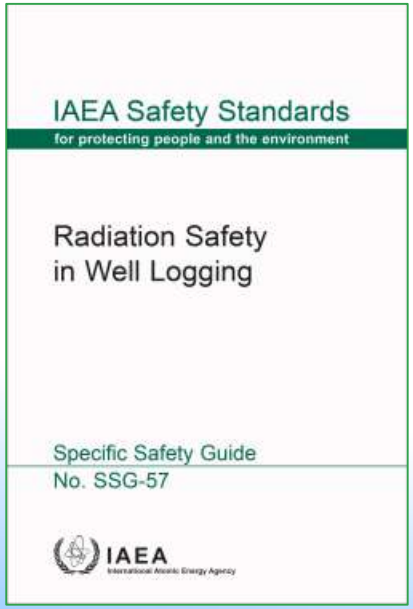
Recently published standards (2020)

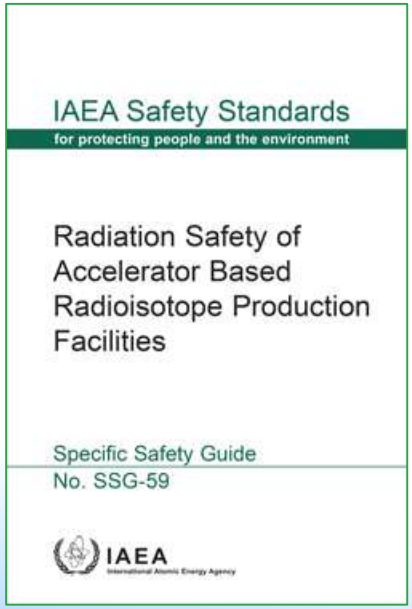


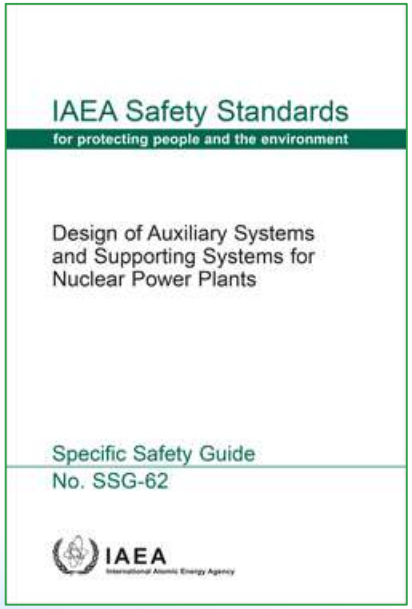












Upcoming publications

- SSG-15 (Rev. 1) Storage of Spent Nuclear Fuel
- SSG-58 Radiation Safety in the Use of Nuclear Gauges
- SSG-60 Management of Residues Containing Naturally Occurring Radioactive Material from Uranium Production and Other Activities
- SSG-61 Format and Content of the Safety Analysis Report for Nuclear Power Plants
- SSG-63 Design of Fuel Handling and Storage Systems for Nuclear Power Plants

IAEA
International Atomic Energy Agency

Accessing and Navigating the IAEA Safety Standards

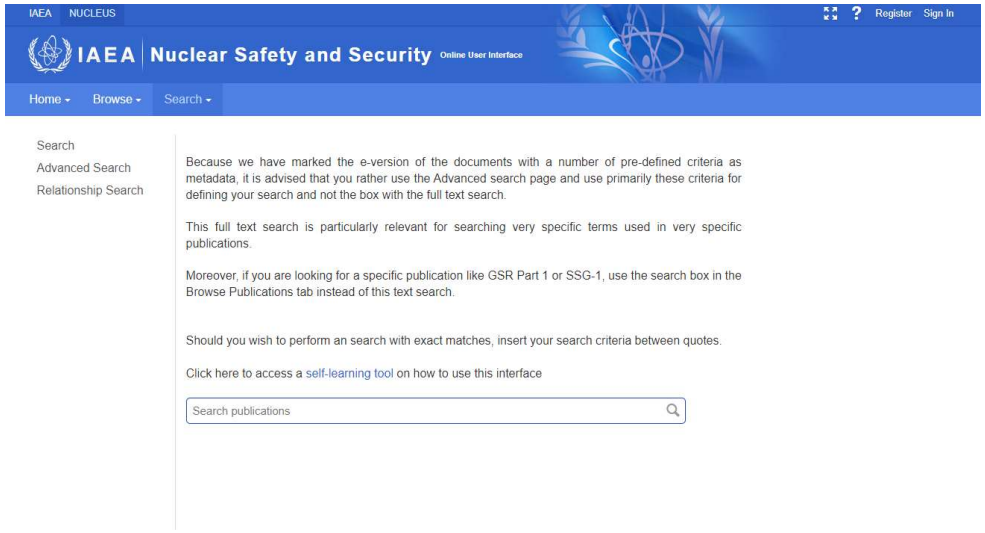
Ms Tatiana Karseka-Yanev
Safety Officer
SSDS, IAEA

IAEA
International Atomic Energy Agency

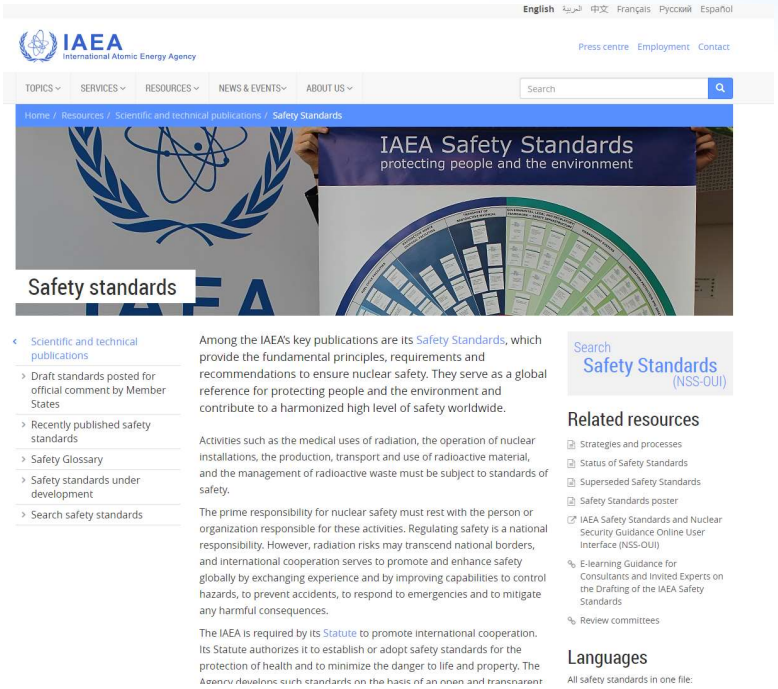
IAEA Safety Standards - Resources

Where to get more information

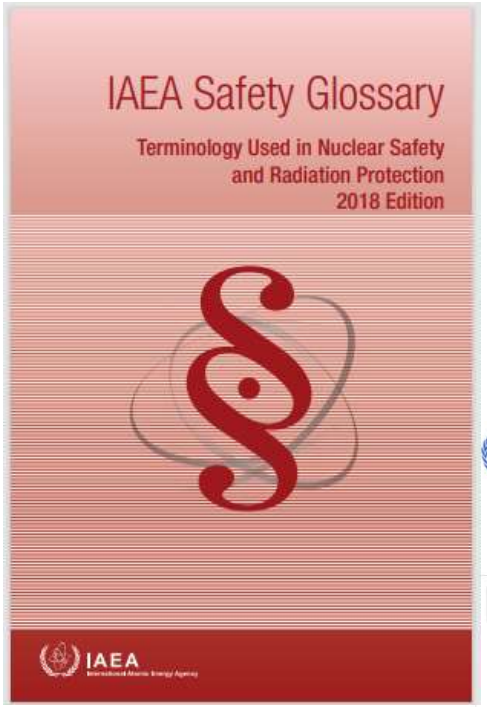
NSS-OUI



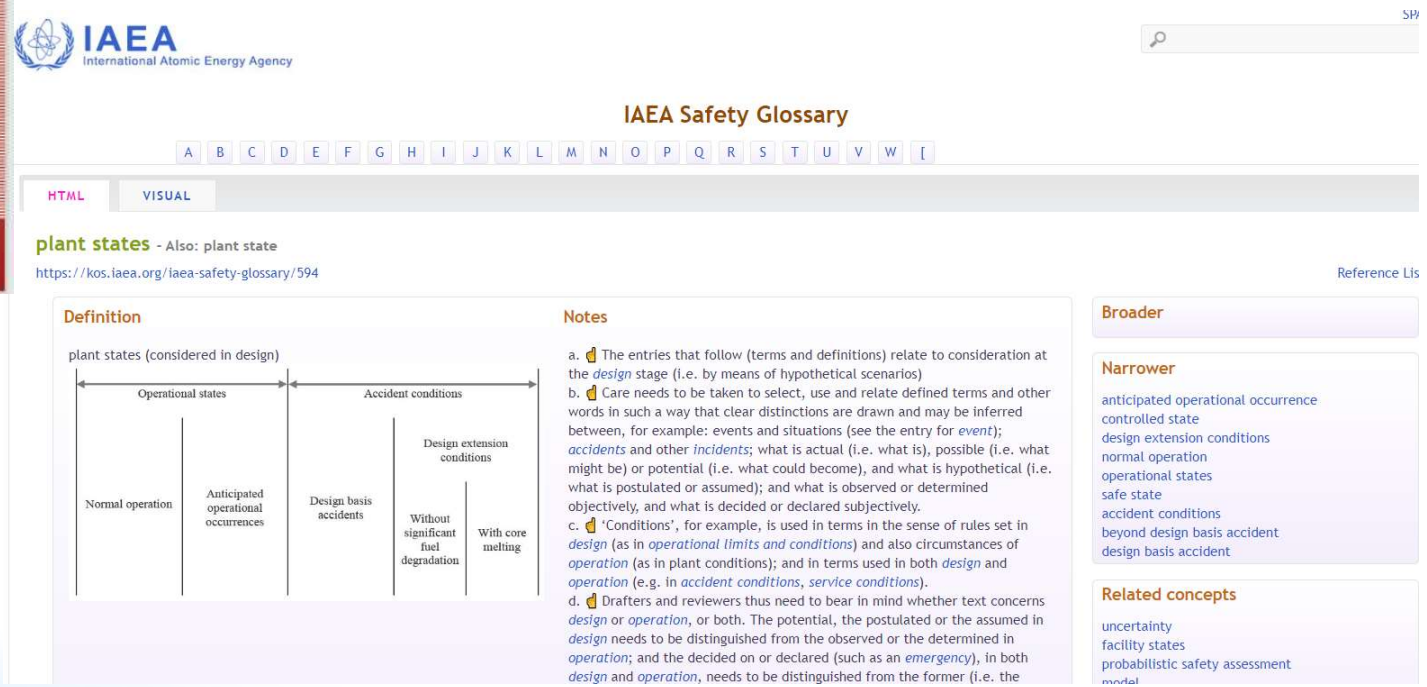
IAEA.org



IAEA Safety Glossary, 2018 Edition



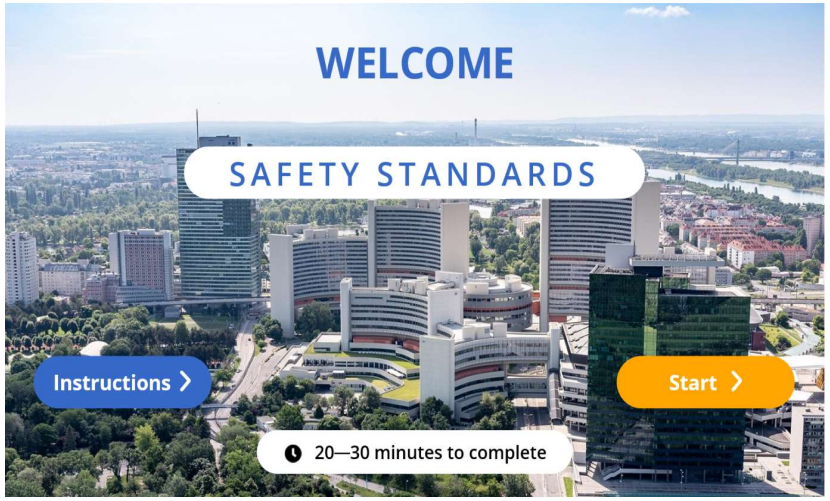
https://www.iaea.org/publications/11098/iaea-safety-glossary-2018-edition



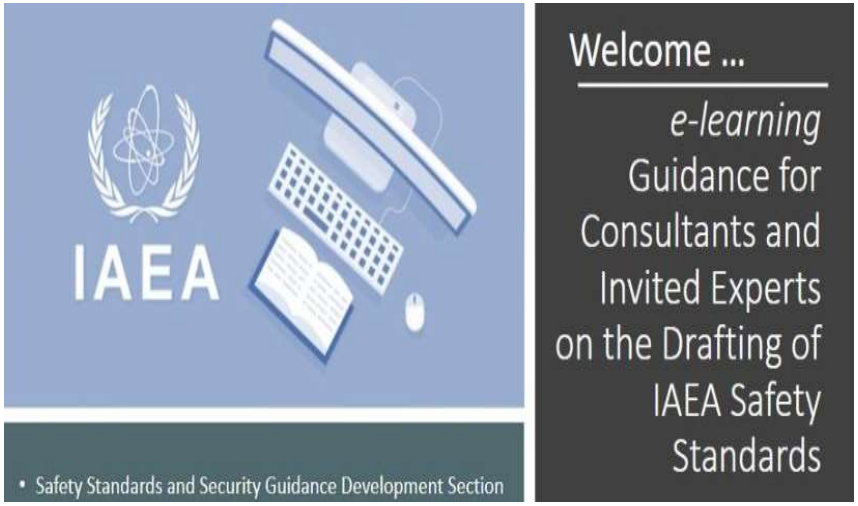
https://kos.iaea.org/iaea-safety-glossary.html

E-learning

IAEA Safety Standards Overview
https://elearning.iaea.org/m2/enrol/index.php?id=691



Guidance for External Contributors on Drafting IAEA Safety Standards
https://elearning.iaea.org/m2/course/view.php?id=689



IAEA
International Atomic Energy Agency

Nuclear Safety and Security Online User Interface (NSS-OUI)

Easy Access through Nuclear Safety and Security Online User Interface (NSS-OUI)

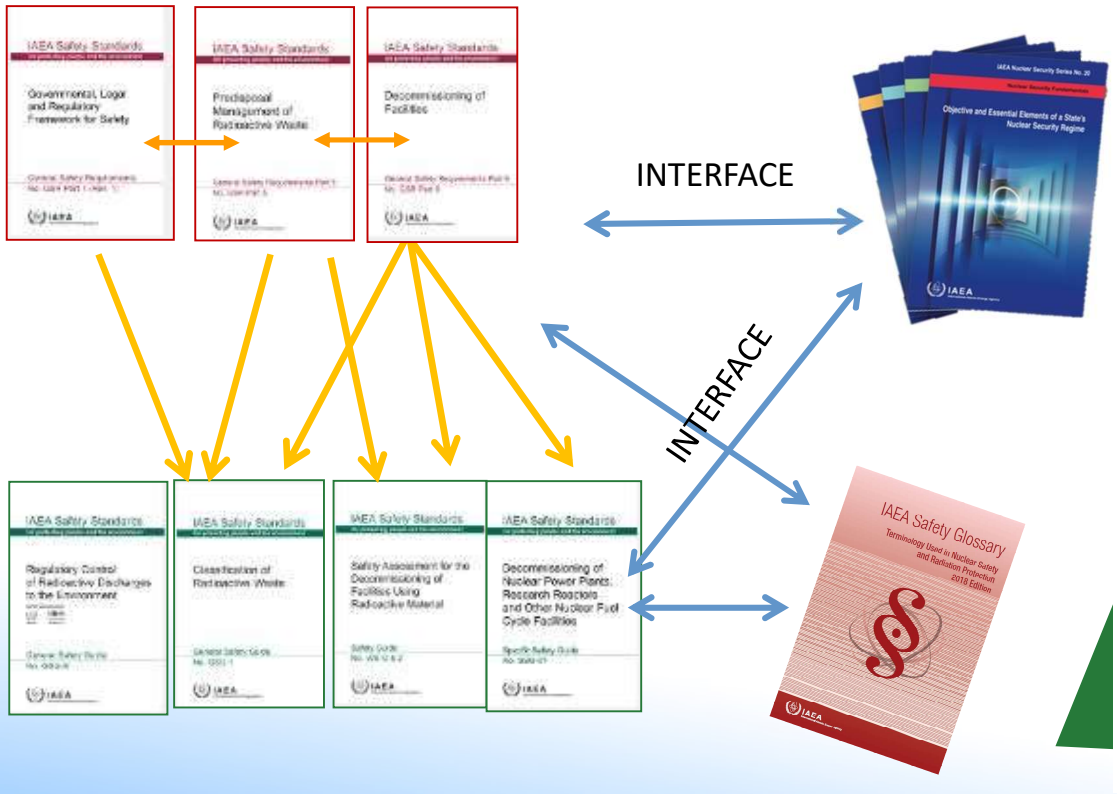
- Search through entire collections
- Relationships and links between requirements and corresponding recommendations
- Hyperlinks to definitions from the IAEA Glossary
- Updates on newly published Standards and other IAEA publications
- Free access at any time and any place (no sign in)

https://nucleus-apps.iaea.org/nss-oui

Content and relationship management through metadata and explicit relationship notes

The safety standards are a consistent and interrelated set of publications.

Topical relationship – Hierarchical relationship – Semantic relationship



- Governmental, Legal and Regulatory Infrastructure for Safety (based on GSR Part 1)
  - National policy and strategy
    - GSR Part 1/ National policy and strategy/General
    - National policy and strategy for decommissioning
    - National policy and strategy for waste management
    - Governmental responsibility for the disposal of radioactive waste
    - International obligations and arrangements for international cooperation
  - Legal and regulatory framework
    - GSR Part 1/Legal and regulatory framework/General
    - Responsibilities of the regulatory bodies specific to occupational exposure
    - Responsibilities of the government and the regulatory body specific to public exposure
    - Responsibilities of the government specific to medical exposure
    - Responsibilities of the regulatory body specific to medical exposure
    - Responsibility of the regulatory body for the disposal of radioactive waste
    - Responsibility of the regulatory body for the management of radioactive waste
    - GSR Part 1/Emergency preparedness and response
    - GSR Part 1/Waste management
    - GSR Part 1/Decommissioning
    - GSR Part 1/Protective actions to reduce existing or unregulated radiation risks

Content and relationship management through metadata and explicit relationship notes

The safety standards are a consistent and interrelated set of publications.

Topical relationship – Hierarchical relationship – Semantic relationship

See also:

- NS-G-2.13 on Evaluation of Seismic Safety for Existing Nuclear Installations
- SSG-9 on Seismic Hazards in Site Evaluation for Nuclear Installations
- SSG-18 on Meteorological and Hydrological Hazards in Site Evaluation for Nuclear Installations
- SSG-21 on Volcanic Hazards in Site Evaluation for Nuclear Installations
- NS-G-3.6 on Geotechnical Aspects of Site Evaluation and Foundations for Nuclear Power Plant
- NS-G-1.5 on External Events Excluding Earthquakes in the Design of Nuclear Power Plants
- NS-G-1.6 on Seismic Design and Qualification for Nuclear Power Plants
- NS-G-1.7 on Protection Against Internal Fires and Explosions in the Design of Nuclear Power Plants
- NS-G-1.11 on Protection against internal Hazards other than Fires and Explosions in the Design of Nuclear Power Plants
- NS-G-3.1 on External Human Induced Events in Site Evaluation for Nuclear Power Plants

IAEA
International Atomic Energy Agency

NSS-OUI Demonstration

https://nucleus-apps.iaea.org/nss-oui/

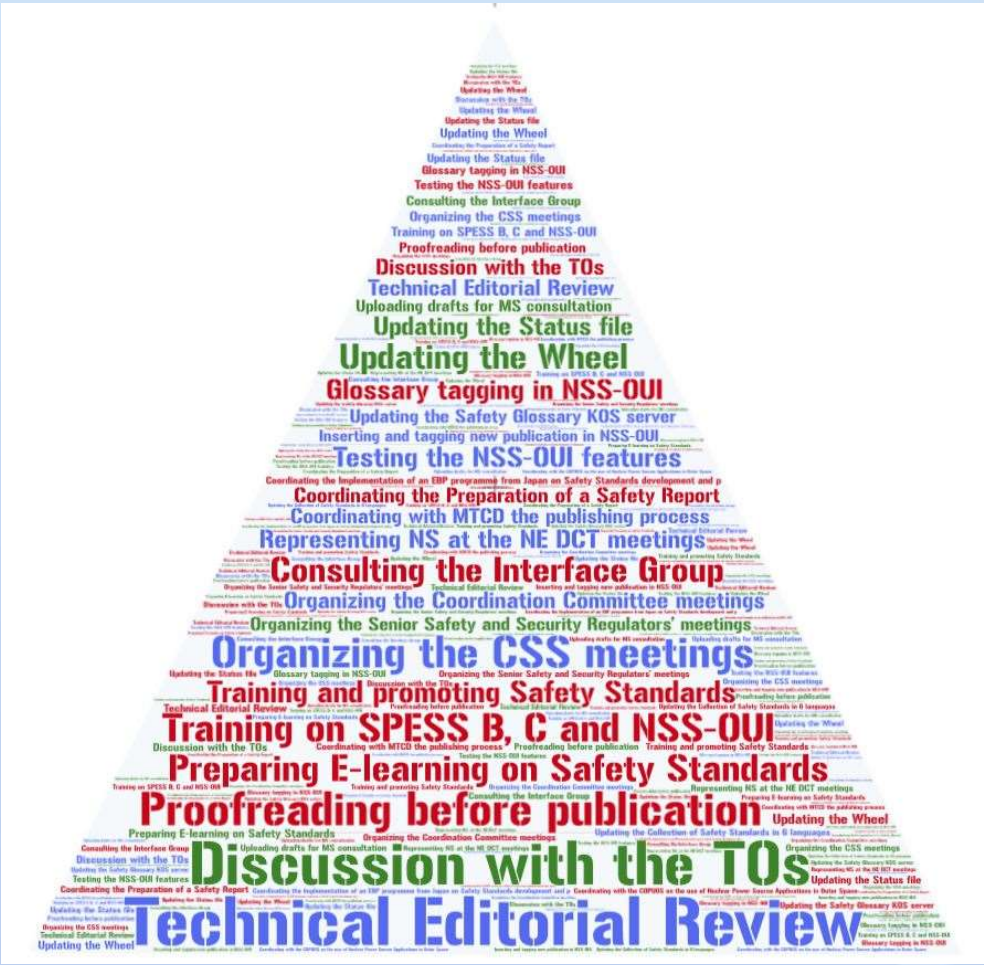
IAEA
International Atomic Energy Agency

How to contact us

Safety.Standards@iaea.org

IAEA
International Atomic Energy Agency

SAFETY STANDARDS AND SECURITY GUIDANCE DEVELOPMENT SECTION



- Dominique Delattre
  - Katherine Asfaw
  - Cristina Fischer
  - Tatiana Karseka-Yanev
  - Maria Nikolaki
  - Peter Shaw
  - Masaharu Yuzawa

IAEA
International Atomic Energy Agency

Questions?

IAEA
International Atomic Energy Agency

Thank you!