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Developing Transport Regulator Capacity on a Regional Basis

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Abstract

Over 20 million shipments of radioactive material occur each year and this number is expected to increase as more countries develop their healthcare and industrial programmes that include the use of radioactive material.

Safety during transport is assured by complying with the requirements of the IAEA Specific Safety Requirements SSR-6 which are adopted into the UN Model Regulations and the international modal regulations for transport by air and sea. There are no international regulations for land transports (road and rail) and therefore each country has to develop its own national regulations based upon SSR-6[1] requirements or the UN Model Regulations[2].

The IAEA currently has 168 Member States that have transport regulatory infrastructures ranging from mature to very limited. For appropriate levels of safety during transport to be assured it is essential a regulatory infrastructure that includes effective regulator oversight exists in each of the countries through or into which radioactive material is transported. In addition it is recognized that shipments are already taking place in most countries of the world and therefore the challenge is to develop the transport regulator capacity in each country to enable each to provide the appropriate levels of transport regulator oversight in the shortest possible timescales.

The combination of shipments taking place, limited resources and implementation of regulator oversight in the near term has led the IAEA to adopt a regional approach to help Member States to build collaborative networks of transport regulators. The regional programmes, which are IAEA Technical Cooperation funded with extra budgetary funding from the European Commission are being managed by the IAEA Transport Safety Unit (TSU) and cover the regions of Africa, Asia and Pacific, Latin America and the Mediterranean Region representing the involvement of over 80 Member States.

This paper will provide an insight into the approach being used, the countries involved, and the practical approach to regulator oversight being developed.

Introduction

The IAEA currently has 168 Member States that have transport regulatory infrastructures ranging from mature to very limited. For appropriate levels of safety during transport to be assured it is essential a regulatory infrastructure that includes effective regulator oversight exists in each of the countries through or into which radioactive material is transported. In addition it is recognized that shipments are already taking place in most countries of the world and therefore the challenge is to develop the transport regulator capacity in each country to enable each to provide the appropriate levels of transport regulator oversight in the shortest possible timescales.

Member States in each region

Four regions have been set up namely, Africa, Asia and Pacific Islands, Latin America and the Mediterranean region; the Member States involved in each region are listed in Table 1. A small number of States from the Africa and the Asia and Pacific Island networks are also members of the Mediterranean network to provide a mechanism to exchange information, develop common approaches in neighbouring regions and further extend the network of contacts between regions.

The needs of Member States

The needs of a Member State are dependent upon the following:

i. Current status of its regulatory infrastructure

ii. If radioactive material is imported, exported or is a transit State

iii. If packagings are designed in the State

iv. If packagings are manufactured in the State

v. If packaging designs are tested in the State

Several Member State have maturing regulatory infrastructures and have specific areas of their regulatory infrastructures to develop whereas other Member States have little or no regulatory infrastructure in place.

Radioactive material is being transported in all the States in each region and consequently there is a need to introduce regulator oversight, appropriate to the transport activities taking place, in the shortest possible timescales. It is therefore important to build sustainable and appropriate levels of regulator capacity and develop the laws and regulations governing the transport of radioactive material in each of the States to enable each of them to meet their obligations, duties and responsibilities.

Transport safety

The premise of transport safety is that safety is based upon the correct type of package being used within defined control parameters with operational and administrative controls being applied by the operator in an appropriate quality management system. The international nature of some shipments means that safety in one State is dependant upon the operator and the State where the consignment originated fulfilling their duties and responsibilities to ensure the package and the transport operations comply with the transport regulatory requirements.

Regional approach for capacity building

It is important that a Regulatory Body inspects and assesses the compliance of operators who carry out transport activities in its State. This requires not only knowledge of the transport regulatory requirements but also an understanding of how a regulator operates and how it can prioritise its activities.

Why a regional approach?

The question often is why a regional approach to capacity building, would focused attention on a Member State be more effective? The answer to that question to an extent is yes it would be more effective but it is a matter of limited funding, availability of resources, how would you prioritise the selection of the Member States, and the consequential time it would take to provide support for the Member States in the lower half of the priority list.

The capacity of the IAEA, that is the Secretariat and the Member States who provide experts, is limited and not capable of providing mentoring and training individually to the number of Member States requiring support over the next 5 – 7 years. Consequently, the combination of shipments taking place in all Member States, the limited, and in some very limited, regulator resources and regulatory infrastructure, and the need to implement regulator oversight as soon as practicable, led the IAEA to adopt a regional approach to help Member States to build collaborative networks of transport regulators on a regional and trading basis.

The objective of this approach is to be in contact with as many Member States on a regional basis, to provide training in the SSR-6 regulatory requirements and to encourage collaboration to take advantage of the variety of Member State resources available in a region. Networking and the encouragement to collaborate empower the Member States, provides healthy peer motivation and is capable of providing the necessary minimum levels of Regulator oversight capacity in shorter timescales.

Effective collaboration will include for each State involved in a regional network:

a. A sharing of information of the activities that constitute effective regulator oversight,

b. A sharing of information of what regulator activities takes place:

   i. in States in their region,

   ii. in States who receive consignments they consign,

   iii. in States who consign packages to their State

c. A list of contacts responsible for regulator oversight in other States,

d. An ongoing dialogue takes place between the States in (b)

e. Sharing of information concerning operators who export radioactive material,

f. Sharing of regulator oversight processes to improve harmonisation, and reduce unnecessary overlap and gaps

g. Continue to seek ways to increase confidence and trust between the network group.

The three-element approach

Element 1 – Laws and Regulations

To develop and adopt laws takes time, in some States several years or more, and this is usually beyond the influence of this initiative. The development and adoption of regulations can also take time and for this the Agency provides drafting schools for regulations to provide guidance on drafting and the opportunity for the Agency to review draft regulations to assess if the requirements of IAEA SSR-6 are fully incorporated and enforceable.

Element 2 – SSR-6 Regulations and Regulator activities

Workshops and meetings provide information about the SSR-6 requirements in the context of a logical framework. In addition there are requirements from other IAEA Safety Standards such as GSR Parts 1 and 3[3,4], that are important for transport activities such authorisations that enable import and export controls to be adopted and national registers of persons/organisations that possess radioactive material to be maintained.

Element 3 – Building collaborative networks

To build the necessary confidence in the network requires meeting and discussions and a series of meetings has taken place on a program of topics with telephone conference calls being used to maintain contacts. The Mediterranean region has developed an import / export template with the intention of harmonising requirements between the Member States involved. This template has also been given to the Africa, Mediterranean and Asia networks through those who are members of the Africa and Mediterranean networks.

Observations

The Africa network used a peer review process in which two Member States peer reviewed a third Member State on a rotational basis. This proved to be successful and improved the understanding of the network members and provided a basis to build trust.

In some regions progress has been slower than in others and this illustrates the need for a flexible approach as it is the Member States who decide if collaboration takes place and the time needed to make progress.

The transport regulations are prescriptive and therefore detailed knowledge is required to enable regulator oversight programmes to be developed and implemented.

To achieve an effective sustainable collaborative network will take several years and each State involved must recognise and want the advantages that collaboration will bring. This recognition itself will require a level of understanding of the SSR-6 requirements within a developing safety culture thereby generating a sustainable approach to safety with appropriate interactions and collaboration between neighbouring and trading States.

The need for guidance on implementation, regulator behaviours and safety culture has become more apparent from the regional network programmes.

The time available is limited and is used to provide technical content and implementation and the building of trust and confidence between the Member States in the regional network.

Tactics to continue the development of the regional networks

Issues

The time needed to develop sustainable collaborative networks is a challenge to the funding model used by the Agency which normally allocates funding for 2 or 4 year programmes of work.

More access to the technical content of the transport regulations and their implementation is required by the Member States. Funding and human resource constraints cannot support the number of meetings required to effectively provide the technical knowledge in an effective way to the number of people necessary.

Future tactics

Further discussion and alignment between the needs of Member States, the funding models and the human resource requirements will be necessary to provide assurances that the Agency is able to assist Member States in the early years until the network is sustainable. Part of this process will involve the development of metrics and the use of expert missions to identify needs and progress on implementation.

Basic technical content would be best provided by on line e-Learning and work is in hand to develop this mechanism. The technical content will be structured to provide core technical competences for a transport regulator and cover the range of regulator activities as defined in

TS-G-1.5[5]. The system will provide information on the names of students and their progress to inform assessments of implementation progress in each Member State. The use of e-Learning will significantly extend access to information to meet the needs of each Member State on a 24/7 basis.

Meetings can then be used to clarify misunderstandings / difficulties with the e-Learning material and provide more time for activities which will encourage the collaboration and trust elements for building the network and provide training on behaviours and other soft skills.

The Training Course Series 1 Manual[6] is currently under revision and it will be made available early next year to supplement the e-Learning platform.

Advantages

The e-learning material will be available for each Member State on a 24/7 basis and there will be no limitations to the number of students who can enrol and use the system.

The system will provide a consistency to the information provided to Member States and provide a basis for harmonisation of understanding between Member States.

Changes in requirements and improvements in the information can be provided to all Member States at the same time.

The system will be extremely cost effective in that it will provide a training resource simultaneously to many more people than could ever be achieved by a series of meetings with unlimited funding.

More time will be available in future regional programmes to encourage the development of collaboration between Member States with opportunities to develop specific skills to suit their resource availabilities.

Reliable data can be generated to inform Member States and the Agency of progress being made.

Future requirements

As always funding is an issue and in addition to the funding needed to complete the e-Learning platform there will be a need to maintain the technical content and develop the system based upon feedback from the users on an on-going basis.

There is also a need to maintain contact with the regional networks to offer encouragement over a longer term with the opportunity to hold occasional regional meetings to maintain some momentum through periods when there will be risks to the progress that has been made.

References

1. SSR-6, Regulations for the Safe Transport of Radioactive Material 2012 Edition, IAEA Vienna
2. UN Model Regulations, UN Recommendations on the Transport of Dangerous Goods – Model Regulations, 19th Edition, 2015, UNECE
3. GSR Part 1(Rev.1) Governmental, Legal and Regulatory Framework for Safety, 2016, IAEA Vienna
4. GSR Part 3, Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards, 2014, IAEA Vienna

5. TS-G-1.5, Planning and Preparing for Emergency Response to Transport Accidents Involving Radioactive Material, 2002, IAEA Vienna (under revision)
6. Training Course Series 1, Safe Transport of Radioactive Material – 4th Edition, 2006, IAEA Vienna (under revision)

TABLE 1 Member States involved in each region

AFRICA	ASIA &	PACIFIC ISLANDS	LATIN AMERICA	MEDITERRANEAN REGION
Algeria				Algeria
Angola	Afghanistan	Fiji	Bolivia	Albania
Benin	Bahrain	Marshall Islands	Brazil	Bosnia-Herzegovina
Botswana	Bangladesh	Papua New Guinea	Chile	Croatia
Burkina Faso	Cambodia	New Zealand	Columbia	Former Yugoslav Republic of Macedonia
Burundi	China	Palau	Costa Rica	Greece
Cameroon	Indonesia	Tonga	Cuba	Malta
Central African Republic	Islamic Republic of Iran	Vanuatu	Ecuador	Montenegro
Chad	Iraq	Cook Islands (*)	El Salvador	Portugal
Cote d'Ivoire	Jordan		Guatemala	Jordan
Democratic Republic of Congo			Honduras	Egypt
Egypt	Kuwait	Solomon Islands (*)	Mexico	Serbia
Ethiopia	Lao PDR	Kiribati (*)	Nicaragua	Slovenia
Gabon	Lebanon		Panama	Lebanon
Ghana	Malaysia	Tuvalu (*)	Paraguay	Turkey
Kenya			Peru	
Libya	Mongolia		Republica Dominicana	
Madagascar	Myanmar		Uruguay	
Malawi	Nepal		Venezuela	
Mali	Oman			
Mauritius	Pakistan			
Morocco				Morocco
Mozambique	Philippines			
Mauritania	Qatar			
Namibia	Sri Lanka			
Niger	Syrian Arab Republic			Syrian Arab Republic
Nigeria	Thailand			
Seychelles	TTUTJ of T Palestinian A.			
Senegal	Vietnam			
Sierra Leone	Yemen			
South Africa				
Sudan				
Tanzania				
Tunisia				Tunisia
Uganda				
Zambia				
Zimbabwe				
37	26	11	20	18
(*) Non-Member State				