

**TECHNICAL COOPERATION EFFORTS: IMPROVING SAFETY IN  
TRANSPORT OF RADIOACTIVE MATERIALS**

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## **ABSTRACT**

The IAEA, through its Technical Cooperation Programme (TCP), has provided assistance aimed to enhance the capabilities of its Member States to put in place comprehensive governmental and regulatory frameworks in the field of transport safety. In addition, the TCP has focused attention on the matter of delay and denial of radioactive material shipments. The next cycle of the TCP will include an interregional project specifically aimed at raising awareness about the problems surrounding delay and denial of shipments and to assist Member States in developing the appropriate mechanisms to make transport of radioactive material more viable and, as a result, granting greater access to the development and use of nuclear technology for countries that are currently not able to sustain the use of nuclear technology without assistance.

## **INTRODUCTION**

Radioactive material shipments are vital to the development and advancement of technologies that benefit the global community in areas such as medicine, agriculture, hydrology, geology, industry, research and the environment. Transport in general, and of radioactive materials in particular, is truly a global enterprise, involving all regions of the world. Problems with transport in one region of the world can directly impact another region on the other side of the globe, making this an inter-regional challenge. A number of factors make it challenging to ship radioactive material and, as a result, some carriers and ports have adopted a non-acceptance policy for radioactive material shipments. As a consequence of these challenges, there are regions of the world that are, due to denials of shipment (DoS), cut off from essential radioactive materials, such as life-saving radiopharmaceuticals.

In addition, lessons learned from the tragic events at the Fukushima Daiichi nuclear power plant have highlighted the need for improved international cooperation, both between UN groups and Transnational Organizations, in the transport sector. The disposition of massive quantities of contaminated debris and

the eventual movement of severely damaged spent nuclear fuel could present significant challenges to national, regional, and global transport regimes.

In light of these challenges, the call for enhanced cooperation between the International Atomic Energy Agency (IAEA), UN groups, and Transnational Organizations in the transport sector was raised at the IAEA Ministerial Conference on Nuclear Safety in June 2011, and further discussed at the IAEA Transport Conference in October 2011. There is a strong need for the IAEA to bring together, and work collaboratively with, the different UN groups (ICAO, IMO, UNECE, WHO, UNODC) and Transnational Organizations (ACI-Airport Council International, GEA-Global Express Association, IAPH-International Association of Ports and Harbors, IATA-International Air Transport Association, ICHCA-International Cargo Handlers and Carriers Association, ICS-International Chamber of Shipping, IFALPA-International Federation of Airline Pilot Associations, ISC-Former International Steering Committee, WNTI-World Nuclear Transport Institute, WNA-World Nuclear Association, and WCO-World Customs Organization) involved in the transport sector to build effective partnerships, joining efforts to create synergies aimed at improving the current transport regime for radioactive materials.

## **CURRENT STATUS**

The regional/inter-regional projects on transport safety initiated by IAEA/TC aim to contribute to the strengthening of the effectiveness and sustainability of national regulatory infrastructure and to the continuous improvement of performance of Regulatory Bodies in the participant countries.

Reaching compliance with International Safety Standards represents a very important milestone in the development of the regional projects on transport safety. With this goal in mind, it is strongly recommended that the Self-Assessment of Regulatory Infrastructure for Safety (SARIS) tool be implemented within national organizations, in order to develop a results-based national action plan for improvements to transport safety. Based on the outcomes of national self-assessments using SARIS, TC and IAEA technical departments will determine the most appropriate level of support and assistance for continuous improvements to national regulatory frameworks for safety, at the national, sub-regional and regional levels.

IAEA/TC has provided technical assistance to the Member States for many years. Looking at the status of development of radiation safety infrastructure in the different regions, encouraging progress has been made, although accomplishments vary from country to country. Achieving sound infrastructure across the various regions continues to require a concerted effort. Further steps are needed in order to ensure a timely and comprehensive approach to radiation safety at the national level, addressing the existing shortcomings.

The framework of regional projects includes networking, sharing of experiences, peer review missions aimed at developing and strengthening radiation safety infrastructure, and establishing radiation safety as a “trans-boundary” topic in a region.

## **PROJECT DESIGN**

Projects are designed to move toward a sustainable system of mutual support. It is envisaged that regional projects will set up an infrastructure that encourages sharing between states in a region. A key aspect of the strategy is to demonstrate that sharing of information and resources produces a net benefit for all states involved, irrespective of the support provided by the IAEA.

Regulatory bodies and transporters are the primary beneficiaries of IAEA/TC projects; however, transport affects a wide range of end users, in particular in the medical area.

In general, IAEA/TC projects consist of:

- Regional workshops to establish a process.
- Group application of Self-Assessment to establish strengths and weaknesses.
- Preparation of a “National Profile” for transport by each assessment group for each Member State
- Assessment of National Profiles to gather each MS’s strengths and establish a “pool of excellence”
- Preparation of draft regional action plans, matching regional strengths to regional weaknesses
- Regional workshop to improve and endorse a regional action plan
- Implementation and monitoring of action plans on a priority basis for each of the 12 areas of transport safety. A typical action plan includes: exchange of experience, mentoring, investigations of incidents, development and operation of networks of excellence, sub-regional training and education support, development of regulations, broad based awareness and communication and international coordination
- After each action plan activity the change/improvement is identified by each participant (informing national counterparts)
- National Profiles are updated
- Action plan completion report, accounting for all reported improvements

## **SUMMARY OF ON-GOING REGIONAL AND PROPOSED INTER-REGIONAL TC PROJECTS DEALING WITH TRANSPORT OF RADIOACTIVE MATERIAL**

### TC Africa

RAF 9046: Strengthening an Effective Compliance Assurance Regime for the Transport of Radioactive Material

- First coordination meeting, Zimbabwe, July 2012
- Countries completing SARIS are grouped to perform peer review meetings, 20 so far.
- 20 peer reviews scheduled for 2013 (12 done)
- Regional assessment to evaluate results of peer reviews and determine further IAEA assistance to the region by drafting the regional/sub-regional/national action plan

### TC Asia

RAS 9067: Strengthening an Effective Compliance Assurance Regime for the Transport of Radioactive Material

- Compliance Assurance training completed in Jordan (May 2012)
- Training and workshops planned for China and New Zealand (Q4 2013)
- Peer reviews for regulatory programs planned for 2014

PAK 9037 (National project) Strengthening Infrastructure for Radiation, Transport and Waste Safety

- Workshop in Pakistan on Safety Assessments of Transport Packages (November, 2012)

## TC Europe

RER9114: Delivering Effective Transport Safety Regimes (approved but not initiated)

## TC Latin America

No specific TC project for transport safety in Latin America and the Caribbean region is established. Some training courses and workshops related to transport have been performed in the past in the framework of Regulatory Infrastructure TC projects, but continued efforts are subject to availability of funding.

## Proposed Inter-Regional Project Description

This Interregional TC Project is intended to establish and support a harmonized international framework to sustain the safe transport of radioactive materials according to and consistent with the IAEA Regulations for the Safe Transport of Radioactive Material (SSR-6) [1]. It will also contribute, to the extent possible, to verify and improve consistency between the latest revisions of the UN regulations and guidance for the different transport modes and the IAEA Transport Regulations.

Several IAEA Member States are in need of improvement to their regulatory frameworks for transport of radioactive materials, which could include support to implement the 2012 edition of SSR-6.

For over a decade, an ad-hoc inter-agency Committee involving ICAO, IMO, and UNECE, facilitated by IAEA, has focused primarily on the harmonization of regulations for transport of radioactive materials. On occasion, additional International Organizations such as IATA, WNTI, ICHCA, and IFALPA have attended Committee meetings to provide input on specific topics. At the International Steering Committee on Denials of Shipment of Radioactive Material (ISC) meeting in 2012, the concept of forming a new UN inter-agency committee and expanding the scope of the inter-agency Committee to cover cooperation in all areas of transport safety, including DoS, was proposed and accepted by the ISC.

Therefore, the IAEA is proposing to continue arrangements for collaboration through the ad-hoc inter-agency committee and expand that committee's activities to include Transnational Organizations and Member States under this Interregional Technical Cooperation (TC) Project.

Member States will directly benefit from the efforts of this inter-agency group as experts in transport discuss solutions to specific challenges that face them, as well as the global transport community. Solutions to the most pressing transport problems can be proposed, discussed, refined and eventually acted upon. Representatives of Member States who participate in the discussions of this group bring their particular challenges in the area of transport of radioactive material to the table, and stand to gain the most from the solutions proposed. They will then have the opportunity to work with the Regional Coordinators in order to implement these proposed solutions, as appropriate. In addition, existing regional TC projects addressing transport issues can be collaboratively engaged to further the overall goal of strengthening the global transport regime.

Overall, this TC Project will contribute to improving the current regime for the safe, secure and sustainable transport of radioactive material throughout the globe, thus contributing to the development of agricultural, hydrological, geological, medical, industrial, research and environmental activities in Member States that have need of radioactive materials. While this TC Project has specific tasks and goals,

there is flexibility to tackle problems that may arise in specific regions of the world throughout the course of the project.

### Planned Project Activities

There are several activities planned for this project, subject to its approval. These include the following:

- Supporting the Strengthening of MSs regulatory programmes for transport,
- Supporting the adoption and integration of SSR-6 within the larger UN-structure for dangerous good transport,
- Analysing and harmonizing the implementation of SSR-6 across the global transport regime,
- Reviewing the progress done in implementing recommendations,
- Reviewing training materials of external organizations on transport of radioactive materials,
- Developing modules on radioactive material transport to be inserted into external organization's training packages,
- Instructing training personnel in efficiently developing developed training modules on transport of radioactive materials,
- Coordinating and leveraging of training and assistance programmes of the multiple UN agencies and Transnational Organizations to provide more efficient and focused support to MSs and,
- Compiling and distributing contact information for transport experts.

These activities will be carried out in a collaborative fashion with existing regional TC projects in Asia, Europe and Africa. Coordination with other international entities will be sought in order to create synergies and avoid overlapping of activities.

### Project Design Elements

The overall objective to which this project will contribute is an improvement in the global transport network to support the safe and reliable transport of radioactive materials throughout the world, thus contributing to the development of agricultural, hydrological, geological, medical, industrial, research and environmental activities that have need of radioactive materials. Some of the planned outcomes include:

- A harmonized international framework to sustain the safe transport of radioactive materials is established and supported according to IAEA Transport Regulations (SSR-6).
- Regional cooperation mechanisms aimed to facilitate a harmonized approach to the safe transport of radioactive materials and collaboration in areas of common interest for the reduction in denials and delays of shipments are established.
- Improved coordination and collaboration between the multiple UN agencies and Transnational Organizations involved in radioactive material transport.

More specifically this project seeks to strengthen the implementation of the IAEA Transport Regulations (SSR-6), analyze the practical aspects of Member States' implementation of SSR-6 and further harmonize UN incorporation and use of SSR-6 in model and modal regulations, upgrade training modules on transport of radioactive materials provided within the current training framework on transport and coordinate the training offered by different training providers in order to include harmonized training material in accordance with the transport regulations in SSR-6 and finally, establish a cross-sectorial and multi-disciplinary network of professionals on transport of radioactive materials.

In addition, the project will seek to engage a roving Denial/Delay of Shipment "Ambassador" to meet with appropriate entities in different regions, engaging government and customs officials, carriers, and ports, and visit "hot spots" where DoS is a significant issue. This "Ambassador" will be supported by a

network of international transport experts, seeking to bring targeted expertise to situations where denial is occurring.

### Participating Countries

Currently, the Member States that have expressed their interest in participating in this interregional project are: Ghana, South Africa, United Republic of Tanzania, and Egypt (from TC Africa region); Iraq, Bangladesh, Thailand, and China (from TC Asia and the Pacific region); Turkey and Kazakhstan (from TC Europe region); Brazil, Dominican Republic, and Peru (from TC Latin America and the Caribbean region).

The Agency is also seeking Partner Countries for the project, institutions in more developed countries that can bring additional assets, support and expertise to the project. Financial contributions from donor countries to the project or to specific activities are also being sought.

### **CONCLUSIONS**

Experience so far has indicated that the most tangible progress was achieved in Member States where the issues of government commitment and ownership were properly addressed. This implies the involvement of national authorities, often extending beyond the recipient institute, to the end-user. The net effect is more direct contact with the sector involved, a strengthened role for counterpart organizations, and a wider interest in the outcome and sustainability of the activity beyond the lifetime of the IAEA project.

IAEA/TC projects on transport safety aim bringing the world community as a whole forward together in the establishment of sustainable regulatory infrastructures that work harmoniously and effectively across borders. Networking, sharing of experience and lessons learned, and peer review actions are necessary and efficient ways to work harmoniously for continued development.

### **REFERENCES**

[1] Regulations for the Safe Transport of Radioactive Material - 2012 Edition Specific Safety Requirements, Series No. SSR-6, Vienna, 2012.