Transport Facilitation Working Group

Results of 2015 Survey

Serge Gorlin
Report to TRANSSC 32 - June 2016
“Denial of shipments continues to be a problem which must be addressed.

DOS can adversely affect security – e.g., if a package is left at a facility, it may be misplaced or abandoned. Efforts to reduce denials have both safety and security benefits.

DOS is also hindering radioactive source returns as well as beneficial uses involving radioactive material. Information on why carriers deny shipments should be developed.”
Background

- Transport Facilitation Working Group (TFWG) set up in April 2014
- An independent, multi-stakeholder group of experts whose role is to propose strategies and activities necessary to enable the efficient global transport of radioactive materials.
- TFWG submits reports to the Inter-Agency Group (IAG), composed of representatives of the IAEA, ICAO, and IMO Secretariats as well as UNECE.
- Assumes some functions of the International Steering Committee on Denials of Shipment (2008-2013)
- Initial focus is on assembling credible data regarding the level of difficulty in shipping radioactive materials worldwide
TFWG Members

Co-Chairs:
Nat Bruno - Brazilian Nuclear Energy Commission
Serge Gorlin - World Nuclear Association

Secretary:
Ulric Schwela - Tantalum-Niobium International Study Center

- Manju Saini - Atomic Energy Regulatory Board, India
- Trevor Dixon - World Nuclear Transport Institute
- Iain Davidson - Office for Nuclear Regulation, UK
- Paul Gray - International Source Suppliers and Producers Association
- Nontutuzelo Mmutle - National Nuclear Regulator, South Africa
- Mario Mallaupoma - Peruvian Institute of Nuclear Energy
- Jack Edlow - Edlow International
- Zhengcai Chen - formerly of Ministry of Transport, China
- Bernard Monot - Areva
Survey

• Conducted in 2015 through online questionnaire: https://www.surveymonkey.com/s/2BQT8FR
• 61 responses received from organisations relying on Class 7 shipment
• Respondents responsible for over 300,000 package movements / year
• Good cross-section of organisations representing diverse regions and sectors of nuclear technology
# Respondents

## Medical
- Mallinckrodt Pharmaceuticals
- Mallinckrodt Medical
- International Isotopes Inc
- Best Theratronics
- Eckert & Ziegler (Brazil)
- BRIT
- Delfin Farmaco
- Shreeji Imaging and Diagnostic
- Perkin Elmer (India)
- Elekta Medical Systems

## Mining / Minerals
- BHP Billiton
- Rio Tinto
- Ethiopian Minerals Development SC
- Advanced Material Japan
- Specialty Metals Resources
- Trademet
- Advanced Metallurgical Group

## Governmental
- International Atomic Energy Agency (one department)
Respondents

Industrial Sources
- Nordion
- Reviss Services
- SQHL
- Sievert Lab (Brazil)
- Jabarra Radioproteção
- Arctest
- NDT do Brasil
- Geecy Industrial Services
- Berthold Technologies (India)
- Electronic & Engineering Co.
- Advanced Nuclear Fuels (Areva)
- CEZ

Class 7 Logistics
- NTP Logistics
- Daher-NCS
- RSB Logistic
- DMS
- CMA-CGM
- Express Truck (Spain)
- Ambientis Radioproteção

Nuclear Industry
- Korea Hydro Nuclear Power
- Urenco
- EPZ
- INB
- Converdyn

Users
- Vision Systems & Solutions
- Schlumberger
- HLS Asia
- AVX Corporation
Country where respondent based

**Americas**
- Brazil
- USA
- Canada
- Peru

**Asia**
- India
- China
- Kazakhstan
- South Korea
- Singapore
- Japan

**Europe**
- Germany
- Czech Republic

**Africa**
- South Africa
- Tanzania
- Ethiopia

**Oceania**
- Australia
How many Class 7 shipments does your organization carry out each year?

- < 10: 32%
- 10 to 50: 28%
- 100 – 200: 26%
- 200–500: 10%
- > 500: 0%
Are your shipments mainly international or domestic?

- International: 64%
- Domestic: 36%
To what extent do these shipments involve transit or transhipment?

- Significant portion of transit / transhipment: 44%
- Little or no transit / transhipment: 56%
Please rate your organization’s overall degree of difficulty in shipping Class 7

Using a scale of 1 – 7 where 1 is very easy, and 7 very difficult

<table>
<thead>
<tr>
<th>Category</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mainly international + transit / transhipment</td>
<td>5.43</td>
</tr>
<tr>
<td>Mainly international</td>
<td>4.85</td>
</tr>
<tr>
<td>Mainly domestic</td>
<td>3.8</td>
</tr>
<tr>
<td>All respondents</td>
<td>4.54</td>
</tr>
</tbody>
</table>
Your organization’s overall degree of difficulty in shipping Class 7

Very large (> 500 shipments / year) v Very small (< 10)

- Large: 4.1 (15 respondents)
- Small: 5.25 (18 respondents)
How is the situation compared to 3 years ago?

- 36% Greatly Improved
- 37% Improved
- 22% Stayed the same
- 3% Deteriorated
- 0% Greatly deteriorated
How is the situation compared to 3 years ago? – Brazil & Peru

- 75% Improved
- 17% Stayed the same
- 8% Greatly improved
- 0% Deteriorated
How is the situation compared to 3 years ago? (excluding Brazil & Peru)

- Greatly Improved: 28%
- Improved: 24%
- Stayed the same: 42%
- Deteriorated: 0%
- Greatly deteriorated: 0%
To what do you attribute the difficulty?

- Perception of Radioactive Materials: 30 respondents
- Lack of economic incentive for transport companies and ports: 15 respondents
- Difficulty in meeting regulatory and other requirements: 10 respondents
- Other: 5 respondents
How many routes are available to your major customer / consignee for Cl. 7?

- Overall (mean): 1.86
- Mainly international + transit / transhipment: 1.37

It should be noted that respondents with a low difficulty rating (≤ 4) are in some cases dependent on 1 or 2 routes to their main customer / consignee.
Our cargoes travel to the consignee by a direct route – please respond

<table>
<thead>
<tr>
<th>Fully agree</th>
<th>Completely disagree</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>7</td>
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</table>

Overall (mean) 3.66

Mainly international + transit / transhipment (27 respondents) 4.98
Over the last 3 years, planning times for Cl. 7 shipments have ...

One respondent said that it had prepared a checklist of 70 procedures to accomplish all the activities involved in shipping Cl. 7
1. Based on the results of the survey, work is still needed to facilitate the timely shipment of Cl. 7, to allow the full benefits of nuclear applications to be realized and to moderate knock-on effects to safety and security.

2. The survey should be repeated at a future date to track progress against benchmark.

3. A future survey can be adapted by e.g.:
   • Trying to identify more clearly where difficulty is occurring
   • Further breakdown on sector, region, mode
   
   ...all while maintaining comparability with benchmark
Recommendations

4. Further outreach on the results of the survey and consultation with Cl. 7 stakeholders through:
   - Presentation at PATRAM 2016
   - Side event at General Conference
   - Articles (e.g. WNN)

5. Creation of a website – tfwg.info – and newsletter
Your organization’s overall degree of difficulty in shipping Class 7

Very large (> 500 shipments / year ) v Very small (< 10)

- Very large: 4.1
- Very small: 5.25

Air v Maritime*

- International Air (15 respondents): 4.47
- International Maritime (26 respondents): 5.06

* Respondents were not asked their principal transport mode. Results based on knowledge of TFWG members and research.
Types of cargo shipped by respondents

Number of respondents

- UOC
- Natural Hex
- Enriched Hex
- Nuclear Fuel
- LLW
- ILW
- HLW
- Cobalt-60
- NORM
- Moly-99
- FDG
Types of package shipped by respondents

<table>
<thead>
<tr>
<th>Number of respondents</th>
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</thead>
<tbody>
<tr>
<td>Excepted</td>
</tr>
<tr>
<td>IP1</td>
</tr>
<tr>
<td>IP2</td>
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<tr>
<td>IP3</td>
</tr>
<tr>
<td>Type A</td>
</tr>
<tr>
<td>Type B</td>
</tr>
<tr>
<td>Type C</td>
</tr>
</tbody>
</table>
Which modes of transport does your organization use for Cl. 7 shipment?

Number of respondents

- Air: 40
- Ocean: 35
- Road: 35
- Rail: 10
To what do you attribute the difficulty? – main themes

- Lack of transit ports
- Lack of harmonization
- Not enough coordination between regulatory bodies
- Lack of political will
- Delay in getting approvals
- Lack of education / communication
- Limit of 10 Bq/g is too low
- Supply chain integration*

* Integration or mergers between transport companies can result in fewer Cl. 7 shipping options
Are there any specific issues you would like to bring to the attention of TFWG and / or the Inter-Agency Group? - examples

- Communication and awareness
  - Perception of radioactive materials needs to improve
  - Need for joint declaration to facilitate the transportation of radioactive material

- Training need
  - Training session related to radioactive cargoes should be mandatory for carriers
  - Shipments delayed in Customs due to lack of understanding of import/export licensing requirements
Limited availability of carriers and/or routes
- Number of available routes is diminishing
- Only one carrier, which means “monopoly”; more should accept
- ACL and ripple effect
- Cannot assume acceptance of status quo; acceptance can change quickly and radically

Coordination among networks
- Need for networks to facilitate the transportation of radioactive material
Are there any specific issues you would like to bring to the attention of TFWG and/or the Inter-Agency Group?

- Regulatory clarity and interpretation
  - Double interpretation in calculating activity of radionuclide mixtures
  - Airlines use TIs smaller than those recommended by IATA

- Harmonisation of regulations
  - Different requirements of regulatory bodies according to country
  - Too many regulations
“The achievement of effective security in transport can be assisted by considering transport schedules, routing, security of passage, information security and procedures. In particular, and as far as is operationally practicable, general recommendations to be regarded as best practice are as follows:

- The total time that radioactive material is in transport, the number of intermodal transfers and the waiting times associated with the intermodal transfer are kept to the minimum necessary.”
6.6. Physical protection against unauthorized removal during transport should encompass, as far as operationally practicable in accordance with the graded approach:

(a) Minimizing the total time during which the nuclear material remains in transport.

(b) Minimizing the number and duration of nuclear material transfers, i.e. transfer from one conveyance to another, transfer to and from temporary storage and temporary storage while awaiting the arrival of a conveyance, etc.