



## ***L02.- Safety Assessment GSR Part 3***

***International Atomic Energy Agency***



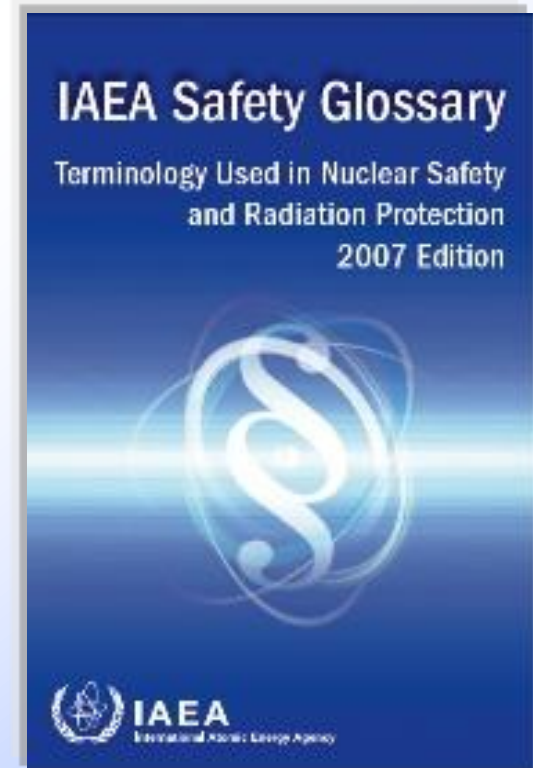
# OBJECTIVE

**To discuss safety requirements related to the safety assessment, established in the General Safety Requirements Part 3 (*GSR Part 3*). – Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards.**



# IAEA Safety Glossary

- ✓ **Safety assessment**. Assessment of all aspects of a practice that are relevant to protection and safety; for an authorized facility, this includes siting, design and operation of the facility.
- ✓ **Safety analysis**. Evaluation of the potential hazards associated with the conduct of an activity. (The safety analysis is part of the overall safety assessment).

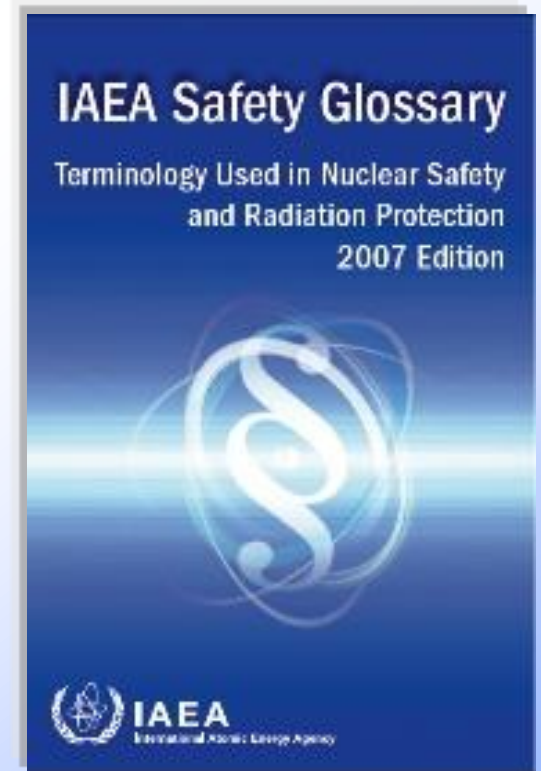




# IAEA Safety Glossary

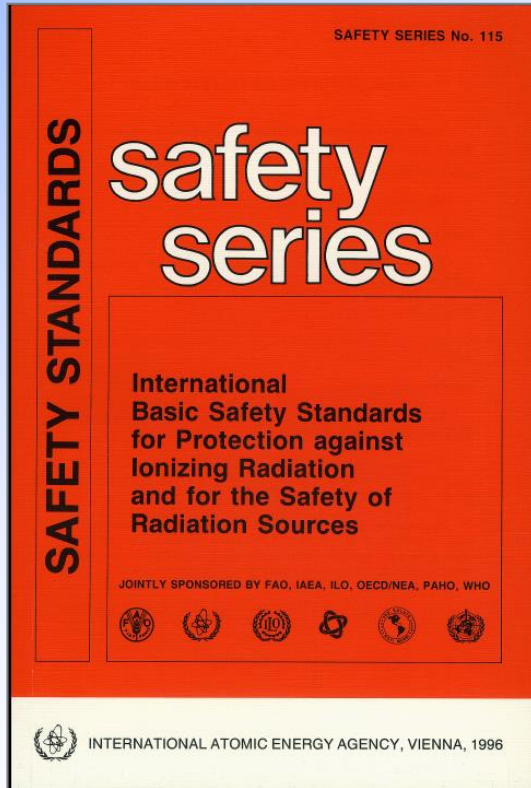
- **Safety case**. A collection of arguments and evidence in support of the safety of a facility or activity.

This will normally include the findings of a safety assessment and a statement of confidence in these findings.

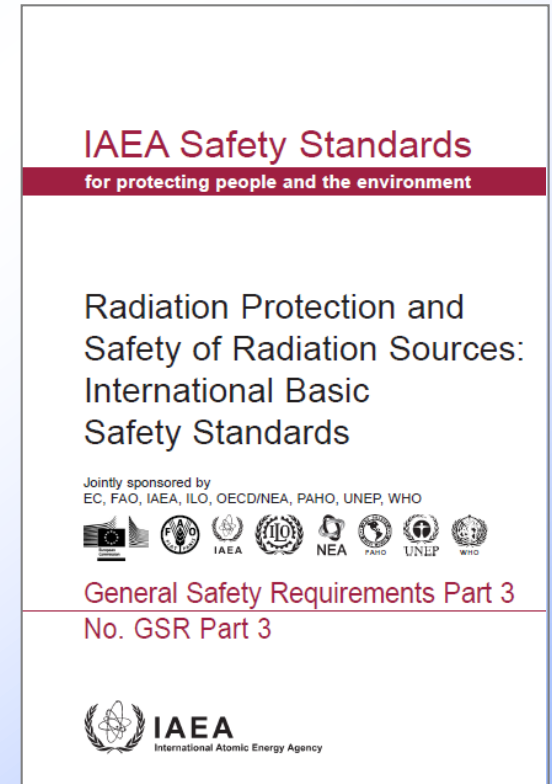




# Requirements for the safety assessment



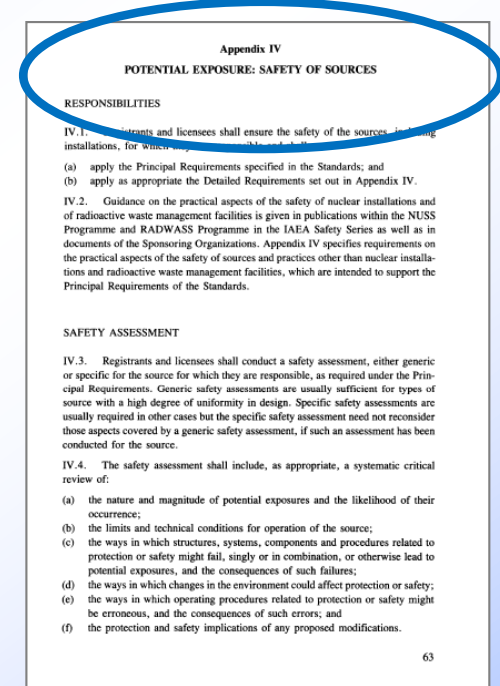
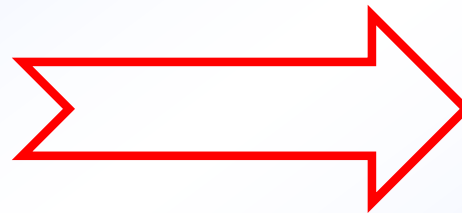
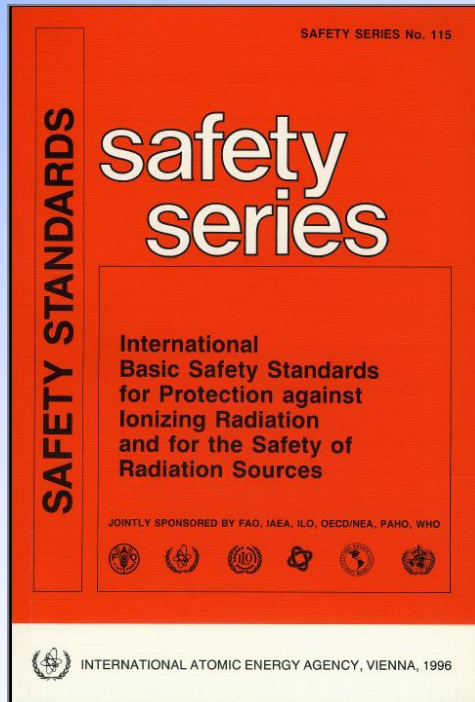
**Very similar requirements in both editions; but.....**







# Requirements for the safety assessment

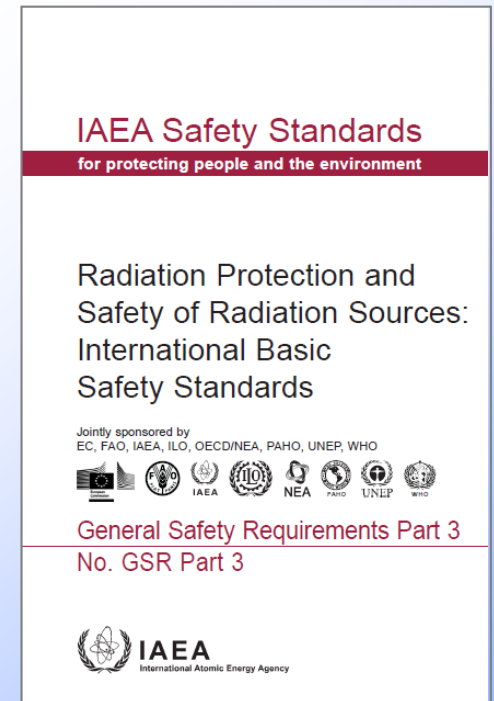


In the SS 115 these requirements were exposed in the section of potential exposures and hardly any attention was paid to them.



# Requirements for the safety assessment

- The new BSS establish requirements to be fulfilled in all facilities and activities giving rise to radiation risks.
- For certain facilities and activities, such as nuclear installations, radioactive waste management facilities and the transport of radioactive material, other safety requirements, complementary to these Standards, also apply.





# Assessment of Potential Exposures

## Potential Exposure - Definition

*«Prospectively considered exposure that is not expected to be delivered with certainty but that may result from an anticipated operational occurrence or accident at a source or owing to an event or sequence of events of a probabilistic nature, including equipment failures and operating errors.»*

**IAEA Basic Safety Standards (GSR Part 3)**





# Assessment of Potential Exposures

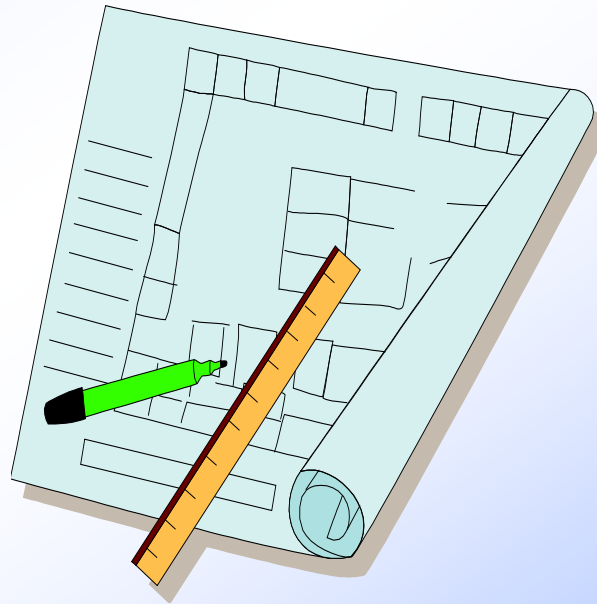
## Licensees should provide information related to:

- The nature and magnitude of **potential exposures** and their likelihood;
- The ways in which structures, systems and components, and procedures might fail or might give rise to **potential exposures**, and the consequences of such events;
- The possibility of human errors leading to the **unplanned exposure** of any person.



# Safety demonstration for the authorization of facilities and activities

- Any person or organization that requests an authorization is responsible for conducting a safety assessment to be presented to the regulatory body as part of the request.

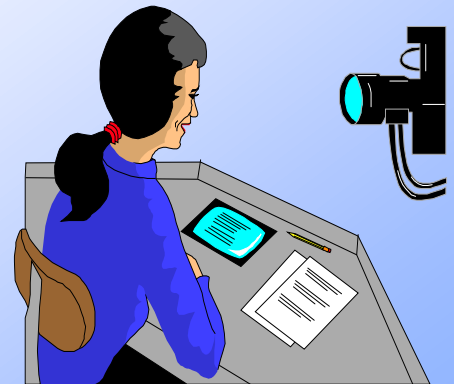




# Safety assessment

## Requirement 13: Safety assessment

- The regulatory body shall establish **requirements** for persons or organizations responsible for facilities and activities that give rise to radiation risks **to conduct an appropriate safety assessment.**
- Prior to the granting of an authorization, the responsible person or organization shall be required **to submit a safety assessment, which shall be reviewed and assessed by the regulatory body.**





# Safety assessment

## Requirement 13: Safety assessment

- The person or organization, as required, or registrants and licensees, as appropriate, shall conduct a safety assessment that is either generic or specific to the practice or source for which they are responsible.
- A **generic safety assessment** is usually sufficient for types of source with a high degree of uniformity in design.
- A **specific safety assessment** is usually required in other cases; however, the specific safety assessment need not include those aspects covered by a generic safety assessment, if a generic safety assessment has been conducted for the type of source.



# Safety assessment

The safety assessment shall include, as appropriate, a **systematic critical review** of:

- a) *The **operational limits and conditions** for the operation of the facility;*
- a) **The ways in which structures, systems and components, including software, and procedures relating to protection and safety might fail, singly or in combination, or might otherwise give rise to exposures, and the consequences of such events;**
- c) *The ways in which **external factors** could affect protection and safety;*
- d) *The ways in which **operating procedures** relating to protection and safety **might be erroneous, and the consequences of such errors;***
- e) *The **implications for protection** and safety of any modifications;*
- f) *The implications for protection and safety of **security measures** or of any modifications to security measures;*
- g) *Any **uncertainties or assumptions** and their implications for protection and safety.*





# Safety assessment

The registrant or licensee shall take into account in the safety assessment:

- a) *Factors that could give rise to a **substantial release of radioactive material**, the measures available to prevent or to control such a release, and the maximum activity of radioactive material that, in the event of a major failure of the containment, could be released to the environment;*
- b) *Factors that could give rise to a **smaller but continuing release of radioactive material**, and the measures available to detect and to prevent or to control such a release;*
- c) *Factors that could give rise to **unintended operation of any radiation generator** or a loss of shielding, and the measures available to detect and to prevent or to control such occurrences;*
- d) *The extent to which the use of **redundant and diverse safety features** that are independent of each other, so that failure of one does not result in failure of any other, is appropriate to restrict the likelihood and magnitude of potential exposures.*





# Safety assessment

Registrants and licensees shall ensure that the safety assessment is documented and, where appropriate, that it **is independently reviewed** under the relevant management system.



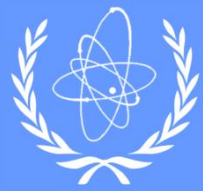


# Safety assessment

Additional reviews of the safety assessment shall be performed when:

- a) **Significant modifications** to the facility or to its operating procedures or maintenance procedures are envisaged;
- b) **Significant changes occur on the site** that could affect the safety of the facility or of activities on the site;
- c) **Information on operating experience, or information about accidents and other incidents** that could result in exposures, indicates that the current assessment might be invalid;
- d) **Any significant changes in activities** are envisaged;
- e) **Any relevant changes in guidelines or standards** have been made or are envisaged.





# Safety assessment

Modifications shall be made cautiously

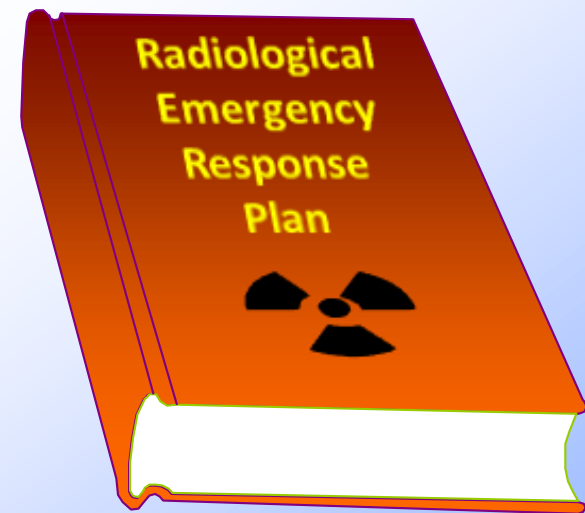
The implementation of all improvements **shall be prioritized so as to optimize protection and safety.**

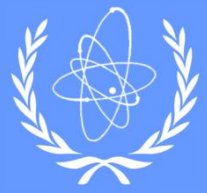




# Emergency preparedness and response

If the safety assessment indicates that there is a **reasonable likelihood of an emergency** affecting either workers or members of the public, the registrant or licensee shall prepare an **emergency plan for the protection of people and the environment.**





***Thank you!***