

APPLYING THE GOOD PRACTICES IDENTIFIED IN IAEA TRANSAS MISSIONS

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ABSTRACT

Over several TranSAS missions there have been a number of good practices identified. This paper sets them out and examines how they might be used by competent authorities to improve safety and efficiency.

INTRODUCTION

The International Atomic Energy Agency is authorized by its Statute to establish standards of safety for protection of health and minimization of danger to life and property and to provide for the application of those standards at the request of States. Accordingly, the Agency has issued Regulations for the Safe Transport of Radioactive Material and several related guides and technical documents. Effective implementation of these regulations is essential for ensuring a high level of safety during the transport of radioactive material.

In response to direction from the Agency's General Conference, a service for carrying out, at the request of any State, an appraisal of the implementation of the Agency's Transport Regulations by that State has been established. This is known as the Transport Safety Appraisal Service (TranSAS). TranSAS is intended to assist States in improving their transport safety regulatory programmes by providing:

- an appraisal of the State's transport safety regulatory practices with respect to requirements of the Agency's Transport Regulations and related international standards and guidelines; and
- recommendations, as appropriate, in areas where the Member State's transport safety regulatory programme might be improved.

Missions provide an opportunity for key staff of the competent authority of the host State to discuss their practices with, and to learn from, an international group of experts in the field of transport safety.

Methods

The mission is accomplished through various means including:

- assessing the regulatory framework for the safe transport of radioactive material, with particular attention to whether the State's legal framework provides an appropriate set of arrangements for all modes of transport;
- determining whether the transport regulations and regulatory practices are complete and are being implemented effectively by comparing them with current international standards and best practices;
- defining whether adequate steps are being taken by the competent authority to ensure compliance with the Transport Regulations, including assessing its inspection and enforcement activities; and

- reviewing particular aspects of the State's transport regulations and regulatory practices that are determined to be inadequate, and identifying possible objectives for future improvements.

History

Over several years the IAEA has promoted the use of TranSAS missions to assist member states in establishing their strengths and weaknesses in comparison to the Agency Safety Standards. To date there have been seven TranSAS missions carried out, the most recent six of which are openly published, as follows:

Slovenia (unpublished)	June/July 1999
Brazil	April 2002
United Kingdom	June 2002
Turkey	March 2003
Panama	June 2003
France	March/April 2004
Japan	December 2005

In addition to suggestions for improvement these missions identified good practices. This paper explores how these identified Good Practices can be taken forward. This paper centres on the results of a consultancy held to investigate this issue.

CATEGORIES OF GOOD PRACTICE

The good practices can be separated into different topical areas. Each of the identified topical areas can then be associated with the appropriate Section number and, where appropriate, paragraph number, of TS-R-1. In TS-R-1 paragraph number order the topical areas considered, and the number of good practices in each area are set out in Table 1.

Good Practice Topical Area	Number of Good Practices
Emergency preparedness for transport (Section III, paras. 304, 305)	13
Inspection and Enforcement (Section III, paras. 306, 307)	6
Training (Section III, paras. 311 – 315)	3
Operations — general (Section V)	1
Operations — package operations and packaging maintenance (Section V)	1
Prior Notification (Section V, paras. 554 – 557 and Section VIII, para. 819)	1
Operations — road transport (Section V, particularly paras. 567 – 570)	1
Operations — rail transport (Section V, particularly paras. 567 – 570)	1
Operations — maritime transport (Section V, particularly paras. 571, 572)	3

Operations — air transport (Section V, particularly paras. 573 – 575)	3
Review and assessment (Section VI)	4
Legislative and governmental responsibilities (Section VIII)	16
Authority, responsibilities and functions of the regulatory body (Section VIII)	5
Organization of the regulatory body (Section VIII)	1
Authorization process (Section VIII)	4
National Database (N/A)	3
Physical Protection (N/A)	2

Table 1. Categorisation of good practices

HOW CAN THE GOOD PRACTICES BE PROMOTED?

The fact that the main good practices lie in the area of government activities and responsibilities means that the target audience for good practices are Member States of IAEA, rather than industry. This can help simplify the way to promote these.

Several options for using these have been considered. One problem identified in examining the good practices is that they tend to be written in a very specific manner, related to the state involved. The initial process of making the good practices more accessible is to create a generalised list detailing them. Such a generalised list is set out in Table 2.

Topical Area (TS-R-1 Section, para.)	Good Practice
Emergency preparedness for transport (Section III, paras. 304, 305)	Integration of emergency plan(s) applying to the transport of radioactive material into State national emergency response plans.
	Provision of a National Guidance System for Radiological Emergency Response covering emergencies in the area of the transport of radioactive material.
	Ensuring emergency response plans are comprehensive and effective, by involving both governmental agencies and industry participation, covering all modes of transport.
	Maintaining emergency preparedness by regular (annual) review and updating as necessary.
	Regular (four times / year) meetings of all relevant governmental organizations involved in emergency coordination, to share experiences and lessons learned from emergency incidents and exercises.
	Maintaining a web based incident management system.
	Defining theoretical source terms to be used in accident scenario planning, combined with practical workshops in which scenario

Topical Area (TS-R-1 Section, para.)	Good Practice
	<p>resolution issues are agreed among people with field experience.</p> <p>Conducting systematic exercises covering a range of potential accidents, using a variety of methods and realistic scenarios in combination with a high frequency of testing.</p> <p>Performing a critical review / critique of shipboard emergency plans for INF ships in the application of the INF Code and ensuring contingency plans are updated accordingly.</p> <p>Preparation of guidance circulars to assist local authorities in effective response to land based incidents throughout the country.</p> <p>Establishing general international maritime emergency response agreements between neighbouring countries.</p> <p>Maintaining comprehensive equipment and systems availability countrywide at strategically placed locations.</p>
<p>Inspection and Enforcement (Section III, paras. 306, 307)</p>	<p>Maintaining extensive and detailed documentation covering quality and compliance assurance.</p> <p>Conducting 100% inspections on all INF class vessels with INF cargo on board and all vessels carrying fissile material.</p> <p>Undertaking essential verifications to ensure that International Code for the Safe Carriage of Packaged Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes on Board Ships (INF Code) requirements for the transport of INF cargoes are met within the context of a certified quality assurance programme.</p> <p>Performing critical review / critique of shipboard emergency plans for INF ships in the application of the INF Code and ensuring contingency plans are updated accordingly.</p> <p>Regular inspection by the competent authority of ships carrying radioactive material in the context of Port State Control (PSC) type procedures.</p> <p>Ensuring all packages are in compliance with the most recent edition of the Transport Regulations.</p>
<p>Training (Section III, paras. 311 – 315)</p>	<p>Ensuring comprehensive training is given, led by the Competent Authority, to all personnel involved in handling dangerous goods, including radioactive material.</p> <p>Mandatory implementation at the national level of international recommended requirements on training of personnel under the IMDG Code.</p> <p>Mandatory education and training of all shore side workers</p>

Topical Area (TS-R-1 Section, para.)	Good Practice
	handling dangerous goods transported by sea, commensurate with their duties and responsibilities.
Operations — general (Section V)	Application of thoroughly prepared and thoroughly evaluated transport plans.
Operations — package operations and packaging maintenance (Section V)	Competent Authority monitoring of trends of large shippers of the more dangerous forms of radioactive material and working with them to facilitate compliance.
Prior Notification (Section V, paras. 554 – 557 and Section VIII, para. 819)	Ensuring notification and liability provisions relating to shipments of radioactive material are both comprehensive, effectively implemented, and made available to competent authorities for emergency planning and national security purposes.
Operations — road transport (Section V, particularly paras. 567 – 570)	Reducing the maximum dose to members of the public to 0.1 mSv/h at 1 m from a vehicle.
Operations — rail transport (Section V, particularly paras. 567 - 570)	Application of comprehensive quality assurance programmes and procedures related to the storage, handling and transport of spent fuel casks on the site and to and from the railhead.
Operations — maritime transport (Section V, particularly paras. 571, 572)	Implementing recommendations concerning the level of safety for the maritime transport of radioactive material additional to those specified in the IMDG Code and INF Code.
	Application of special conditions on ships in transit with INF cargo.
	Use of state-of-the art vessel tracking systems on INF vessels.
Operations — air transport (Section V, particularly paras. 573 - 575)	Maintaining comprehensive Type A package documentation by a Competent Authority.
	Promoting safety culture consistent with that recommended in the BSS the companies and airlines in their multimodal (road–air) operations.
	Verification that the exposure of workers does not exceed 1 mSv in a year.
Review and assessment (Section VI)	Provision by the Competent Authority of a guidance document on the information necessary for an application for CA approval.
	Ensuring early and active interaction between the Competent Authority and applicants during the design review process, including regular CA observation of physical testing .
	Maintaining a project record management system that (a) ensures files that are neat, complete, systematically organized and properly

Topical Area (TS-R-1 Section, para.)	Good Practice
	maintained and (b) ensures project information is maintained electronically, providing search and sort capabilities available to all staff members.
	Commissioning detailed assessments and reports on the radiation exposures resulting from the transport of radioactive material in both normal and accident conditions of transport and for all modes of transport.
Legislative and governmental responsibilities (Section VIII)	Establishing written cooperation agreements / memoranda of understanding between the various ministries and governmental agencies/authorities having a locus w.r.t. radioactive material transport.
	Setting up interinstitutional commissions on an informal basis to address mutual problems or issues.
	Ensuring that the responsibilities of the various authorities in charge of radiological emergencies in transport are completely and properly stated in legislation.
	Establish a system to ensure updating of the legislation which implements the various provisions of the international safety instruments such as the IMDG Code, ICAO Technical Instructions etc. (which are substantially updated and revised every two years).
	Ensuring all relevant international instruments associated with the transport of radioactive material are made mandatory in appropriate legislation.
	Early introduction at the national level of proposed new or revised safety practices such as e.g. the IMO's Automatic Identification System (AIS), Medical First Aid Guide for Use in Accidents Involving Dangerous Goods (MFAG), Emergency Response Procedures for Ships Carrying Dangerous Goods (EmS), SOLAS Convention, International Ship Management (ISM) Code and Irradiated Nuclear Fuel (INF) Code.
	Consolidation of competent authority responsibilities for radioactive material transport into a single regulatory entity.
Authority, responsibilities and functions of the regulatory body (Section VIII)	Use of national regulatory co-ordinating committees and groups with charters to co-ordinate the development and implementation of domestic regulatory documents reflecting the requirements of the international modal authorities.
	Establishing appropriate legal framework to promote a high level of effectiveness in ensuring proper protection of the public.

Topical Area (TS-R-1 Section, para.)	Good Practice
	Ensuring the clear and comprehensive definitions of the terms in safety legislation.
	Ensuring that the public is enabled to be informed directly and accurately concerning the safety in transport of dangerous goods.
	Establishing a system to ensure the responsible minister is immediately informed when hazards arise in the transport of radioactive material or when exposure of personnel or thefts of material occur or are suspected.
Organization of the regulatory body (Section VIII)	Framing legislation to directly reference internationally recognised Agreements/Codes of Practice.
Authorization process (Section VIII)	Licensing all stages of the acquisition, possession, storage, transport and disposal of all radioactive material.
	Establish a system to enable modifications to approved designs to be rapidly progressed where only limited safety significance is entailed.
	Use of revision sheets in certificates of approval to provide useful information and clarification of the current revision status of the certificate.
	Provision of a comprehensive and continuously updated register of serial numbers of all approved packages.
National Database (N/A)	Maintaining a database on the use, storage and movement of all radioactive material within a State.
	Establishing control over all radioactive material transported within a State, including packages that normally do not require competent authority certification under the Transport Regulations (i.e. Type IP and Type A packages).
Physical Protection (N/A)	Adaptation and inclusion of the obligations under the Convention for the Physical Protection of Nuclear Material to the measures taken to ensure the safe and secure passage of INF ships.
	Application of the enhanced security measures required under the International Ship and Port Facility Security (ISPS) Code to ships carrying radioactive material.

Table 2. Generalised good practices

The TRANSSC Committee

The TRANSSC Committee provides a forum to consider further if and how the Good Practices should be taken forward. A list of these Good Practices (as set out in Table 2 above) has been

circulated to the TRANSSC committee for their consideration. Each member is requested to respond to two questions:

- How is this implemented in your country?
- How can we encourage this good practice?

These two questions encourage the TRANSSC member to first look inward and then outward while considering the good practice. The answers to these questions are being used to develop a plan for a way forward. The range of States involved in TRANSSC results in a range of views. The benefits of discussing these views are likely to be significant. Existing groupings of states (possibly regional groupings) are also encouraged to engage in discussion based on the two questions above.

The range of results obtained already from this survey suggests that cross fertilisation of ideas offers a major benefit. It is clear that simply considering this generalised list of good practices is seeding ideas in people's minds.

It is also noted that there are some practices that have already been promoted to a more formal system, and some practices that some states have difficulty adopting. This suggests that there is already a system for promoting the best practices into regulation, although this may not be formalised.

Formalising the practices

The nature of the identified examples of "Best Practice" would be suitable for inclusion in a TECDOC with a view to a possible later publication in the Safety Reports Series, which provide practical examples and detailed methods that can be used in support of the safety standards. Such a publication would provide a concentrated compendium of suggestions for improvement to be of use to Competent Authorities in the first instance and could then be used by them to encourage best practice in the wider audience of users of the Transport Regulations. In addition this document could be used to collect good practices not already identified through TranSAS. Based on the results of the survey of TRANSSC such a document will be considered.

CONCLUSIONS

The simple conclusion as to how to take these good practices forward is that they should be considered and discussed based on a generalised form. The concept of good practices is that other states might carry out work in a way that the mission team had not considered before themselves, and find beneficial. As a result the obvious way to take advantage of these identified good practices is to explore what they could mean through discussion with other states that might have different approaches.

Following this through to its logical conclusion this will result in an improvement in the activities of states. Given that options that are less safe or less efficient are highly unlikely to have been identified as good practices this simple low cost process offers a means of identifying which good practices can be applied by most states and offers opportunities for harmonising activities around these good practices.

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