Update on Delay and Denial of Shipment

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Contents

- T.I.C. and Tantalum Raw Materials
- Delay/denial – affecting all RAM
- ISCDOS
  - Structure
  - Management Team
  - Action Plan
  - Awareness, Communication et c.

14th-17th June 2011
Tantalum-Niobium International Study Center

- International Association under Belgian law
- 85 member companies from 25 countries
- Member companies involved in:
  - Exploration / Mining / Raw material production
  - Trading and Transport
  - Refining / Chemical and Metallurgical Processing
  - Consumption / Production
Tantalum in your life

- Pure metal in electronic capacitors
  - Miniature high-tech devices, medical, automotive

- Pure metal in medicine
  - Bio-compatible; bone replacements, plates, clips
Tantalum in your life

- Alloys in turbines
  - Enable higher operating temperatures
  - Provide greater efficiency and fuel saving

- Components in chemical industry
  - Corrosion resistant equipment
  - Less chemical exposure to maintenance workers

- Carbides in automotive industry
  - Cutting and drilling tools
Tantalum raw materials

- **Tantalite**
  - Mineral concentrate
  - Contains 20-35% Ta$_2$O$_5$
  - Tantalite main sources:
    - Brazil, China, DRC, Ethiopia, Mozambique, Russia, Rwanda

- **Tin slag**
  - Byproduct of tin smelting
  - Contains 2-8% Ta$_2$O$_5$
  - Tin slag main sources:
    - Malaysia, Thailand
Radioactivity

- Natural Th and U present in materials
  - Most activities are between 5 and 50 Bq/g
  - In tantalite locked in mineral matrix
  - In tin slag locked in glass-like matrix

- Tantalum raw materials are NORM
  - Exemption value of 1 Bq/g for Th(nat), U(nat)
  - For NORM a factor of 10, if not extracted for use of Th/U*; balance between radiological protection and practical inconvenience of regulating large quantities of low activity materials
Tantalum refining/processing

- Tantalum processing countries:
  - In Europe: Estonia, Germany, Russia
  - Outside Europe: China, Thailand, USA

- Tantalum raw materials mostly digested by HF
  - Th/U fluorides insoluble, removed in filter cake
  - Processing plants can not easily be moved
Tantalum transport requirement

Tantalite mines: in operation
Tantalite mines: uneconomical or undeveloped deposits
Tin slag: from tin smelting
Processing: extraction of tantalum

Source: T.I.C. estimate 12-Oct-2010, tantalite and tin slag size by most likely resource base.
Delay and Denial of Shipment

- Radioactivity gives rise to concerns:
  - Safety: addressed by TS-R-1, UNOB, Modal Regs
  - Security: regulators impose additional requirements

- Regulatory disharmony results in carriers denying shipment
  - Major carrier official statement: “…in principle not opposed to carrying….radioactive cargo” and “…will consider carriage….provided….transit restrictions are lifted…”
What is a delay/denial – a definition

- A refusal (explicit or implicit) to carry a shipment of radioactive material though it conforms to all the applicable Regulations
- Includes where physical capability exists, but those involved refuse to accept a product
- Does NOT include where physical capability to handle product is not in place
Materials Affected by D/D

- All Radioactive Materials:
  - Radiopharmaceuticals, carried by air
  - Molybdenum, carried by air
  - Cobalt-60, carried by sea
  - Tantalum raw materials, carried by sea
  - Uranium yellowcake, carried by sea
Uranium transport requirement


Conversion – commercially available

Reasonably Assured Resources (RAR)

Enrichment

RAR + Inferred Resources

Domestic only

Not freely available

Eagle Rock project (Areva)

LES project (Urenco)
Sea transport

• Denial Ports termed “Hot Spots”
• Every negative factor affects sustainability

→ some shipments are impossible for years
‘Who cares?’ – The impact of a delay or denial
<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>2004-Jul</td>
<td>fact finding forum</td>
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<td>2006-May</td>
<td>meeting on delay and denial</td>
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**Initial Membership:**

- IAEA, ICAO, IMO
- IATA, ICHCA, IFALPA (ACI, IAPH, WTO)
- IAEA Member States
- Transport – Edlow International; Isotopes – ISSPA
- Industrial ores – T.I.C.; Nuclear industry – WNTI

**Encourage carrier membership – key player**
ISCDOS Meetings

- 2006-Nov: ISCDOS 1
- 2007-Jun: ISCDOS 2
- 2008-Jan: ISCDOS 3
- 2009-Jan: ISCDOS 4
- 2010-Feb: ISCDOS 5
- 2011-Apr: ISCDOS 6
- 2012-Feb: ISCDOS 7
- 2013-Xxx: ?
ISCDOS Organisational Structure
Regional Network

Regional Trade Orgs:
- NAFTA
- ASEAN
- APEC
- European Union
- African Union

TSU Rep:
- K.K. Varley
- J-Y Reculeau
- Y. Zhao

Regional Coordinator:
- Elected by Regional Network

Sea:
- IAPH
- Regional Shippers
- Major Ports

Air:
- ICAO
- IATA
- IFALPA
- ICHCA
- Regional Airlines
- Major Airports

Transport:
- Edlow Int.
- Members of WNTI
- Road/Rail Regulators

Suppliers:
- ISSPA
- WNA
- REM
- AIPES
- T-I-C
- Regional Industry

National Focal Points:
- All Member States in region
National Network

National Govt Reps:
- Energy & Resources
- Foreign Affairs and Trade
- Transport Authority
- Customs Authority

National Trade Orgs:
- Importers
- Exporters

Air:
- National Airports
- National Airlines
- National CAA

Sea:
- National Ports
- National Shippers

Transport:
- Road Freight Companies
- Rail Freight Companies
- Freight Forwarders

Suppliers:
- Medical Industry
- Radiopharmaceutical Industry
- Isotope Industry

Regional Coordinator:
- Provided Training Assistance

National Focal Point:
- Assigned via NV
Management Team

- Composed of:
  - Former Chairs
  - Current Chairs
  - IAEA Secretariat

- Responsible for executing Action Plan
- Monthly calls
- Liaise with:
  - RCs/NFPs
  - Modal organisations
  - production and transport industry
Action Plan

Six thematic areas:
- Awareness
- Communication
- Economic
- Harmonisation
- Lobbying
- Training

Task Tracking
- Ongoing
- To be completed
- Completed
### Awareness – Database

#### Reporting procedure:
- Notification by industry to the NFP / RC / IO
- Investigation by the NFP / RC / IO with cross-communication and using the tools prepared by the ISCDOS
- Fact Sheets
- Communication Strategy
- Inform the IAEA / ICAO / IMO for inclusion in the database

#### IAEA / ICAO / IMO

- 225+ reports; CS analysis
- 2011-Apr for air/sea

#### IAEA / ICAO / IMO

- **Database**
- **IAEA / ICAO / IMO**
- **225+ reports; CS analysis**
- **2011-Apr for air/sea**

#### Details of Difficulty

<table>
<thead>
<tr>
<th>Details of Difficulty</th>
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<tbody>
<tr>
<td>Date of difficulty</td>
</tr>
<tr>
<td>Location(s) and date(s) of transit</td>
</tr>
<tr>
<td>Destination</td>
</tr>
<tr>
<td>Brief description of events</td>
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<tr>
<td>Actions taken to resolve the matter (if any)</td>
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<tr>
<td>Consequences of the development(s)</td>
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<td>Other relevant information or comments</td>
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#### Details of Contact

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<tbody>
<tr>
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<tr>
<td>Address</td>
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<tr>
<td>City, State, Country, Postal Code</td>
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<tr>
<td>Telephone Number</td>
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<tr>
<td>Email Address</td>
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Awareness – Conferences

- **PATRAM**
  - 2004 Berlin
  - 2007 Miami
  - 2010 London
  - 2013 Chicago

- **RAM Transport**
  - 2009 Manchester
  - 2011 Vienna

- **Producer Industry Conferences**
  - Annual: ISSPA, T.I.C., WNA
Awareness – CINS

- Cargo Incident Notification System
  - CMA-CGM, Evergreen, Hapag Lloyd, Maersk, MSC
  - Soon maybe also K-Lines, NYK, Spliethoff

- Database collecting incidents for all Dangerous Goods, 200+ records in six months
  - Some related to Class 7 – mainly misdeclared goods
    - One of the results of delay / denial, negative cycle

- Collect information on regulatory variations

- Share information with ISCDOS
Communication – Strategy

- CS-03 January 2011
- Audiences / Messages / Conduits
- Action Plan
  - Actions postponed by Fukushima
  - Brochure aimed at carriers
  - Fact sheets
  - IAEA General Conference stand
  - Video development
  - Website
- Work led by the WNA
Communication – Key Messages

- Exemplary Safety Record: highly regulated from origin to end use; licensing at all stages
- 50 years of RAM Transport Regulations
  - Wide acceptance globally
- Limited number of carriers, routes, handlers, connectivity
  - Limited sustainability
- Short half-lives for radiopharmaceuticals, limited time
- Variations in national, local and port regulations
  - Handlers & unions, local politicians, emergency services
Harmonisation

- IATA list of variations
  - 240 variations directly/indirectly affecting Class 7

- ICAO Technical Instructions
  - List 156 variations directly/indirectly affecting Class 7

- IMO
  - Requires a proposal to collect this information
  - CINS may help in this collection

- Regulatory variations: to say they have a “strong impact” is an understatement!!!
Lobbying – Successes

- **Hamburg, Germany**
  - Port authority misunderstanding of regulations
  - IO clarified interpretation and released cargo

- **Santos, Brazil**
  - Port authority concern over radiation hazard
  - Industry and national regulator joint meeting
  - Clarified regulations and allayed fears about radiation

- **Port Everglades, FL, USA**
  - Port authority misunderstood emergency arrangements
  - Industry contacted UK NFP; UK Maritime Authority; USA Coast Guard; Port Authority
Training

- Member State hosted training
  - Cuba – National Network
  - Malaysia – multiple workshops
    - Industry
    - Senior port authority staff
    - Stevedore and warehouse line managers

- Technical Cooperation training
  - Panama, 2011-Jul

- Industry led training
  - WNTI workshop in Namibia, 2011-Sep