

AN OVERVIEW OF THE INTERNATIONAL ATOMIC ENERGY AGENCY'S TRANSPORT SAFETY PROGRAMME

Ronald Pope, Gerry Dicke, Xavier Bernard Bruls and M. T. Brittinger, IAEA
International Atomic Energy Agency
A-1400 Vienna, Austria

ABSTRACT

Following creation in the 1950s of the International Atomic Energy Agency (IAEA), the development of model regulations to provide for the safe transport of radioactive material was quickly undertaken. The first edition of these regulations was published in 1961. This was followed by development of other supportive documents. The Transport Regulations have been periodically revised and updated; as have the associated guidance documents. That revision and updating process continues today. In addition, the Agency undertakes multiple tasks directed toward encouraging the safe transport of radioactive material throughout the world. This paper provides an overview of the activities the IAEA is pursuing with emphasis on the programme plans for the next couple of years.

INTRODUCTION

In March 1959, the United Nations Economic and Social Council (ECOSOC) Committee of Experts on the Transport of Dangerous Goods recognized the necessity of co-ordination with the IAEA in the drafting of any recommendations relating to the transport of radioactive material. In July 1959, ECOSOC requested the United Nations Secretary-General to inform the International Atomic Energy Agency (IAEA) of its desire that the IAEA be entrusted with the drafting of recommendations on the transport of radioactive material. The IAEA is authorized by its Statute¹ to perform this function.

In response to that action, the IAEA Transport Regulations were first issued in 1961 and have been issued periodically since (e.g., the latest edition was issued in 1996²). The development of the Regulations was followed by development of explanatory and advisory documents, schedules of requirements for consignments, recommendations on emergency response to transport accidents, and two safety practice documents on compliance assurance and quality assurance. The Transport Regulations have been periodically revised and updated; and the associated guidance documents have been updated. That revision and updating process continues today. In addition, the Agency undertakes multiple tasks directed toward encouraging the safe transport of radioactive material throughout the world. It fosters research in key areas, provides a transport safety appraisal service, integrates and coordinates with key international organizations regarding the implementation of the Transport Regulations, develops training materials and provides training to critical individuals from the 132 countries which are Member States to the IAEA, and develops and maintains data and information bases and public communications tools

The following summarizes the plans for continuing this effort in the first years of the new century.

BACKGROUND

The top-level oversight bodies for the IAEA are its Board of Governors, which meets multiple times each year; and its General Conference, which meets in September each year. For the past three years, the General Conference has passed resolutions emphasizing the need to continue efforts on the safe transport activities. Among various actions noted, the General Conference has:

- a) requested the Secretariat to continue its work of reviewing and revising the Agency's Transport Regulations, on the basis of a schedule consistent with the schedule of international modal organizations, with a view to issuing a revised edition of the Agency's Transport Regulations every two years, as necessary, beginning in 2003;
- b) called for efforts at the international, regional and bilateral level, to examine and further improve measures and international regulations relevant to the international maritime transport of radioactive material;
- c) requested the Secretariat to establish a transport safety appraisal service (TranSAS) and encouraged Member States to avail themselves of this service; and
- d) stressed the importance of having effective liability mechanisms in place.

In response to these directions, the Agency has undertaken a revised programme for fulfilling its mission. The following summarizes the transport safety subprogramme envisioned for the years 2002-2003. It is based upon the approved Programme and Budget for those two years³.

TRANSPORT SAFETY PROBLEMS AND ISSUES TO BE ADDRESSED BY THE IAEA

Concerns arising lately in connection with the transport of radioactive material are compounded by its international implications. Left unaddressed, these concerns might have harmful consequences and result, for instance, in difficulties with the delivery of radioactive substances for radiodiagnosis and radiotherapy. Therefore it is of considerable importance to preserve and to more fully harmonize an international approach to the regulation of the transport of radioactive material, accounting for changes in radiation protection principles, transport practices and technology, and addressing newly identified issues.

As noted above, the ECOSOC resolution in 1959 [724 (XXVIII).C.3(g)] expressed the desire that the Agency be entrusted with the drafting of recommendations on the transport of radioactive substances within the general principles of the Committee of Experts on the Transport of Dangerous Goods and in consultation with the United Nations and the specialized agencies concerned. Beginning in 1961, in response to that resolution, pursuant to the statutory function of the Agency as the international organization authorized to establish standards of radiation safety, and in consultation and collaboration with relevant international organizations in the United Nations family, the Agency's Board of Governors has periodically approved updated Regulations for the Safe Transport of Radioactive Material (the Transport Regulations).

In addition, in 1997, the Diplomatic Conference on the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management adopted a resolution relating to the safe transport of radioactive material (the Joint Convention came into force in June 2001). This resolution invited the Agency, in consultation, and where appropriate in collaboration, with the competent organs of the United Nations and with the specialized organizations concerned, "*to keep under review the existing*

rules and regulations with respect to the safety of transboundary movement of spent fuel and radioactive waste". Since that time, the Agency's General Conference, in resolutions GC(42)/RES/13 (1998) and GC(44)/RES/17 (2000), requested the Secretariat to keep the Agency's Transport Regulations under review and to provide appraisal services in the area of transport safety to requesting States.

The Agency's plans to support these requests are outlined in its budget document for 2002-2003³, in the "*Safety of Transport of Radioactive Material*" subprogramme, within the "*Radiation Safety*" programme. The objective, expected outcomes, transport safety subprogramme trends, and details of the three transport safety projects in 2002-2003 are summarized below

OBJECTIVE OF THE IAEA TRANSPORT SAFETY SUBPROGRAMME FOR 2002-2003

The objective is to establish and maintain internationally accepted standards for the safe transport of radioactive material and to provide for the application of those standards nationally and internationally.

EXPECTED OUTCOME OF THE IAEA TRANSPORT SAFETY SUBPROGRAMME FOR 2002-2003

The expected outcome of the transport safety subprogramme, with its three projects, is the achievement of an international consensus on updated safety standards for the transport of radioactive material.

SUBPROGRAMME CHANGES AND TRENDS

A major focus of the transport safety subprogramme will be on maintaining the Agency's Transport Regulations. These Regulations are based on the Basic Safety Standards for radiation protection⁴, taking into account any revisions thereto. A further focus will be on maintaining close liaison with other United Nations bodies in order to ensure a harmonized approach to transport safety. Also, it is expected that there will be an increasing demand from Member States for assistance with the development of their transport regulations and appraisals of the national implementation of the Transport Regulations. Continuing attention will be paid to the production of high quality education and training material relating to transport safety, and to providing training to key personnel in the Agency's Member States.

Three particular new initiatives are envisaged:

- a) the convening of a radioactive material transport safety conference in 2003;
- b) the development of a personal computer based expert system for demonstrating the application of the safety requirements embodied in the Transport Regulations and their links to the various modal transport regulatory documents; and
- c) the placing of increased emphasis on ensuring that the transport activities carried out by the Agency itself comply with the Agency's own standards.

The first of these initiatives will be directed toward addressing the regulatory aspects of transport safety, with focus on issues that continue to be raised at the Agency's General Conferences. The 2002-2003 subprogramme and budget is expanded to undertake this conference, the timing and venue of which are yet to be determined.

The second of these initiatives is not directly included in the programmatic budget. The successful accomplishment of it may depend upon extra-budgetary contributions from Member States. It is noteworthy that as the training on the IAEA Transport Regulations has expanded during the past few years, the request for a computer-based expert system, that would make application of its requirements easier and facilitate compliance by users, has frequently been raised by the students. Similarly, frequent from consignors and carriers for such a computer-based system are frequently received by the Secretariat.

The third of these initiatives is a direct consequence of the need to encourage all entities involved in the transport of radioactive material to ensure they undertake these activities in full compliance with international standards. As the 1996 edition of the Transport Regulations have been going into effect through the international modal organizations [i.e., by the International Civil Aviation Organization (ICAO) and the International Air Transport Association (IATA) – for air transport; the International Maritime Organization (IMO) – for sea transport; and the UN/ECE's Inland Transport Committee for regional road and rail transport in Europe], the Agency's Secretariat has been reviewing the manner in which safeguards samples are transported with a view to ensuring that compliance of the Agency's own activities comply with the new standards.

TRANSPORT SAFETY PROJECTS FOR 2002-2003

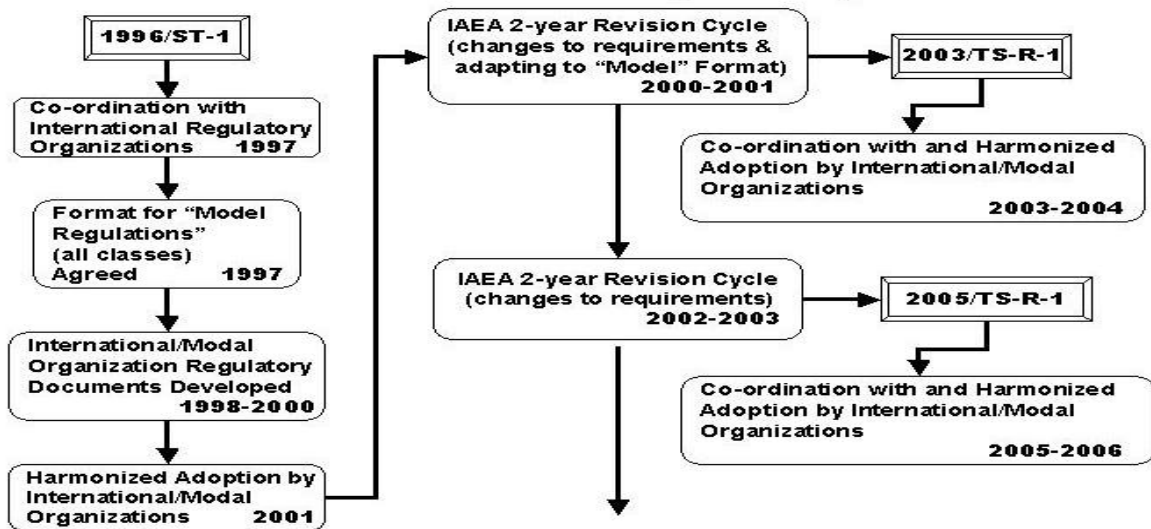
The Agency's programme in radioactive material transport safety has been structured into three principle projects for the coming years.

Project K.2.01: Establishing safety standards for the transport of radioactive material

This project will result in the completion and the endorsement by the Agency's Transport Safety Standards Committee (TRANSSC) and the Agency's Commission on Safety Standards (CSS) and the approval by the Agency's Board of Governors and the issuing by the Agency of a revised version of the Regulations for the Safe Transport of Radioactive Material in 2003. The actions that are leading to this new edition of the Transport Regulations – and potentially new editions every two years thereafter – were recommended by the Transport Safety Standards Advisory Committee [TRANSSAC – now renamed the Transport Safety Standards Committee (TRANSSC)] in the late 1990s. The new revision cycle is intended to have the Agency's Regulatory revision process be in line with those of the United Nations Committee of Experts' Model Regulations for dangerous goods, and the regulatory documents for the various modes of transport issued by ICAO, IATA, IMO and the UN/ECE. The revision process for the 2003 edition was initiated in early 2000, and is expected to be completed in mid-2003 with the publication of the new edition. Details of the current revision cycle are included in a companion paper presented at this symposium⁵.

In response to the General Conference’s request that the Secretariat “continue its work of reviewing and revising the Agency’s Transport Regulations, on the basis of a schedule consistent with the schedule of international modal organizations, with a view to issuing a revised edition of the Agency’s Transport Regulations every two years, as necessary”, and the recommendations of TRANSAC, a call for proposed changes to the Transport Regulations with a view to publishing a revised edition in 2005, if needed, will be issued in January 2002. The overall review and revision process that the Agency has undertaken since 1996 and is undertaking is summarized in Fig. 1.

Fig. 1. Review and Revision Process for the IAEA Transport Regulations



Significant efforts were expended by experts from many countries and international organizations in reformatting the UN “Model Regulations” and the follow-on international modal regulations to a relatively common format. For the first time, in its 1999 recommendations⁶ the United Nations Committee of Experts incorporated essentially all of the requirements for radioactive materials embodied in the IAEA Transport Regulations². The format of the IAEA Transport Regulations has yet to be adapted to this new harmonized format. Consideration of this revised format for the 2003 edition of the IAEA Transport Regulations will be one of the tasks of a regulatory review/revision panel meeting to be convened in Vienna in November 2001.

As noted above, an IAEA Conference on the Safe Transport of Radioactive Material in 2003 is planned. This conference will establish a unique platform for discussing aspects of safety in the international transport of radioactive material. It will enable those Member States less integrated into the international transport community to present their problems vis-à-vis those Member States with a more established international role. The venue and dates for the Conference are yet to be established.

The Agency fosters Co-ordinated Research Projects (CRPs) with its Member States. Many of these are focused on addressing issues relating to specific regulatory requirements. One of these, dealing with the severity, probability and risk of accidents during maritime transport of radioactive material was recently completed, and a summary of that work has been published⁷. Another such project deals with the severity of accidents during air transport of radioactive material. The final report of this CRP is expected to be completed and published during the 2002-2003 time period. Work has just been initiated on evaluating the requirements for contamination on packages and conveyances. This CRP is envisioned to also be completed in 2003. A companion paper at this symposium provides additional details on these and other transport safety-related CRPs⁸.

Project K.2.02: Appraising the application of safety standards for the transport of radioactive material

The Transport Safety Appraisal Service (TranSAS) was initiated in 1999 at the request of the Agency's Board of Governors. One appraisal was requested and has been completed to date (Slovenia) and three additional appraisals have been requested (Brazil, Turkey and the United Kingdom). The Secretariat is taking action to address these requests. Specific reports on the TranSAS missions will be published once they are cleared by the appraised States. A companion paper at this symposium provides additional information on the transport safety appraisal service⁹.

In addition, the Agency undertakes, at the request of Member States, International Regulatory Review Team missions which may include a transport safety component. When transport is included, a "mini-TranSAS" appraisal is accomplished, where the review is not undertaken in the breadth and depth that occurs with TranSAS missions. Three IRRT missions have been completed with transport safety components (Switzerland, Finland and the Czech Republic).

In 2003, it is envisioned that the Secretariat will undertake an appraisal of its own radioactive material transport activities and publish a report on the findings of that safety appraisal.

Guidance material which can facilitate application of the safety standards on issues critical to transport safety have been and will continue to be developed and issued. This includes a guidance document that is expected to result from the CRP on contamination, where the guidance is currently envisioned to focus on the measurement and control of contamination on packages and conveyances. In addition, the 1996 edition of the IAEA's Transport Regulations includes a new requirement for a radiation protection programme (RPP). Steps were taken during 2000 to develop guidance on RPPs; the publication of a technical document providing guidance on this issue is expected late in 2001 or early in 2002 once basic radiation protection issues regarding the guidance can be resolved. This guidance document, which is discussed in a companion paper at this symposium¹⁰, is envisioned to be of assistance to competent authorities, consignors and carriers, and should facilitate the implementation of the requirements in the IAEA Transport Regulations.

Specialized training courses on transport continue to be forecast in the Agency's educational and training programme. The updating of the training material for these courses reflecting the changes resulting from the

1996 edition of the Transport Regulations is almost completed, and will be updated in 2003/2004 to reflect the revised 2003 edition of the Transport Regulations. The Agency undertakes or supports, primarily through the Technical Co-operation arm of the Agency, periodic training at inter-regional, regional and – as requested – at a Member State level. For example, during 2000, three regional training courses (East Asia/Pacific, Europe and Latin America) were completed; during 2001, two regional training courses (Europe and West Asia) and one Member State training course in transport safety are envisioned; and during 2002 one regional course (Africa) is already being planned with more expected.

In the data collection area, the Agency will continue annually to update and publish the list of Member States' designated competent authorities for radioactive material transport. The PACTRAM database on competent authority package approval certificates is being upgraded to a Windows-based version and will subsequently be made available on-line. For the EVTRAM database on events in radioactive material transport, the Agency is developing a computer program that will help Member States prepare quality-assured data. The program will be made available on the Internet, thus simplifying the process by which data can be provided. For all databases, the Agency only accepts data from designated Member State contact points.

The Agency communicates to the informed public through two products: a public information brochure that describes the Agency's work programme in transport safety, and a 30-minute video film that summarizes the requirements of the Transport Regulations. These are being upgraded to properly reflect the 1996 edition of the Transport Regulations and will be available free-of-charge. The agency also provides details on its transport safety programme and issues relating to transport safety on the internet at URL



Project K.2.03: Incorporating the safety standards for the transport of radioactive material into modal international regulations

This project is envisioned to involve efforts that will result in the incorporation of the 2003 edition of the Transport Regulations into modal international regulations. This will be accomplished by continuing to work in close cooperation with the United Nations organizations responsible for specific modes of transport. To that end, the Agency has fostered an interagency coordination group that meets approximately once per year. This group involves primarily the UN organizations: ICAO, IMO and UN Committee of Experts. The Secretariat also meets and consults with a body of national competent authorities [the Radioactive Transport Study Group (RTSG)] which convenes periodically to address compliance issues.

SUMMARY

The Agency's transport safety activities continue to be tailored to the needs of its Member States, with a primary focus on maintaining and encouraging implementation of the its Transport Regulations throughout the world.

REFERENCES

- ¹ INTERNATIONAL ATOMIC ENERGY AGENCY, *Statute as amended up to 28 December 1989*, Article III.A.6, 89-05761, International Atomic Energy Agency, Vienna, Austria (1990).
- ² INTERNATIONAL ATOMIC ENERGY AGENCY, *Regulations for the Safe Transport of Radioactive Material, 1996 Edition – Requirements*, IAEA Safety Standards Series No. ST-1, International Atomic Energy Agency, Vienna, Austria (1996).
- ³ INTERNATIONAL ATOMIC ENERGY AGENCY, *The Agency's Programme and Budget 2002-2003*, GC(45)/8, International Atomic Energy Agency, Vienna, Austria (2001).
- ⁴ INTERNATIONAL ATOMIC ENERGY AGENCY, *International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources*, IAEA Safety Series No. 115, International Atomic Energy Agency, Vienna, Austria (1996).
- ⁵ Dicke, G., Pope, R., and Boyle, R., *A Status Report on the Review and Revision of the International Atomic Energy Agency's Regulations for the Safe Transport of Radioactive Material*, PATRAM 2001, Chicago, IL, USA (2001).
- ⁶ United Nations, *Recommendations on the Transport of Dangerous Goods Model Regulations*, ST/SG/AC.10/1/Rev.11, United Nations, New York (1999).
- ⁷ INTERNATIONAL ATOMIC ENERGY AGENCY, *Severity, probability and risk of accidents during maritime transport of radioactive material*, IAEA-TECDOC-1231, International Atomic Energy Agency, Vienna, Austria (2001).
- ⁸ Dicke, G. Bernard-Bruls, X., and Pope, R., *Status of Coordinated Research Efforts on Transport Safety Regulatory Issues*, PATRAM 2001, Chicago, IL, USA (2001).
- ⁹ Dicke, G., *The International Atomic Energy Agency Transport Safety Appraisal Service*, PATRAM 2001, Chicago, IL, USA (2001).
- ¹⁰ Pope, R., Bernard-Bruls, X., and Shaw, K., *International Guidance on Transport Safety Radiation Protection Programmes*, PATRAM 2001, Chicago, IL, USA (2001).