



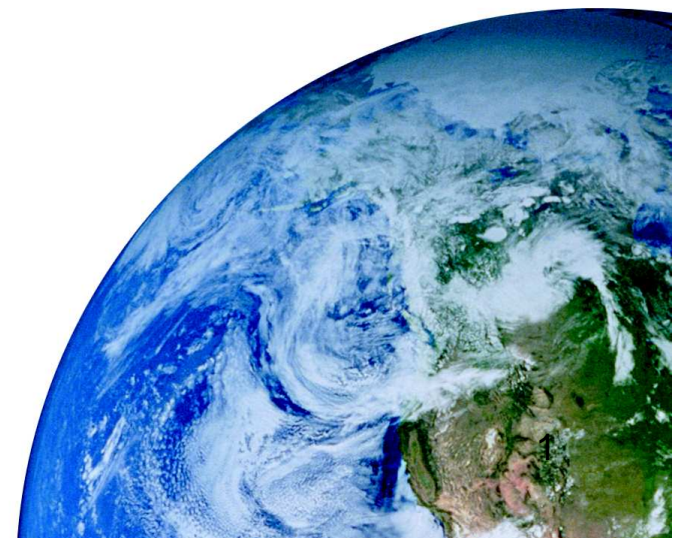
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# **Safety and Security Issues in the Transport of Nuclear Fuel Cycle Materials – Industry Experience**

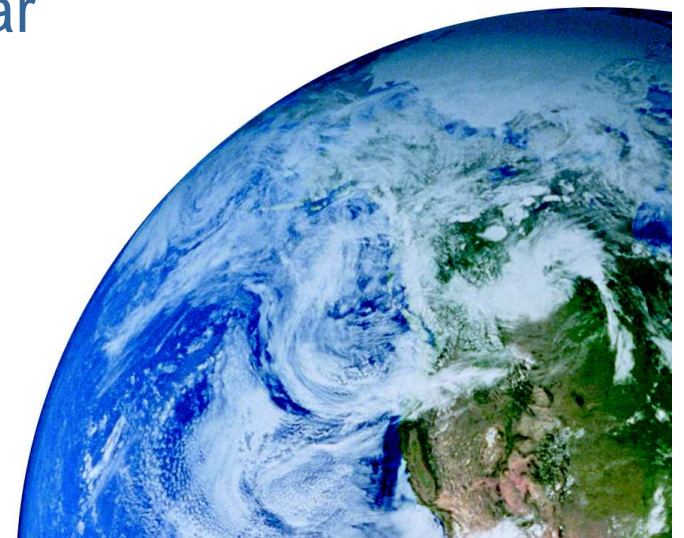
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**IAEA International Conference on the Safe and  
Secure Transport of Radioactive Materials**  
Vienna, 17- 21 October 2011



**The World Nuclear Transport Institute now comprises over 50 member companies covering all aspects of radioactive material transport.**

This paper gives an industrial perspective on safety, security and public acceptance issues with particular reference to nuclear fuel cycle materials, based on the international experience of its members gained over the past decades.





# Let's start with a conclusion...

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## To Maintain a High Level of Safety

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- It is widely recognised that compliance with the IAEA Regulations for the Safe Transport of Radioactive Material provides a high level of safety.  
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- The regulatory regime is now almost stabilised
- Transport will ne more international.
- It is recognised that the adequacy of the Regulations versus the real conditions of transport and handling must be reviewed periodically.

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## To Maintain a High Level of Security

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- A high level of Security must be achieved.
  - The requirements regarding security are increasing.
  - IAEA has publicised the implementing guide "Security in the transport of radioactive material" in 2008.
  - INFICIRC 225, for nuclear material, is under revision and should be published at the end of 2010/beginning of 011/
  - The industry will respond Appropriately.
- Security must be reconciled with
  - Safety
  - Information for the Public
- Harmonisation among the national security regimes and consistency in their implementation would avoid undue burden on all stakeholders and would increase public confidence in our activities.

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**“Excerpts from conclusions presented at the end of the International PATRAM 2010 conference in London last October”**

# Safety Issues

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- The underlying philosophy is that transport safety is vested primarily in the properties of the package.
- The IAEA Regulations for the Safe Transport of Radioactive Material, TS-R-1 set the standards for packages.
- Appropriate tests are also specified which cover all the transport accidents which can be realistically envisaged.
- High levels of Nuclear Safety and management systems are essential components for industry.



# The Safety Record

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- The safety record achieved by the transport industry is excellent - in the last 50 years there has never been a transport accident involving nuclear fuel cycle materials which caused significant radiation damage to man or the environment.
- Compliance is the key to safety and this will become increasingly important as the industry expands and new entrants emerge.

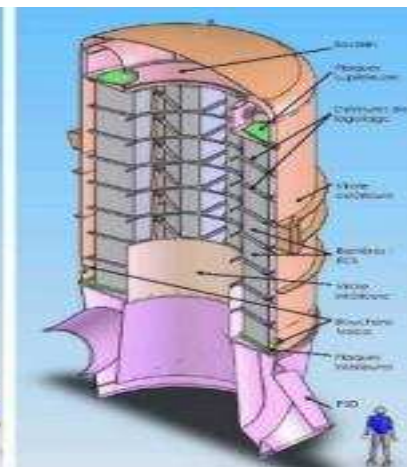
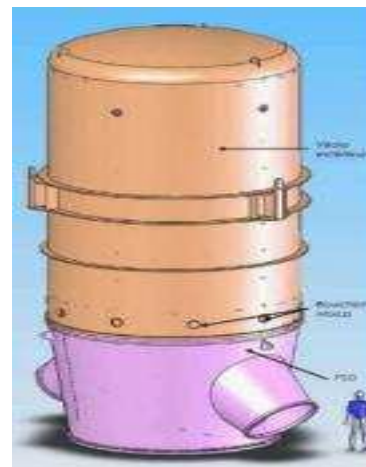


# Future Safety Issues

- The IAEA Regulations have been successful in ensuring safety but there remains a need to revise features which result in operational constraints and increased costs but do not contribute to safety.



- The packaging and transport of a wide variety of process and decommissioning wastes will become increasingly important and the regulations must be able to cope with these efficiently.



# Transport Security



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# Transport Security

- Security involves measures to guard against malicious acts and this presents a different challenge from safety and also from public order management.
- In the past the main concern has been diversion of materials relevant to nuclear weapons but the potential threat of terrorist action leading to widespread dispersal of radioactivity is now an important concern.
- The properties of fuel cycle materials are relevant to security risk. Uranium concentrates and new fuel present a very low risk.





## Transport Security cont...

- Mixed oxide fuel (MOX), spent fuel and vitrified high level waste, are refractory, not easily dispersed, and transported in robust containers, according to their category and relevant regulatory arrangements.



- It is important to project a realistic assessment of the threats and potential consequences based on the nature of the materials, packages and the operating record of the nuclear fuel cycle transport industry.
- The requirements should then be appropriate to avoid unnecessary constraints and costs.

# Transport Security Requirements



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The requirements placed on the transport industry have come from multiple sources in the past but the industry has been able to operate within this regime.

INFCIRC 225, presents best practice to be adopted by Member States, and covers security requirements for materials with a potential use in weapons.

Other bodies (IMO, ICAO, ADR, and national jurisdictions) as well as the IAEA have also formulated requirements and recommendations.



The IAEA guidance on security measures covers the transport of all radioactive materials, including nuclear fuel cycle materials covered by INFCIRC 225.

Whereas the IAEA guidance cannot be prescriptive - only national governments have the necessary information to assess the factors relevant to a particular transport in their region. The transport industry should be able to operate more efficiently within it .

# Safety and Security Regulation

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- Safety and security have many common features but the appropriate requirements are different in some important respects.
  - However it is important that the requirements for both are closely coordinated, simplified as far as possible and conflicts avoided.
  - The current IAEA policy based on the Nuclear Safety Series coupled with the complementary Nuclear Security Series should achieve this objective.
  - The IAEA guidance is likely to form the basis of national requirements and this policy framework should be capable of being successfully implemented by the nuclear transport industry.
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# Public Acceptance

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- Whereas the potential safety and security risks associated with the transport of nuclear fuel cycle materials must not be underestimated, the assessment of the risks must be realistic and quantified.
- Exaggerated presentations then perceptions of potential risks resulting from transport operations have serious consequences, e.g. the denial of shipments and the demonstrations to prevent HLW transport, give rise to operational problems, public disorder and high costs.



- The nature of the materials and packages are significant factors in ensuring not only safety but also security both from the point of view of theft and diversion of material and also from terrorist attack.

## Public Acceptance cont...

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- It is highly relevant that the nuclear fuel cycle transport industry has had an excellent safety and security record over many years.
  - It is important to dispel sometimes exaggerated perceptions of the risk in the minds of the public, politicians and regulators. This depends on good communications based on sound science.
  - Information briefs on safety and security issues written in a style which the public and media can really understand (having always in mind that transparency stops where confidentiality starts)
  - This is an important part of the role of WNTI in its support of the nuclear transport industry.
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## Conclusions (1)

- There is a need for transport...so a need for transport Industry
  - A dream : The best would be to have these operations disconnected from political short term interests...
  - Transport has to remain safe secure and to become commonly accepted
  - For that, Industry needs to rely on an efficient and sufficient stable and global regulatory framework.
  - Work smarter and not harder, improvements must be governed by the need for an additional value in terms of safety.
  - The requirements must be appropriate to avoid unnecessary constraints and costs
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## Conclusions (2)

- We are not transporting for the only benefit of one operator, a consignor or a consignee....
  
  - ....but for the **beneficial interest of our communities.**
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