Nuclear Fuel Cycle Facilities

- **Front End:**
  - Mining & Milling
  - Conversion
  - Enrichment
  - Fuel Fabrication

- **Back End:**
  - Spent Fuel Storage
  - Reprocessing
  - Waste Management
Fuel Cycle Facility Safety Standards

Safety Fundamentals

Thematic areas
- Legal and governmental infrastructure
- Emergency preparedness and response
- Management systems
- Assessment and verification
- Site evaluation
- Radiation protection
- Radioactive waste management
- Decommissioning
- Rehabilitation of contaminated areas
- Transport of radioactive material

Facilities and activities
- Nuclear power plants: design
- Nuclear power plants: operation
- Research reactors
- Fuel cycle facilities
- Radiation related facilities and activities
- Waste treatment and disposal facilities

- General safety (cross-cutting themes)
- Safety of nuclear facilities
- Radiation protection and safety of radiation sources
- Safe management of radioactive waste
- Safe transport of radioactive material
Fuel Cycle Facility Safety Standards

- **NS-R-5 Scope:**
  - **Front End:**
    - Conversion & Enrichment
    - Fuel Fabrication
  - **Back End:**
    - Spent Fuel Storage
    - Reprocessing
  - **Other:**
    - R&D Facilities
    - Criticality
Fuel Cycle Facility Safety Standards

- NS-R-5 Structure:
  - Safety Management System
  - Siting
  - Design
  - Construction
  - Commissioning
  - Operation
  - Decommissioning
Fuel Cycle Facility Safety Standards

- NS-R-5 General Safety Requirements:
  - Defence in Depth
  - Demonstration of Safety
  - Safety Analysis
  - Safety Management System
  - Safety Culture
  - Emergency preparedness

- NS-R-5 Specific Safety Requirements:
  - Conversion & Enrichment
  - Uranium Fuel Fabrication
  - MOX Fuel Fabrication
Fuel Cycle Facility Safety Standards

Graded Approach:

- **Magnitude of “possible radiation risks”**
- **Maturity of Facility/Activity**
  - Proven design and practices
  - Existence of operational experience of similar facilities or activities
- **Complexity**
FCF Safety Guides:

- Published in 2010:
  - SSG-6 Safety of Uranium Fuel Fabrication
  - SSG-7 Safety of Uranium and Plutonium Mixed Oxide Fuel Fabrication Facilities
  - SSG-5 Safety of Conversion Facilities and Uranium Enrichment Facilities

- Published in 2012:
  - SSG-15 Storage of Spent Nuclear Fuel

- In Development:
  - DS360 Reprocessing
  - DS381 Research & Development Facilities
  - DS407 Criticality Safety
Concluding Remarks

The set of Safety Standards for Fuel Cycle Facilities will be:

- A useful support for Member States to ensure the highest level of Safety,
- The basis for the *IAEA Safety Review Service* (Safety Evaluation During Operation- SEDO)