Security in Safety
The Transport of Nuclear Fuel Cycle Material

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Points covered

• Security Measures
• The United Nations Model Regulations
• Additional Security for Maritime Transports
• Industries Concerns
• Assessment of the Risk
• Burden on Industry
• Conclusion
Security Measures

• Security
  – is the various measures to guard against malicious acts
  – is mainly responsibility of the States involved

• Transport industry must comply with State Security regulations

• Transports of Nuclear Fuel Materials
  – Subject to extensive national protection measures including
    • Design of the transport vehicle
    • Use of security forces
    • Employee screening
    • Satellite tracking
Security Measures

• Physical protection measures for international transports include
  – Limiting the time in transit
  – Varying the routes used
  – Avoiding bottle necks
  – Limiting the knowledge of the shipments on a “need to know basis”
Security Measures

• Since 2001 interest has shifted to all nuclear fuel cycle materials including
  – HLW
  – MOX
  – Fuel assemblies
• All these materials are transported by dedicated
  – Vessels
  – Rail or road wagons
• Routes have to be approved by the competent authorities in the countries concerned
• In the past the IAEA main focus was on safety so this was a major change in direction for the IAEA and the industry.

• In 2002 work began on developing security requirements for all radioactive materials

• The United Nations Model Regulations contain provision for
  – basic security measure for all dangerous goods
  – enhanced security measures for *high consequence dangerous goods*
    • *high consequence dangerous goods include*
      – dangerous chemicals
      – flammable liquids
      – gasses
      – radioactive materials in type B and C packages
Security for High Consequence Dangerous Goods

• **Provisions for high consequence dangerous goods**
  – competent authorities shall consider
    • identifying consignors or carriers engaged in the transport of high consequence

• **Security plans**
  – Carriers, consignors and others engaged in the transport shall adopt a security plan that includes
    • Allocation of security responsibilities
    • Records of dangerous goods transported
    • Assessment of vulnerabilities
    • Statements of measures, including training, policies to respond to higher threat conditions, new employee verification
Security for High Consequence Dangerous Goods

- Choice of routes
- Equipment and resources that are to be used to reduce security risks
- Procedures for reporting and dealing with security threats
- Breaches of security or security incidents
- Procedures for the evaluation and testing of security plans
- Measures to ensure that the distribution of the transport information is limited as far as possible.
Sea Transports

• Additional Security for Maritime Transports
  – International Maritime Organisation
    • International Ship and Port Facility Security Code
      – Security for the ports and shore side
    • Amendments to the Safety of Life at Sea Convention
      – Long range identification and tracking of ships

• The 2005 Protocol to the Convention for the Suppression of Unlawful Acts Against the Safety of Maritime Navigation, 1988
  – states that a person commits an offence
Suppression of Unlawful Acts Against the Safety of Maritime Navigation

- uses against or on a ship or discharging from a ship any radioactive material in a manner that causes or is likely to cause death or serious injury or damage;

- transports on board a ship any radioactive material, knowing that it is intended to be used to cause death or serious injury or damage;

- transports materials knowing that it is intended to be used in a nuclear explosive activity or in any other nuclear activity not under safeguards;

- transports any equipment, materials or software that significantly contributes to the design, manufacture or delivery of a BCN weapon, with the intention that it will be used for such purpose.

- The transportation of nuclear material is not considered an offence if such items or materials are transported under the control of a State Party to the Treaty on the Non Proliferation of Nuclear Weapons.
Three Instruments & The Transport Industry

• Three International Instruments
  – INFCIRC 225
    • Nuclear materials with a potential to produce a nuclear device
  – UN Model Regulations for high consequence dangerous goods (HCDG)
    • All dangerous goods consider to have a grave consequence if used maliciously
  – IAEA Security in the Transport of radioactive materials
    • All radioactive materials in transport
Industries Concern

• UN Model Regulations
  – High consequence radioactive materials
    • 3000 A1 for large sources
    • 3000 A2 for other radioactive materials
• IAEA Security in the Transport of Radioactive Materials
  – Enhanced security level
    • Radioactive sources (CoC)10D
    • Other materials – 3000 A2
Industries Concern

- Difference in values for enhanced security levels
- Transporters do not understand D values

- Lack of harmonisation
  - IAEA v UN
    - At least for the next 4 years
  - Governments
    - Inconsistency between government requirements
    - Especially for international land transports crossing several territories
Assessment of the Risk

• Perceived risk
  – it is important to make and communicate a realistic assessment of the danger and the real risk
  – taking into account the properties of the material and the packaging used
  – exaggerated perceptions in the minds of public and politicians could have a serious impact on the transport industry and the supply chain
  – In the event of an incident proper communication of the real danger is essential
Risk assessment

• Risks are manageable
  – Un-irradiated materials present low radiological hazard
    • Unlikely targets
    • Radiological consequences would not be severe
  – Highly radioactive materials
    • Metallic, ceramic, or vitreous
      – Not easily dispersed
      – Transported in vary robust packages
• Packages and the transport system are designed to ensure safety but they also provide security from realistic terrorist activities
Burden on Industry

- Many new requirements
  - Advance notice
    - This could increase the security threat
  - Monitoring
    - GPS, RFID
  - Escorts
  - Personnel screening (Dock worker)
  - Additional training
  - Container screening

- All adding additional cost which may lead to
  Denial and delays to vital transports
Conclusion

• Several international instruments already apply to the transport of nuclear fuel materials
  • But there is a lack of harmonisation
• The real risk - not a perceived risk must be presented
  • The packaging used is very robust
  • The materials are not easily dispersed
• Additional burdens on the transport system could lead to more denials and delays

• Thank you for your attention