SAFETY AND SECURITY INTERFACE

How Safety and Security are implemented in transport.

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OVERVIEW

- Objectives of the transport safety regulations
- Types of packages
- Hazard communication and controls during transport
- The interface between safety and security
SAFETY OBJECTIVES

- To protect persons, property and the environment from the effects of radiation during transport of radioactive material

How?
- Containment of the radioactive contents
- Control of external radiation levels
- Prevention of criticality
- Prevention of damage caused by heat
**ACHIEVING THE OBJECTIVES**

- Applying a graded approach to package types
  - Content limits - classification
  - Package performance requirements - select the right package
- Administrative controls
  - Hazard communication - marking, labelling, documents
  - Where appropriate, approval by CA
  - Simple operational controls during transport
    - Separation of packages from crew and public
    - Limiting accumulation of nuclear material
**TYPES OF PACKAGES**

- Graded approach
  - Not accident resistant: Excepted, Industrial, Type A
  - Accident resistant: Type B, Type C (air transport)
- Special packaging:
  - UF6
  - Fissile - criticality
All packages are subject to control and communication requirements for safety

Part of:
- Preparing package for transport
- Transporting the package from consignor to consignee

Packaging may contribute to security: robustness, size, mass and layers
**COMMUNICATION**

- Communication for safety is accomplished by:
  - Marking packages
  - Labelling packages (overpacks/freight containers)
    - Radiation category – fissile (segregation; 50)
  - Placarding freight containers, tanks, road and rail vehicles
  - Providing transport documents and approval certificates
  - Providing advance notification for certain shipments

**UN 2910**

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- **Radioactive I**
- **Radioactive II**
- **Radioactive III**
- **Fissile**
- **Corrosive**
SAFETY AND SECURITY

- Low and moderate potential consequence contents: do not require robust packages nor robust security measures
- Higher potential consequence contents require robust packages which also **may** provide security benefits
  - Penetration resistant
  - Difficult to open: require special tools
  - Large mass: difficult to move
The physical protection system should not adversely impact safety features of the package(s).

Potential conflicts with safety:

- Attachment of security devices to packages may require a package design safety review.
- The use of overpacks and closed transport vehicles may adversely impact rejection of decay heat.
INTERFACE SAFETY WITH SECURITY

- Safety: display of placards and labels ➔ appropriate emergency response action
- Safety and security have different needs
  - Safety: open and transparent hazard communication
  - Security: information protection
- Placarding: information on public display ➔ can be problematic for security, but is required in most countries and for international shipments
IF it is determined that placards and labels should not be displayed for domestic shipments of nuclear material:

- Compensatory measures should be used to meet the intent of the safety requirement
  - These measures should be decided in consultation with the appropriate transport safety authorities
  - Hazard communication: accomplished with accompanying escorts, guards, health physics personnel, etc.

This only pertains to domestic shipments
Information management from security perspective
  - Limit advanced knowledge to a min # of persons
    - Route/schedule
    - Information on physical protection measures
  - Maintaining information security
    - Real-time tracking information
    - Route changes
Means in use within TRANSRAD

- Communication - IT
- Tracking of vehicles
- Tarpauling - container
- Security systems
- Seals
- Locks
- Packages - stowage
- Dose(rate)meter
THANK YOU!