SAFETY AND SECURITY OF TRANSPORT OF RADIOACTIVE AND NUCLEAR MATERIAL

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BRASIL UM PAÍS DE TODOS GOVERNO FEDERAL

CONTENT

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- Discussions within the IAEA
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- About safety and security
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INTRODUCTION

- Radioactive materials are used daily in many products and processes such as fuel for power generation and applications in medicine, industry, agriculture, environmental science and research

- And they need to be transported in a safe and secure way

INTRODUCTION

- 20 million packages of all sizes transported annually
- Number of shipments expected to increase throughout the world due to:
  - The renaissance of nuclear power generation
  - Increasing technologies that use radioactive sources in medicine and industry
  - New intermediate or final repositories planned in many countries ⇨ Increasing number of shipments of radioactive waste
  - Decommissioning of old nuclear power plants

A GROWING PROBLEM: SHIPMENT DENIAL

- Safety and security related to nuclear and radioactive material is a great concern of international community, and sometimes they are themselves a cause to denials. Denials have occurred in all kinds of transport

- Although appropriate actions have been taken, denials of shipments could turn into a major problem in the world

A GROWING PROBLEM: SHIPMENT DENIAL

- Consequences of denials:
  - disrupting the electrical energy generation
  - preventing medical isotopes that are essential for the immediate delivery of healthcare (nuclear medicine and cancer therapy)
  - disrupting the use of radioactive materials for industrial purposes.
  - raising the related costs

REASONS FOR DENIAL

- Denials have occurred in all kind of transport
- Main reasons:
  - Multiplicity of regulation and authorities with different views at both national and international level
  - The public perception that radioactive material is dangerous, extended to transporters
  - Increasing security requirements
  - Frequent changes in the regulation framework resulting in doubts about the application of transport procedures and increasing the perception that the transport procedures are not adequate
  - Increasing concern about liability in case of accidents

IDENTIFYING PROBLEMS

- Lack of a proper identifing database on shipment statistics and denials
- Lack of international agreements harmonizing the different national rules
- Public acceptance
- Lack of information about risks of exposure to radiation, mainly from carriers (pilots, drivers, etc), in a clear and explicity way

ACTIONS TAKEN

- IAEA General Conference proposed in 2005 the constitution of an International Steering Committee to coordinate international efforts at resolutions of the issues related to denials
- The first meeting of the Steering Committee was held in November 2006, A Plan of Actions was drawn:
  - Establishment of a Data Bank on shipments denials
  - Harmonization of transport regulations
  - Establishment of a Training Program
  - Public information campaigns

DID YOU KNOW?

•SHIPMENTS OF RADIOACTIVE CARGOS ARE BEING *DENIED* EVERYDAY

•IT IS BECOMING *WORSE*, WEEK BY WEEK

•IT INVOLVES PORTS, CARRIERS AND EVEN NATIONAL POLICIES, *THROUGHOUT THE WORLD*

•SHIPMENTS OF *URGENTLY NEEDED MEDICAL ISOTOPES* USED FOR DISEASE DIAGNOSIS AND TREATMENT ARE DELAYED

•INDUSTRIAL APPLICATIONS SUCH AS *STERILIZATION OF MEDICAL PRODUCTS* USED IN HEALTHCARE ARE ALSO AFFECTED

•THE *DIRECTOR GENERAL IS CONCERNED* AND HAS FORMED THE STEERING COMMITTEE ON SHIPMENT DENIAL

•WE NEED *EVERYONE'S* SUPPORT AND HELP

•WE WANT YOU TO *CONTACT US* AT THE DENIAL STAND IN *THE GALLERY BAR AREA FLOOR 01* OR ON DENIAL@IAEA.ORG TO FIND OUT HOW YOU CAN HELP

Products are often diverted from the most direct route initially as some routes close, which can delay them and patient treatment. The transport chain is so fragile in many areas, it will not be long before they don't get through at all, and treatments can't be made. People will die as a result. We need to take action on denial before this happens.

Jack Edlow, **Chairman, on behalf of the Steering Committee**

IAEA
Atoms for Peace: The First Half Century
1957–2007

The Brazilian case

IN BRAZIL

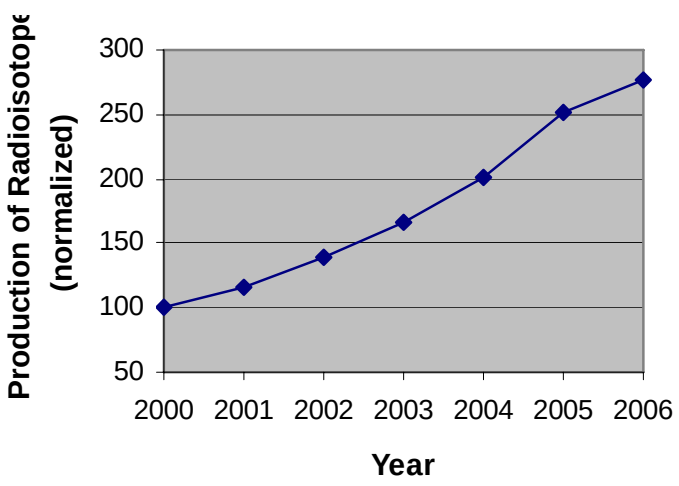
The size of the problem

- The Brazilian Government approved recently the construction of a third power plant unit (1300 MWe)
- Between four and eight new nuclear power plants are planned for the next two decades
- A new near surface repository will be constructed on the next years for low and intermediate radioactive wastes

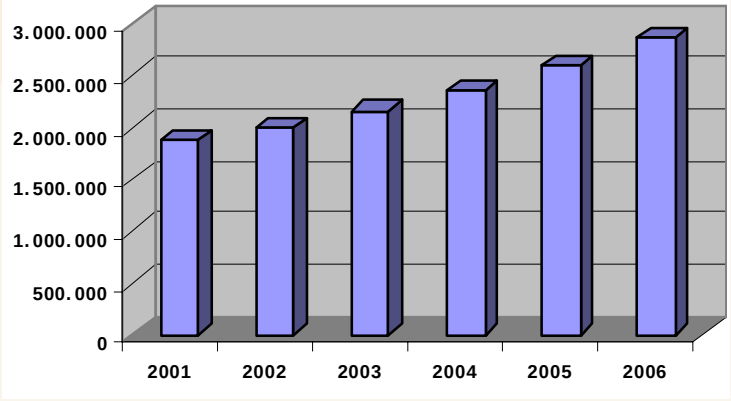
IN BRAZIL

The size of the problem

- The number of radioactive installations increased from 2100 to about 3500 installations between 1995 and 2007



Production of radioisotopes in Brazil for medicine. (normalized for indices 100 in year 2000)



Number of medical procedures using radioisotopes in Brazil.

IN BRAZIL

Regulatory Framework

- The National Nuclear Energy Commission (CNEN) is the National Authority for regulations on transport safety and security
- First national transport safety regulation published in 1988 based on the IAEA Safety Series Nr. 6
- On the current year transport regulation was completely revised to be compatible with the last version of IAEA regulation (ST-R-1)
- Two other governmental organizations have requirements on transport:
  - The Brazilian Institute of Environment and Renewable Natural Resources (IBAMA)
  - The National Agency on Road Transport (ANTT)

IN BRAZIL

Regulatory Framework

- National transport regulations fully compatible with the IAEA recommendations
- Regulation harmonization with other governmental organizations
- IAEA support to improve regulation's system
- *Transport Plan* for each transport assessing all aspects of the Brazilian regulations

IN BRAZIL

TRANSPORT OF NUCLEAR MATERIAL

- Operator must submit a Plan of Transport for analysis and approval which includes security measures
- CNEN inspects the transport during all the way

IN BRAZIL

Problems

- Even though the regulation are compatible with international standards,
  - There have been denials mainly in radio pharmacy delivering but also for nuclear fuel transport

- Misinformation and ideological positions from workers in institutions responsible for issuing environmental licenses could cause delays or denials

- Communication with security forces

About safety and security

In transport

SAFETY x SECURITY: CONVENTIONS

SAFETY

- *Convention on the Physical Protection of Nuclear Material*
- *Code of Conduct on the Safety and Security of Radioactive Sources*

SECURITY

- *Convention on the Physical Protection of Nuclear Material*
- *Code of Conduct on the Safety and Security of Radioactive Sources,*
- United Nations Security Council Resolutions 1373 and 1540
- *International Convention for the Suppression of Acts of Nuclear Terrorism.*
- These instruments are complemented by the IAEA Nuclear Security Series

SECURITY: RELATED ORGANIZATIONS AND OTHER CONVENTIONS

- The International Maritime Organization (IMO)
- The International Civil Aviation Organization (ICAO)
- The United Nation Economic Commission for Europe (UNECE)
- Intergovernmental Organization for International Carriage by Rail (OTIF)

- UN Model Regulations as expressed in the documents:
- The *International Maritime Dangerous Goods Code* (IMDG),
- *Technical Instructions for the Safe Transport of Dangerous Goods by Air*,
- *European Agreement covering international carriage of Dangerous Goods by Road* (ADR),
- *Regulations concerning the International Carriage of Dangerous Goods by Rail* (RID),
- *European Agreement of Dangerous Goods by Inland Waterway* (ADN)

SAFETY x SECURITY: IAEA STANDARDS

SAFETY

- *Regulations for the Safe Transport of Radioactive Material*, TS-R-1 2005.
- The IAEA *Draft Fundamental Safety Principles*
- *International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources* (BSS) are relevant to transport safety and additionally include some limited security provisions.

SECURITY

- *International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources* (BSS) - some limited security provisions.

SAFETY x SECURITY: ACTORS

SAFETY

- Acreditated Users (under control)
- Regulatory bodies staff
- Experts
- Scientists
- Police (just in case of no compliance and extreme resistence)

SECURITY

- Thieves
- Terrorists
- Ill intended people
- Police
- Inteligence forces
- Militaries

- Safety actors

CONCLUSIONS (Guesses)

- We know how to deal with SAFETY issues. The large experience from the IAEA has reached a level of confidence that is satisfactory. Naturally there is room for improvements and accidents could happen.

- Dealing with SECURITY problems is another thing. The main objective here is to elude the control and the traditional skills of the nuclear staff could be unprepared to deal with the problem. But we, together with the Steering Committee, are doing our best.

- One open issue is the COMMUNICATION with the new coming actors. Security forces have their own culture, frequently related to national values and sovereignty issues. Respecting differences and specificities is an important step to reach consensus.

CONCLUSIONS (Guesses)

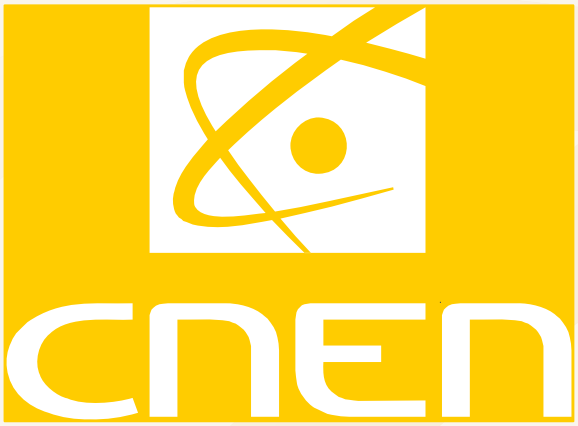
JUST TO FINISH, MISTER TANIGUCHI

USES TO SAY IN SOME TALKS THAT

“We are all in the same boat now”

are we?

I would rather say: WE ARE IN THE SAME SEA…



THANK YOU

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