



Regulations for the safe transport of radioactive materials in the Philippines: re-export, transit and transshipment

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Outline

- Introduction
 - Uses of radioactive materials
 - Classes of dangerous goods
 - Mode of transport
- The Philippine legislative and regulatory infrastructure for radioactive material
- Regulations for safe transport of radioactive materials in the Philippines
 - What are regulated
 - How regulations are enforced

The Nine Classes of Dangerous Goods

Class 1 Explosives

Class 2 Gases

Class 3 Flammable liquids

Class 4 Flammable solids

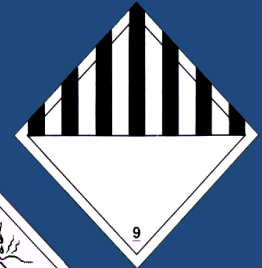
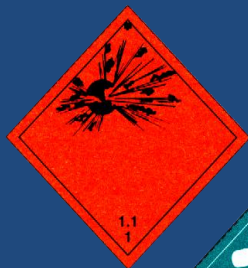
Class 5 Oxidizing substances and organic peroxides

Class 6 Toxic and infectious substances

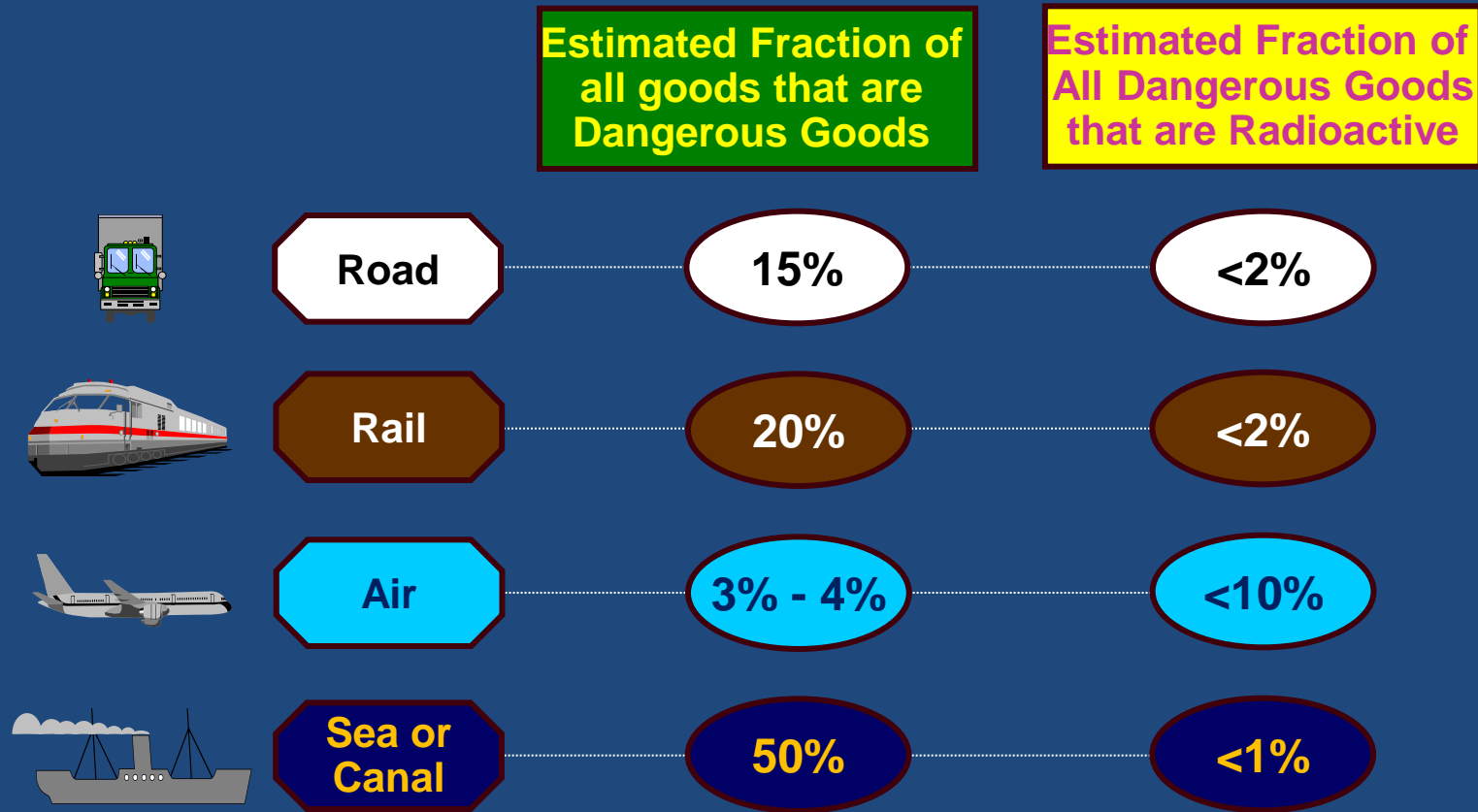
Class 7 Radioactive material

Class 8 Corrosives

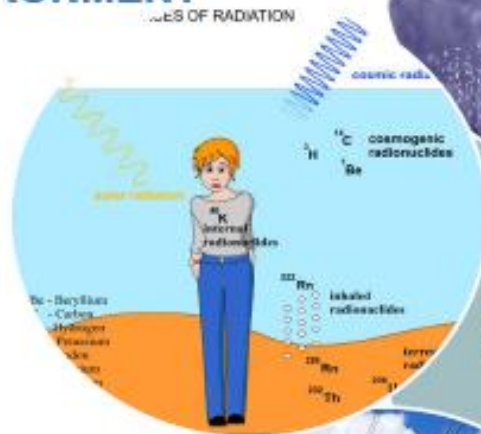
Class 9 Miscellaneous dangerous goods



Perspective of the Transport of Dangerous Goods by Mode - Worldwide



NATURAL RADIOACTIVITY IN FOOD & ENVIRONMENT



IONIZING RADIATION IS PART OF OUR LIVES

MODERN HEALTHCARE



INDUSTRIES

ELECTRICITY GENERATION & HEATING



RESEARCH & DEVELOPMENT





Compliance assurance for the safe and secure transport of radioactive material is a collaborative activity among relevant agencies and organizations

➤ **Government**

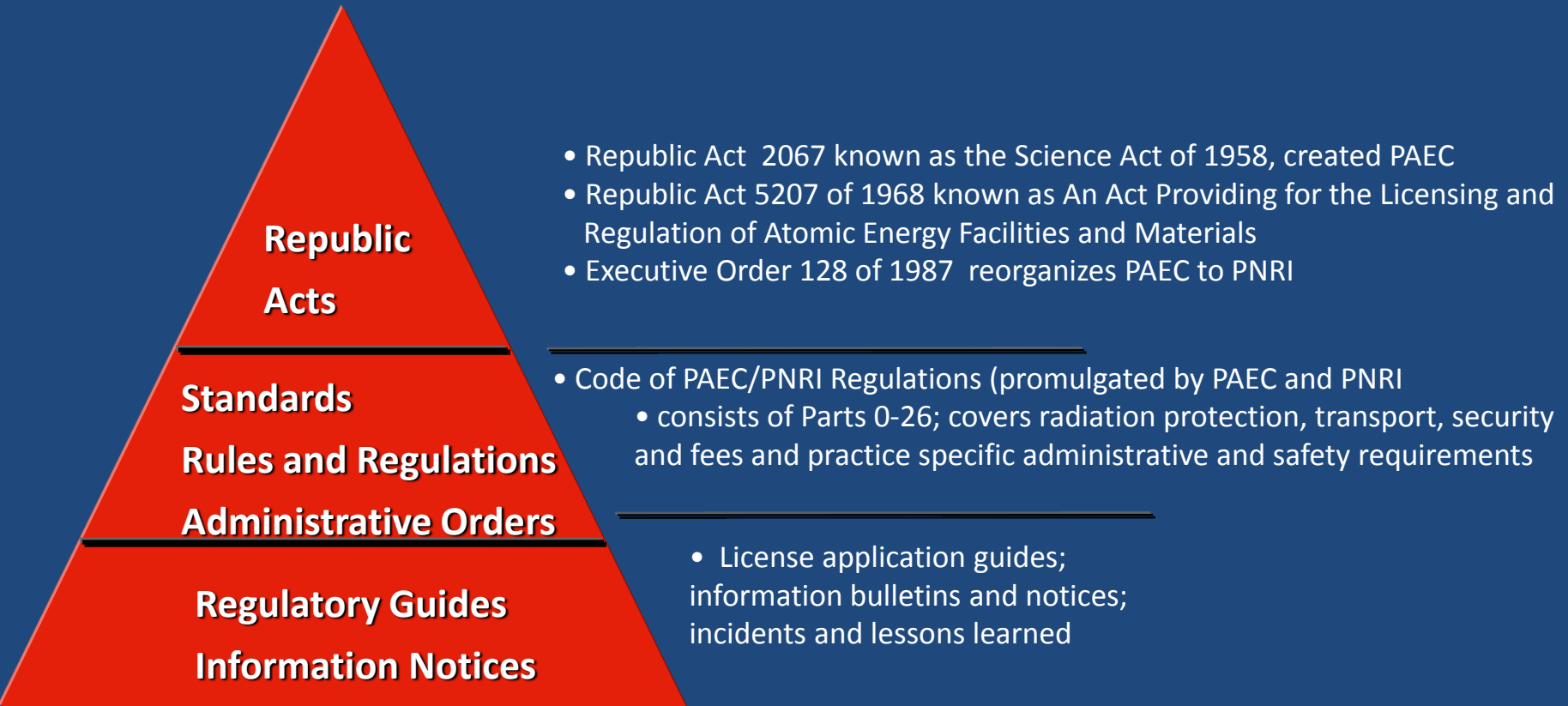
- Department of Science and Technology
 - Philippine Nuclear Research Institute
- Department of Transportation and Communications
 - Philippine Ports Authority
 - Civil Aviation Authority of the Philippines
 - Office for Transportation Security
 - Land Transportation Office
 - Land Transportation Franchising Regulatory Board
- Department of Finance
 - Bureau of Customs
 - Bangko Sentral ng Pilipinas
- Maritime Industry Authority
- Philippine Coastguard
- Environmental Management Bureau, DENR



➤ **Non-Government**

- Carriers
- Forwarders
- Licensees (consignors and consignees)

The Philippine legislative and regulatory framework for radioactive material



Main objective: To fulfil the responsibility of the government - to protect people and the environment from the harmful effects of ionizing radiation

Bases of Philippine laws and regulations for radioactive material:

- US Nuclear Laws Regulations
- International Atomic Energy Agency (IAEA) Safety Standards
- Code of Conduct on Safety and Security of Radioactive Sources (IAEA,

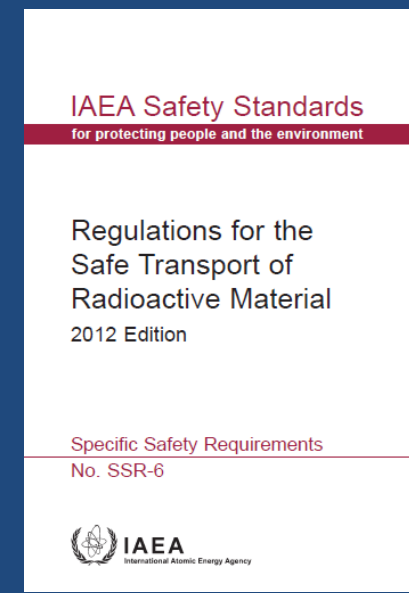
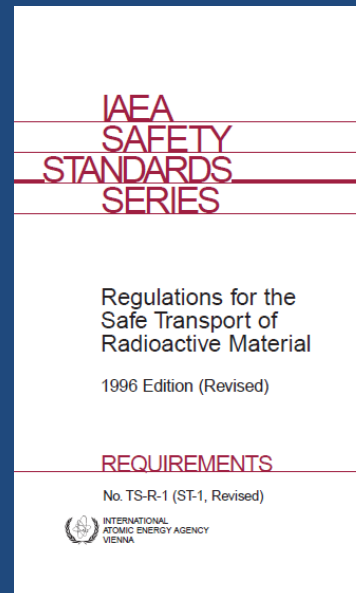
Historical view

ICRP recommendations

- 1954
- 1958 ("Publication 1")
- 1966 (Publication 9)
- 1977 (Publication 26)
- 1990 (Publication 60)
- 2007 (Publication 103)

IAEA Basic Safety Standards

- 1962
- 1967
- 1982
- 1996
- 2011

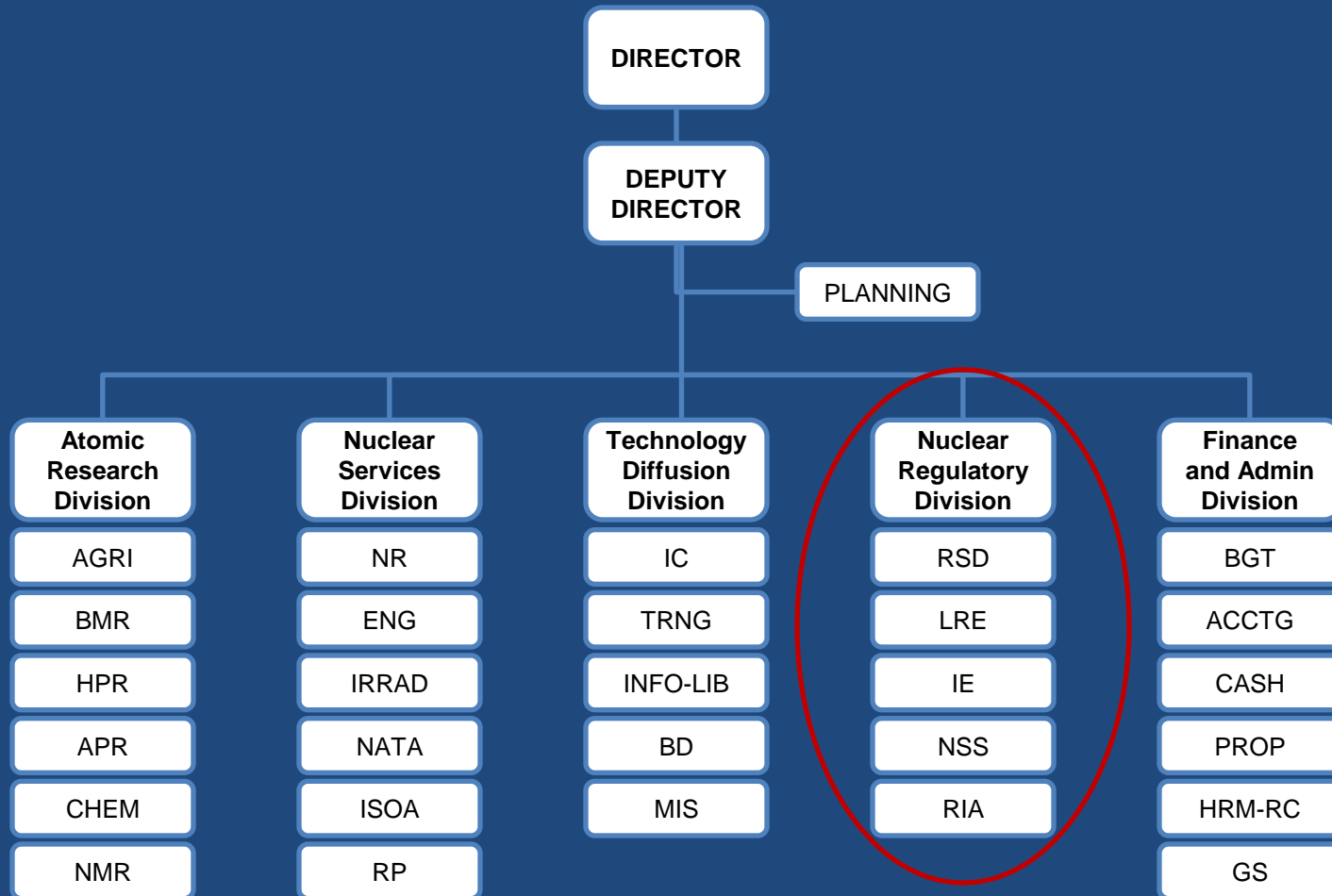


Code of Conduct on the Safety and Security of Radioactive Sources (IAEA, 2004)

- International guidance to achieve and maintain a high level of safety and security of radioactive sources
- Applies to “...all radioactive sources that may pose a significant risk to individuals, society, and the environment...”
 - These sources are listed in Annex I of the Code
- As Member State, the Philippines thru the PNRI commits to the IAEA to abide and apply the Code.



Philippine Nuclear Research Institute Organizational Structure



Code of PNRI Regulations (1)

Part 0- PNRI as regulatory authority for radioactive materials in the Philippines

Part 1- Conduct of PNRI Regulatory Staff (proposed)

Part 2- Licensing of Radioactive Material (1990)

Part 3- Standards for Protection Against Radiation

Adopted IAEA IBSS (1996), by PNRI Administrative Order No. 1, Series of 2001.

Part 4 - Regulations for the Safe Transport of Radioactive Materials in the Philippines (2004)

(Based on the adopted IAEA

Safety Series ST-1, Safe Transport of Radioactive Material (1996), by
Administrative Order on June 26, 2000)

Part 5 - Reactor Site Criteria

Part 6 - Rules of Procedure for the Licensing of Atomic Energy Facilities in the Philippines

Part 7 - Licensing of Atomic Energy Facilities

Part 8 - Atomic Energy Facility Operators' Licenses

Part 9 - Physical Protection of Plants and Materials

Part 10 - Financial Security and Government Indemnity

Code of PNRI Regulations (2)

- Part 11 - Licenses for Industrial Radiography and Radiation Safety Requirements for Radiographic Operations
- Part 12 - Licenses for Medical Use of Sealed Radioactive Sources in Teletherapy
- Part 13 - Licenses for Medical Use of Radiopharmaceuticals
- Part 14 - Licenses for Medical Use of Sealed Radioactive Sources in Brachytherapy
- Part 15 - Licenses for Large Irradiators
- Part 16 - Licenses for the Use of Sealed Sources Contained in Industrial Devices
- Part 17- Licenses for Commercial Sale and Distribution of Radioactive Material and Its Related Devices
- Part 20- Licenses to manufacture and dispense radiopharmaceuticals
- Part 21- Licensing and safety requirements of particle accelerator facilities for the production of radioisotopes
- Part 22- Fees and charges for radioactive materials licenses and other related regulatory services
- Part 23- Licensing requirements for land disposal of radioactive waste
- Part 25- Licenses for commercial providers of nuclear technical services
- Part 26- Security of radioactive sources**

Regulations for Safe Transport Radioactive Material in the Philippines (1)

- First publication was on 1 December 1965 (based on 1964 IAEA revised edition) by the National Committee on the Safe Transport of Radioactive Materials created under Executive Order No. 139 promulgated by the President of the Philippines on 22 February 1965.
- PNRI AO adopting the International Atomic Energy Agency (IAEA) Safety Series No.6, Regulations for the Safe Transport of Radioactive Materials, 1985 Edition (As Amended 1990)
- PNRI AO adopting IAEA Specific Safety Requirements (SSR)-6, Regulations for the Safe Transport of Radioactive Materials 2012 edition is awaiting publication in the Official Gazette

Regulations for Safe Transport Radioactive Material in the Philippines (2)

- Latest publication was on 25 October 2004 - Regulations for the Safe Transport of radioactive material in the Philippines (**based on IAEA TS-R-1, 1996 revised edition, published in 2000**)
 - Variation
 - Section 29. Consignor's Responsibilities
 - Requirement of **"Certificate of Transport"** from licensed consignor to obtain **"Authorization to Transport"** from PNRI for each shipment or movement of radioactive material

What are regulated and controlled

- Radioactive material
- Activities involving radioactive material
 - Import
 - Acquisition
 - Receipt
 - Possession
 - Storage
 - Use
 - Transport
 - Export (usually return of disused radioactive sources)

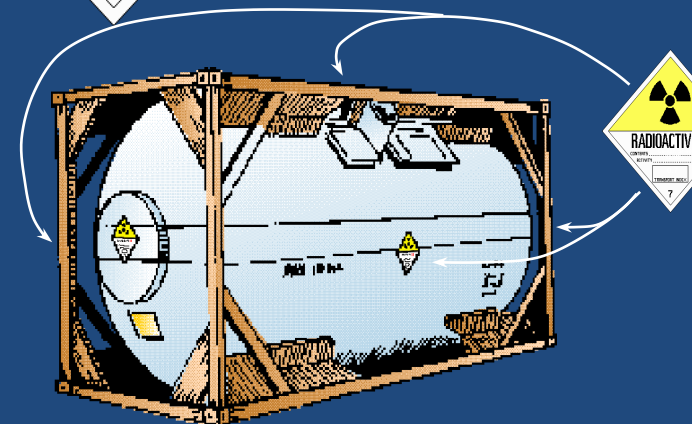
Note: Almost all radioactive materials used in the Philippines are imported

How regulations are implemented

- National
 - In the Philippines, through the issuance by PNRI of Radioactive Material or Facility License
 - Prior to the issuance of a license, a license application is filed by an applicant that provides evidences that requirements for safety and security are met including requirements for the safe transport of radioactive material
 - Relevant inter-agency coordination
- International
 - Licensed suppliers abroad require importers a copy of PNRI authorization or license
 - Notification of PNRI by licensed suppliers abroad of certain incoming shipments of radioactive material

The Transport Regulations Provide a System of Safety Requirements (1)

- *Package design*
- Fabrication and makeup of *package* and contents
- Preparation of *packages* for transport
- Transport documents
- Carriage of *consignments*
- Receipt at final destination



..... the Regulations provide a system of safety requirements (2)

- *Quality assurance*
- Emergency response
- *Compliance assurance*



Responsibilities for Compliance are Assigned to

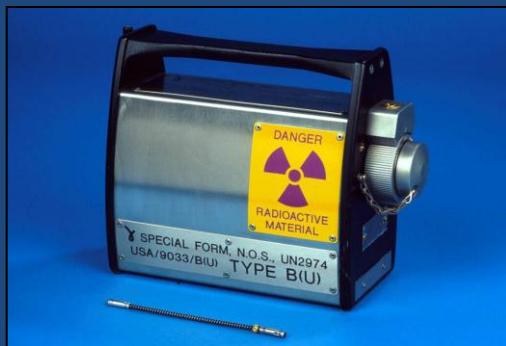
- *Consignor*
- *Carrier (aircraft, vessel, vehicle)*
- *Competent or Regulatory Authority*

Basic *Package* Types for Radioactive Material

- *Excepted Package*
- *Industrial Package*
- *Type A Package*
- *Type B(U) Package*
- *Type B(M) Package*
- *Type C Package*



Excepted Package



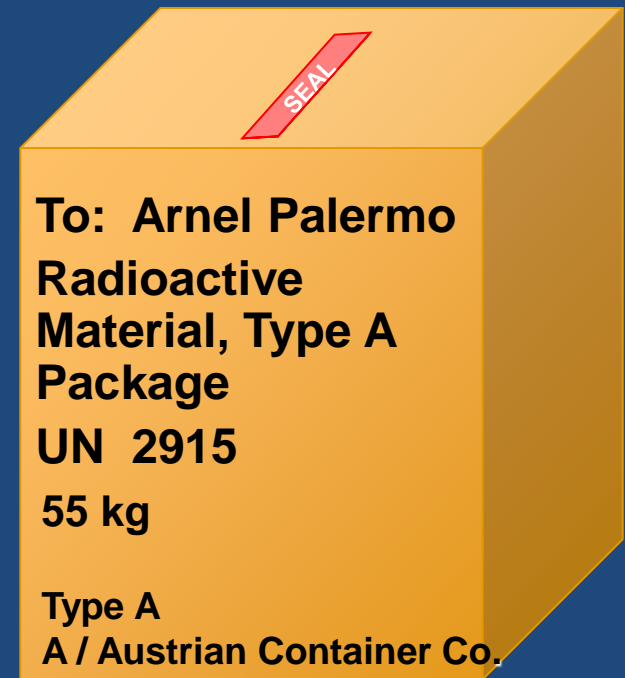
Type B (U) Packages



Type A Packages

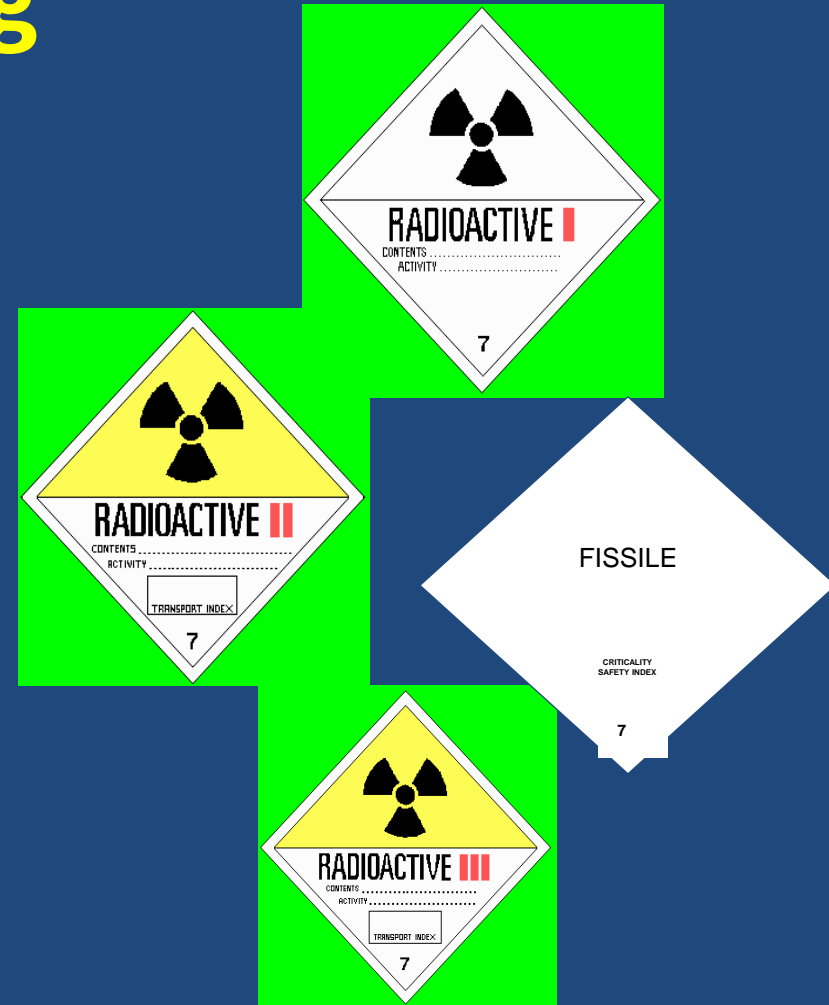
General Marking Requirements for all Radioactive Material Packages

- Name or address of *Consignee/Consignor*
- Proper shipping name
- UN Number
- Gross mass (if >50 kg)
- *Package* identification



Labeling

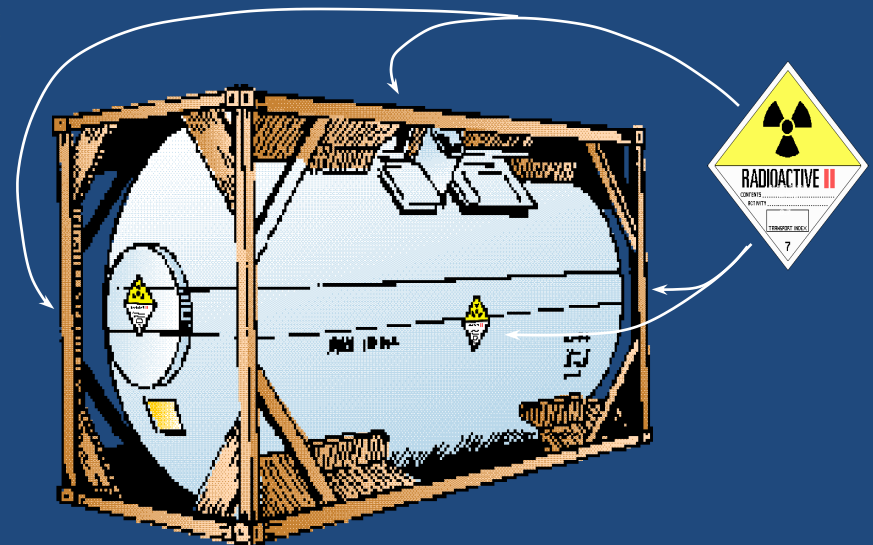
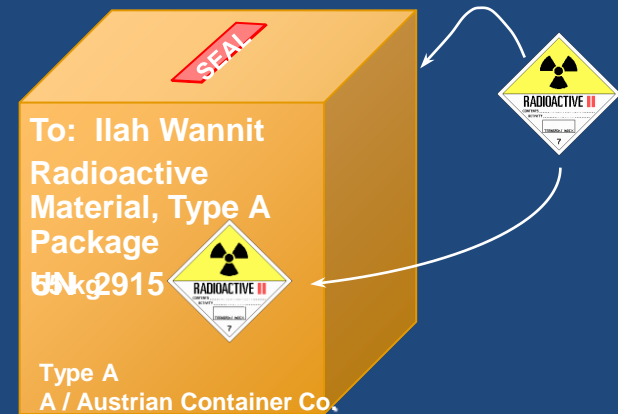
- Consignor responsibility
 - Selecting label
 - Entering data on labels
 - Applying labels
- Types of Labels
 - Radiation category labels
 - *Fissile material* labels
- Labeling applies to:
 - *Packages*
 - *Overpacks*
 - *Freight containers*



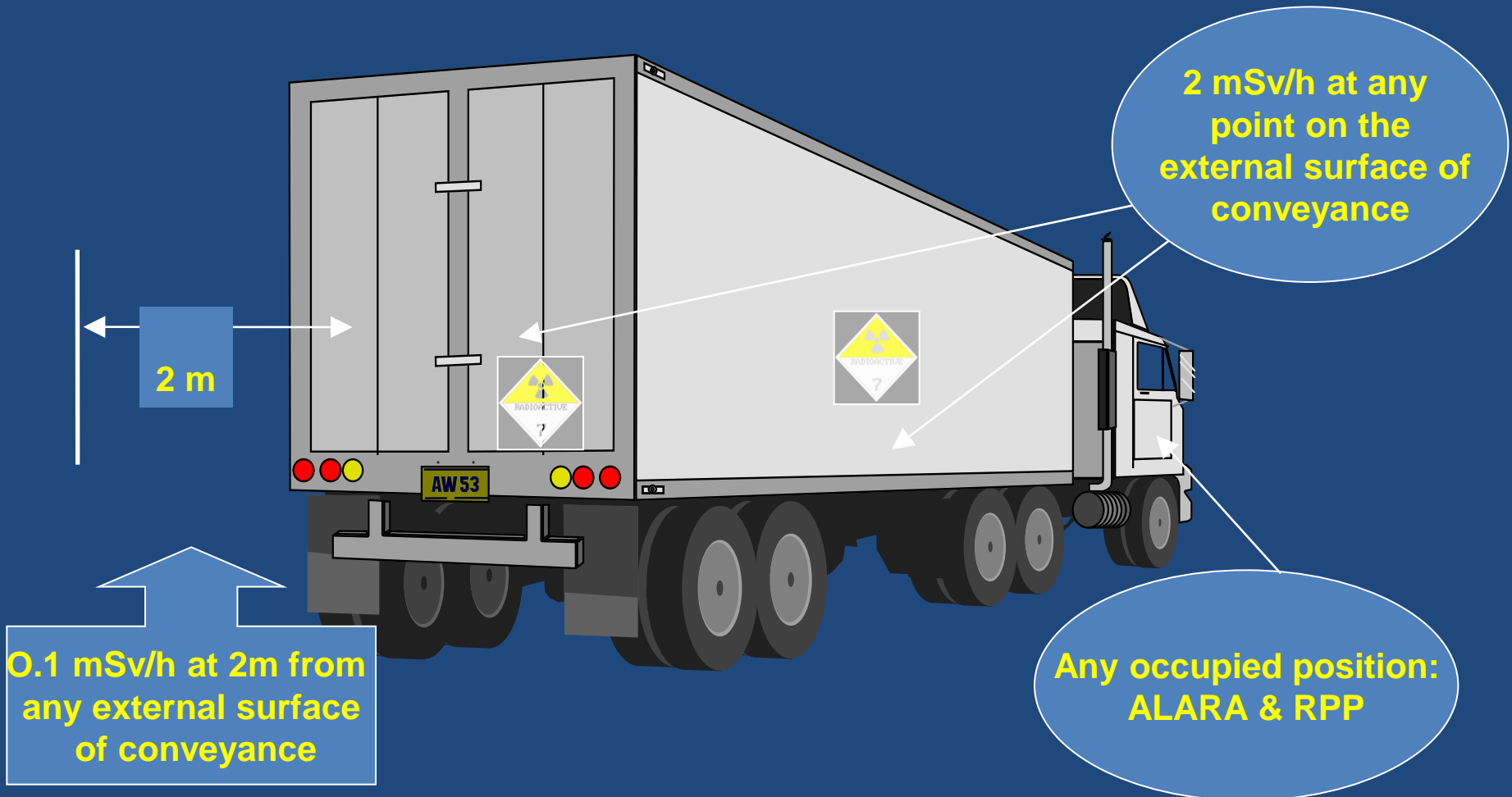
Minimum dimensions = 100mm x 100mm

Applying Labels

- Label configuration on *packages* shall be:
 - affixed on two opposite sides of the outside of a:
 - *package*
 - *overpack*
 - affixed on all four sides of a:
 - *freight container*
 - *tank*
- Labels shall not cover the markings



Maximum Radiation Levels for *Conveyances*



Transport Documents

- Describe particulars of the *consignment*
- *Consignor* is responsible
- Requires specific information in a specified order format
- Concludes with the *Consignor's Declaration*



Consignor's Declaration is a Vital Component of the Transport Document

- Made on the same transport document containing particulars of *consignment*
- Signed and dated by *consignor*
- Termed as follows, or equivalent meaning:

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by (insert mode(s) of transport involved) according to the applicable international and national governmental regulations.

- Not required if intent is already a condition within a particular international convention

Sample copy:
 Shipper's
 Declaration of
 Dangerous
 Goods

SHIPPER'S DECLARATION FOR DANGEROUS GOODS

(Provide at least two copies to the airline.)

Shipper
 Halliburton Energy Services
 (Enter Address of Shipper)

Air Waybill No.
 Page 1 of Pages
 Shipper's Reference Number
 (optional)

Consignee HALLIBURTON ENERGY SERVICES
 ATTN: Juan Valencia, Tele: 281-871-7723
 14804 Morales Road, Gate 3, Delivery Point 108
 c/o Diversified Freight Logistics, Inc.
 Houston, TX 77032
 Attn: Robert Rico, (281) 821-2929



Two completed and signed copies of this Declaration must be handed to the operator

WARNING
 Failure to comply in all respects with the applicable Dangerous Goods Regulations may be in breach of the applicable law, subject to legal penalties. This Declaration must not, in any circumstances, be completed and/or signed by a consolidator, a forwarder or an IATA cargo agent.

TRANSPORT DETAILS
 This shipment is within the limitations prescribed for: (delete non applicable)
 Airport of Departure: (Enter Airport Name)
 Airport of Destination: **Houston**

<input checked="" type="checkbox"/> PASSENGER AND-CARGO AIRCRAFT	<input type="checkbox"/> CARGO AIRCRAFT ONLY
--	--

Shipment type: (delete no-applicable)
 NON-RADIOACTIVE RADIOACTIVE

NATURE AND QUANTITY OF DANGEROUS GOODS

Dangerous Goods Identification					Quantity and Type of packing	Packing Inst.	Authorization
Proper Shipping Name	Class or Division	UN or ID No.	Packing Group	Subsidiary Risk			
Radioactive Material, Type A Package, Special Form, Non Fissile	7	UN 3332	---	---	Cs-137, 444 MBq (12 mCi), one Type A Package Overpack Used	II Yellow TI=0.5 DIM 30X30 X90 cm	USA/0508/\$

Additional Handling Information Source Serial Number(s): **DB-032, Densometer V3C-120 Security Seal 33456**

ICA/IATA Provisions used
 24 hr. Emergency Contact Tel. No.: 713-616-3000 (International); 800-666-9260 (US)

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to the applicable international and national governmental regulations.

Name/Title of Signatory
 Place and Date
 Signature
 (see warning above)

What is transshipment

- Transfer of a shipment from one carrier, or more commonly, from one vessel to another whereas in transit.
- Transshipments are usually made where
 - (1) there is no direct air, Land, or sea link between the consignor's and consignee's countries,
 - (2) where the intended port of entry is blocked, or
 - (3) to hide the identity of the port or country of origin.
- Because transshipment exposes the shipment to a higher probability of damage or loss, some purchase orders or letters of credit specifically prohibit it.

Part 4, Section 36. Transport and Storage in Transit (transshipment)

- A. Segregation and stowage during transport and storage in transit**
- B. Segregation of packages containing fissile material**

Practical experience:

- For certain shipment of radioactive material, storage in transit is not advised by the consignor.**
- Port authorities also discourage storage of radioactive material in the port.**
- Arrangements by consignors, consignees, forwarders, and brokers are made for immediate release of Category 1 and 2 sources and radioactive material for medical use, especially short lived radioactive material, from the ports of entry.**

Part 4, Section 37. Customs Operation.

- Each licensee shall submit to PNRI for verification true copies of transport documents, bill of lading, or airway bill of a radioactive material shipment from a foreign source that will arrive or have arrived at the Philippine Port of Entry.
- A verified shipment will be issued a PNRI Request for Release for submission to the Customs Officer in compliance with the requirements for the release of such package from the customs cargo hold area.

Number of PNRI license holders

Category	Number of PNRI licensees			
	2009	2010	2011	2012
Industry	150	138	146	140
Industrial radiography (gamma)	20	25	23	23
Medical	79	90	85	95
Research	23	22	26	26
Distribution and sale	32	35	34	39
Medical cyclotron	1	1	1	1
Total	305	311	315	324

Geographical distribution of PNRI license holders

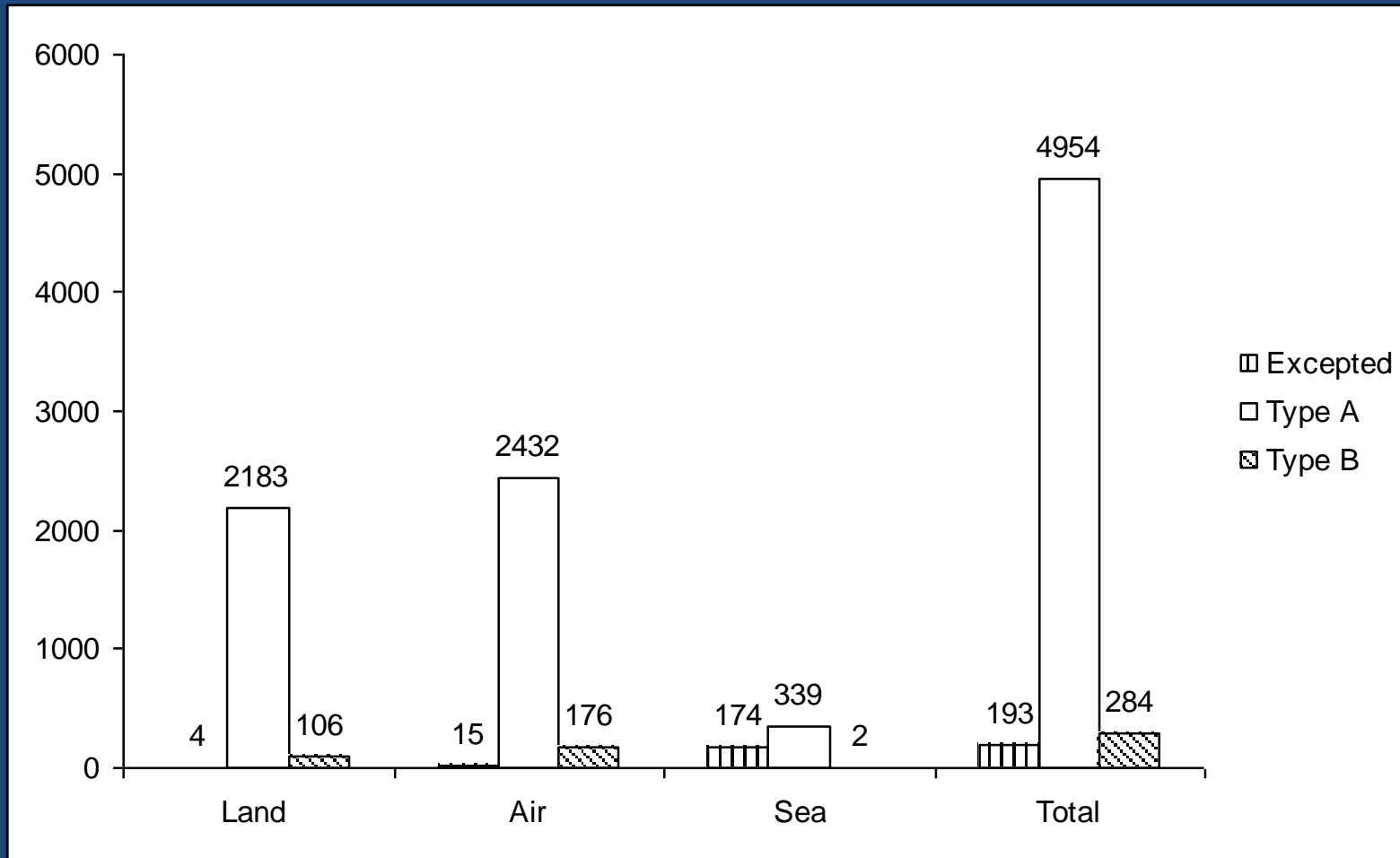
As of 2012

Region I	=	5	Region IX	=	2
Region II	=	4	Region X	=	9
Region III	=	33	Region XI	=	10
Region IV	=	48	Region XII	=	3
Region V	=	5	CARAGA	=	3
Region VI	=	8	ARMM	=	0
Region VII	=	9	CAR	=	5
Region VIII	=	2	NCR	=	179

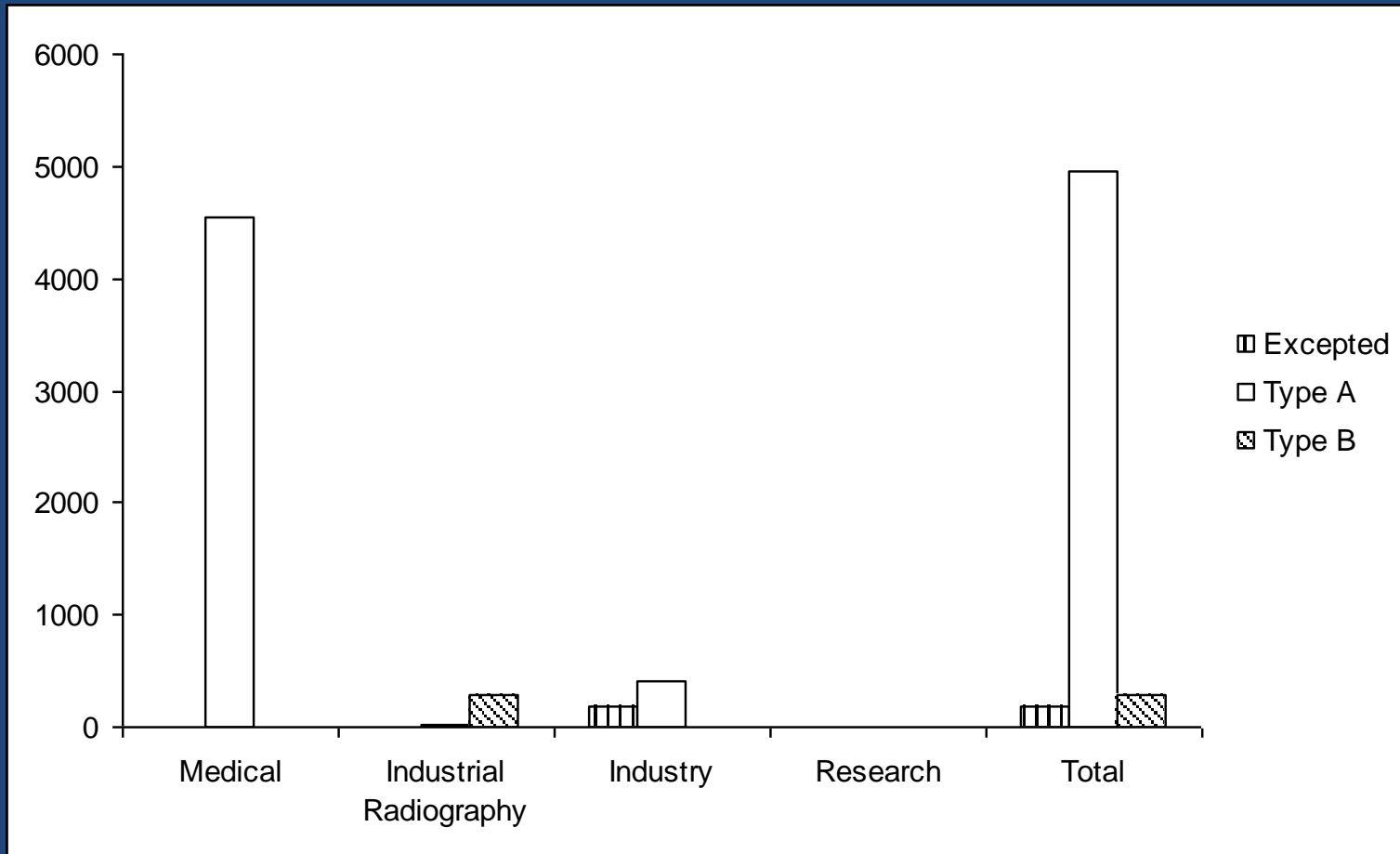


TOTAL = 324

Number of Excepted, Types A and B packages transported by land, air and sea (2010)



Number of Excepted, Types A, and B packages according to type of use of radioactive material (2010)



Cooperation with US-DOE

1) Global Threat Reduction Initiative (GTRI)

- To reduce and protect vulnerable nuclear and radioactive sources (Category 1 and 2 sources) located at civilian sites worldwide from terrorists.

2) US -DOE Second Line of Defense Program (Megaports Initiative Project)

- To interdict nuclear and other radioactive material at seaports in US partner countries



PNRI works to ensure that

Protection

Safety

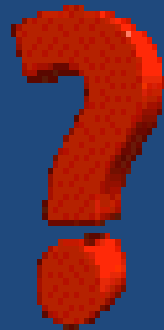
Security objectives

of the Regulations are met to

ensure protection of people and the environment from the harmful effects of ionizing radiation.

Thank you for your
attention

Questions



www.pnri.dost.gov.ph
vkparami@pnri.dost.gov.ph