

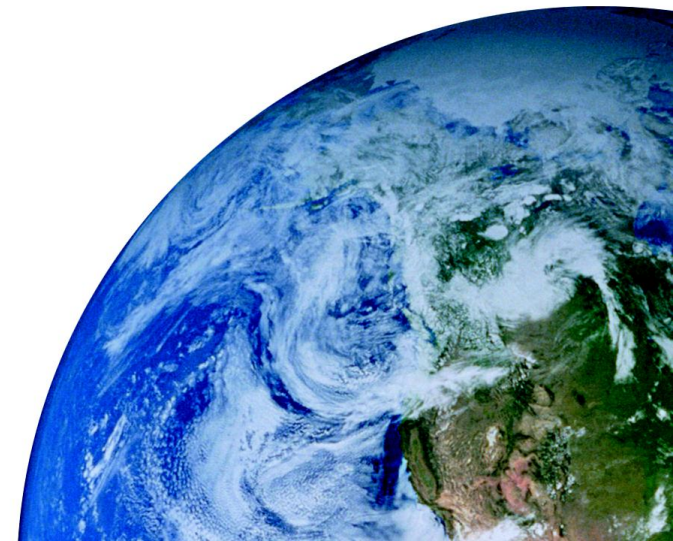
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# Industry Experience on Back End Transport

**Betty Bonnardel-Azzarelli**  
Specialist Advisor, WNTI

International Conference on the Management of Spent Fuel  
from Nuclear Power Reactors:  
An Integrated Approach to the Back End of the Fuel Cycle

IAEA Headquarters, Vienna, Austria  
15-19 June 2015

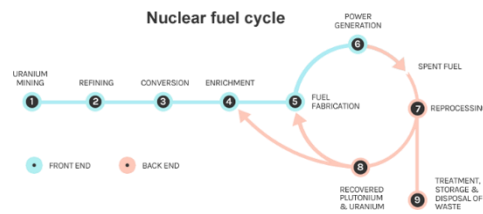


# Facts about Radioactive Material Transport

- 20 millions consignments of radioactive materials routinely transported annually on public roads, railways and ships



- 5% of these are nuclear fuel cycle related




- International Atomic Energy Agency Regulations for the Safe Transport of Radioactive Materials since 1961

# Regulations for the transport of Radioactive Materials - A proven efficiency

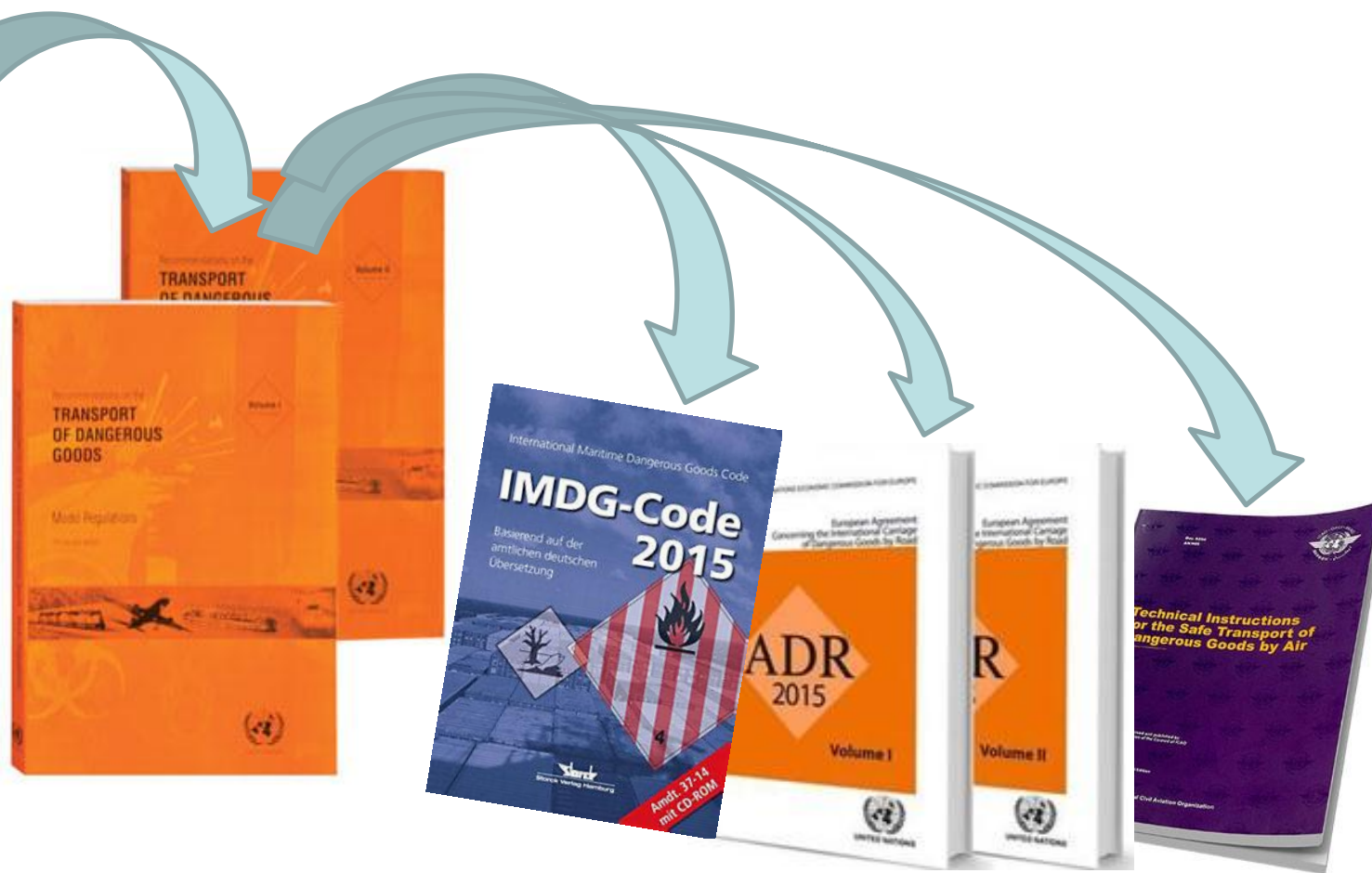
IAEA Safety Standards  
for protecting people and the environment

Regulations for the Safe Transport of Radioactive Material  
2012 Edition

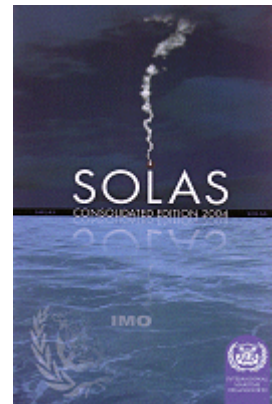
Specific Safety Requirements  
No. SSR-6



IAEA  
International Atomic Energy Agency



# Sea Transport



# The World Nuclear Transport Institute (WNTI)



WORLD NUCLEAR TRANSPORT INSTITUTE

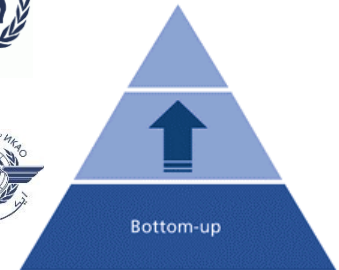


# WNTI: A bottom-up... and top-down approach

WNTI

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- Bottom-up approach
  - Industry feedback to regulators
    - Operational experience
    - Lessons learnt



- Top-down approach
  - Support on understanding and interpretation of the Regulations to Industry
  - Development of Good Practice Documents
  - Organisation of thematic workshops



# WNTI work on back end transport

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- A WNTI industry working group dedicated to Back End Transport
- Factsheets, Information Papers and Good Practice Guides
- A dedicated workshop in December 2014
- Participation in international meetings and conferences



# Challenges in the back end transport

- Changes in the environment
  - Evolution of technical knowledge
  - Evolution of tools (computational, big data...)
  - Evolutions of knowledge, organisations and practices (Back end policy makers and implementers, Competent Authorities, Technical Support Organisations, Industry)





# Challenges in the back end transport

- Challenges in packagings licensing and transport approvals
  - Harmonisation of the regulatory framework for transport and waste
  - Transport after long term storage
- Need to prepare now for tomorrow
  - a clear long term strategy
  - knowledge management
  - long term stability of the regulations
- High level of security



# Challenges in the regulatory framework for transport and waste

- Harmonization

- between countries regulations
- between countries implementation of the regulations
- between waste and transport regulations
- between safety and security



# The “4 Cs”

- Categorisation – large number of product groups;
- Conditioning;
- Characterisation;
- Classification;



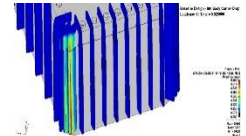
# WNTI GPG on Inventory Principles

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- WNTI Good Practice Guide: WNTI Inventory Principles – A Move Towards Reliable Packaging and Transport Data
- 9 principles – critical for packaging, transport, treatment and disposal
  - Training
  - Accuracy and review
  - Auditability
  - Assurance – nuclear site reviews
  - Fit for purpose data
  - Dedicated resource(s)
  - Dynamic waste inventory data
  - Clarity
  - Alignment



- Europe: Technical guide “Package Design Safety Report (PDSR) from the transport of radioactive material”
- Northern America: Mutual recognition of package design approval for Type B(U) package design
- IAEA: Technical guide “Package Design Safety Report (PDSR) from the transport of radioactive material” in development



# Dual Purpose Casks (DPC)

- Several options for the back end
  - Reprocessing, interim storage in pool, dry interim storage, final repository storage
- Integrated safety demonstration for DPC
  - IAEA Joint Working Group on Guidance for an Integrated Transport and Storage Safety Case for Dual Purpose Casks for Spent Fuel
  - IAEA TECDOC (still draft)
- IAEA Working Group at Transport Safety Standards Committee (TRANSSC)
  - Proposal to change Transport Regulations to include a gap analysis for transport after long term storage



# Other points to consider

- Transport of large components
  - Evolution of the Transport Regulations
  - WNTI factsheet
  - Industry experience
  - Route planning
- Implementation of the IAEA Fissile Exception Requirements
  - WNTI information paper on how to interpret the regulations
  - IAEA guidance (based on WNTI paper and other documents) to be issued soon



# Conclusion

- Keeping the routes open
  - Public acceptance
  - Emergency Preparedness and Response
  - Nuclear liability and insurance
  - Training
  - Information
  - Communication is key



- Importance of a good communications strategy
  - Transport: only nuclear activity in the public domain
  - Stakeholders engagement
  - WNTI good practice guide on communicating for transport





# Thank you

For more information: [www.wnti.co.uk](http://www.wnti.co.uk)

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