

## Implementation of the IAEA's Radioactive Material Transport Regulations

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### INTRODUCTION

The IAEA Regulations for the Safe Transport of Radioactive Material, Safety Series No.6, were first published in 1961. The regulations have been subject to comprehensive revisions in 1964, 1967, 1973, and the latest in 1985.

In its seventh meeting in 1989 the Standing Advisory Group on the Safe Transport of Radioactive Material (SAGSTRAM) recommended that all Member States adopt the 1985 Edition of the IAEA Regulations for the Safe Transport of Radioactive Material, Safety Series No. 6, by January 1, 1991. To determine the extent to which that recommendation was fulfilled, a questionnaire on the implementation of the IAEA Transport Regulations was sent to all Member States in July 1992. The questionnaire invited Member States to describe the current status of the implementation of the IAEA Transport Regulations in their Member State.

The following aspects were included in the survey:

1. Basis of national regulations;
2. Edition of Safety Series No. 6 in use;
3. Method of implementation of Safety Series No. 6;
4. Differences between national regulations and Safety Series No. 6;
5. Use of other international documents.

This paper presents a summary of the results of the questionnaire. More details of the questionnaire and its findings have been published in the *International Journal of Radioactive Materials Transport* (Pollog, 1994). This paper goes on to discuss a new advisory service being offered by the

IAEA to Member States to improve implementation of the Regulations. The paper also considers the adoption of the 1996 Edition by considering a likely timetable for adoption by the modal organizations and a review of the impact of the transition on transport operators.

## **OUTCOME OF THE SURVEY**

Sixty-four (56%) of the 114 Member States (currently 123) responded to the questionnaire, including all 20 of the reported largest radioactive material shipping countries in the world. The 20 largest shipping countries were determined from an Agency request to Member States for shipment data. Throughout this paper whenever the term Member States is used, it refers to only the Member States that responded to the questionnaire and not all of the Member States of the IAEA, unless otherwise noted.

### **Basis of Regulations**

Fifty-nine (92%) of the 64 responding Member States stated that their national regulations for domestic and international shipments are based on one of the editions of Safety Series No. 6. All of the reported top 20 shipping countries' national regulations are based on Safety Series No. 6. Therefore, the overwhelming majority of all shipments of radioactive materials are regulated internationally under the recommendations of Safety Series No. 6.

### **Edition of Safety Series No. 6 in Use**

Ninety-two percent (51) of the Member States with national regulations are using a version of the 1985 Edition for international shipments. The most commonly used version is the 1985 Edition, as Amended 1990, with 32 Member States using it. Of the reported top 20 shipping countries, 16 are using the 1985 Edition (either the original or as supplemented, or as amended) for their national regulations for both domestic and international shipments. These results imply that a large majority of all shipments now follow the 1985 Edition of Safety Series No. 6. It is known that at least one additional major country has adopted Regulations based on the 1985 Edition since the survey was performed.

### **Method of Implementation of Safety Series No. 6**

The Member States were asked to select from the following implementation methods of Safety Series No. 6: (A) by direct reference; (B) verbatim, i.e., incorporated word for word in national legislation or regulations; (C) through mode-specific regulations; (D) in principle, but not verbatim; or (E)

other.

For national purposes, the most popular method of implementation is (C) through mode-specific regulations and (A), by direct reference, respectively, with 22 Member States using each method. The next most frequent method was (D), in principle but not verbatim, with 19. The number of methods chosen may exceed the number of countries having regulations because some countries implement Safety Series No. 6 by more than one method. No Member State selected (E), other. In the case of international shipments, the most popular method of implementation is (A), by direct reference, with 27, followed by (C), through mode-specific regulations, with 20.

### **Differences From Safety Series No. 6 in Member State Regulations**

In their national regulations, 13 Member States stated that there are differences between their national regulations for domestic shipments and the IAEA regulations. The primary areas where differences were reported are postal shipment, labelling, national administrative requirements, and national radiation protection limits and standards. Five Member States indicated that their domestic regulations prohibited the transport of radioactive material by post. Three Member States reported differences as a result of using national radiation protection standards with the differences specifically being seen in  $A_1$  and  $A_2$  values and dose limits.

For international shipments, fewer differences were reported between Member State regulations for international shipments and the IAEA Regulations. Eight Member States stated that there are differences between their national regulations for international shipments and the IAEA Regulations. The primary areas where differences were reported are postal shipments, national administrative requirements, and national radiation protection limits and standards. Four Member States indicated that their regulations for international shipments prohibited the transport of radioactive material by post.

### **Use of Other International Documents**

The Member States were asked if their national regulations were also based on other international documents. The most widely used international regulations used are the Technical Instructions issued by the International Civil Aviation Organization, the International Maritime Dangerous Goods Code prepared by the International Maritime Organization and the Dangerous Goods Regulations issued by the International Air Transport Association with 39 (66%), 36 (61%), and 33 (56%) of the Member States using those documents, respectively. Of the European regional agreements, the most important are OCTI/RID and ADR/ECE, which are used by about

20 Member States.

## **MEASURES TO IMPROVE IMPLEMENTATION**

The survey suggested that the level of implementation is gradually improving with four Member States developing transport regulations based on Safety Series No. 6. The IAEA advice published in Safety Series No. 112 should be helpful, especially to Member States wishing to establish a competent authority to implement compliance assurance programs.

On the other hand, many countries did not respond to the questionnaire. Many of these countries can be grouped in two main clusters: one in Eastern Europe and the former Soviet Union, and the other in Africa. Shipments of radioactive material are known to occur in or through these countries, but little or no information is available on their regulatory framework, and transport practices may be a cause for concern. As a consequence, the IAEA is proposing to offer a service called TRANSART (Transport Safety Advisory Review Teams). A Technical Committee on competent authority actions necessary for compliance with the IAEA's Regulations has reviewed the purpose and scope of the envisaged service and recommended that the emphasis be on "the provision of advice and assistance".

TRANSARTs will focus on providing advice and assistance to Member States that request support in fully implementing the Regulations. Their approach will be flexible, the advice and assistance being tailored to the needs of the particular Member State. They will advise on matters such as the role of the competent authority in establishing priorities and an appropriate regulatory framework, and they may - for example - assist in the conduct of inspections for ensuring compliance with the Regulations and in evaluating the flow of radioactive materials within the Member State. Besides TRANSART missions, the Secretariat will - among other things - arrange for experts to spend some time in Member States as "mentors," support national training programs (for example, by helping to organize workshops - both national and regional), and arrange for fellowships and scientific visits.

The next steps to be taken by the Secretariat include the following:

- Inform Member States of the precise scope of the TRANSART service;
- Contact potential donor Competent Authorities in order to determine the nature and extent of the assistance that they might provide;
- Organize an overall programme of activities based on Member

- States' requests;
- Coordinate the resources available for fulfilling the request; and
  - Organize follow-up activities designed to ensure the long-term success of the TRANSART service.

## **ADOPTION OF THE 1996 EDITION OF SAFETY SERIES NO. 6**

In revising the Regulations, it is necessary to find a balance between the need to take account of technical advances and operational experience and the desirability of providing a stable framework of regulatory requirements. One of the aims is to allow packages approved under a previous version of the Regulations to continue to be used to the end of their designed life. It is further recognized that not all regulatory changes can be implemented simultaneously; Member States and international organizations should provide for the use of both the old requirements and the new ones during a period of transition that may last for a few years. The IAEA will recommend adoption of the revised Regulations in a period of about 5 years from publication (due in late 1996) to achieve worldwide harmonization of their application.

### **Adoption by Modal Organizations**

The driving force for adoption lies with participating Member States instructing the modal organizations to incorporate the IAEA recommendations into their documents, which become binding on Member States through international conventions.

#### **Air**

The air mode is likely to be the first to adopt the 1996 Edition through the ICAO Technical Instructions. This may happen as early as January 1, 1999, and be worldwide in scope. Likewise, the Dangerous Goods Regulations issued by IATA can be expected to be revised in the same time frame.

#### **Sea**

The sea mode is governed worldwide by the IMO through the International Maritime Dangerous Goods Code which is issued every 3 years. The latest consolidated issue is the 1994 Edition. The earliest that the IMO could incorporate the 1996 Edition will be the year 1999.

#### **Road & Rail**

There are regional agreements covering these modes; the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) and the International Regulations concerning the Carriage of Dangerous Goods by Rail (RID). The current timetable for revision

indicates that the 1996 Edition could be in force by January 1, 1999, for both ADR and RID.

### **Adoption by Member States**

Once international shipments are governed by the new Regulations, the case for domestic shipments to follow suit is self-evident. In the survey, 37 (58%) Member States believe that the 1996 Edition will be adopted by 2000, 24 (38%) by 2004, and none later than 2004.

### **OPERATIONAL IMPACT**

While it is recognized that transitional arrangements (sometimes called 'grandfathering provisions') are desirable in a number of areas, the 1996 Edition does not provide transitional arrangements for all aspects. Operators should prudently expect that with effect from January 1, 1999, the following aspects are likely to apply to some international operations:

- (i) The activity limits and material restrictions of Section IV of the Regulations, i.e., new  $A_1/A_2$  values and new exemption values;
- (ii) Provisions for air transport of large quantities of radioactive material and fissile material, i.e., activity limits for Type B packages to be transported by air unless the radioactive contents can be shown to meet the requirements for low dispersible material, and the additional requirements for fissile material transported by air;
- (iv) Packages approved under the 1967 or earlier Editions of the Regulations must be shown to meet at least the 1973 Edition to continue in use and will be subject to multilateral approval;
- (iii) Special arrangements will need to be reapproved under the 1996 Edition.

Transitional arrangements will be provided in the 1996 Edition with respect to:

- (i) Packages not requiring competent authority approval;  
Packages prepared after December 31, 2003, will need to meet the 1996 Edition in full.
- (ii) Uranium hexafluoride;  
After December 31, 2000, multilateral approval of design will be required for designs not meeting ISO 7195, designs not meeting the pressure test of 2.8 MPa designs for more than 9000 kg of uranium hexafluoride that do not meet the thermal test. All packages containing more than 0.1 kg of uranium hexafluoride will require either unilateral or multilateral

- approval after 31 December 2003.
- (iii) Package designs approved by competent authorities under previous Editions;  
In summary, packagings approved to the 1973 Edition may continue to be used subject to multilateral approval. The manufacture of new packagings designed to the 1973 Edition will cease on December 31, 1995, such packagings must meet the 1985 Edition in full. Packagings approved under the 1985 Editions may continue in use. However, after December 31, 2003, they shall be subject to multilateral approval. Additionally, all packagings for which manufacture begins after December 31, 2006 shall meet the 1996 Edition in full.
- (iv) Special form radioactive material approved by competent authorities under previous Editions  
All special form material manufactured after December 31, 2003 shall meet the 1996 Edition in full.

## CONCLUSIONS

The implementation of the 1985 Edition of the IAEA Regulations has been widespread among industrial countries. Measures like TRANSART are being taken to improve the level of implementation as more countries choose to establish internationally consistent regulatory frameworks. Through adoption by modal organizations, the 1996 Edition of the Regulations can be expected to come into force by the turn of the century. Operators should take note that some of the provisions will come into effect immediately. Transition arrangements do not apply to all operations and for some operations the transition period spans just a few years.

## REFERENCES

Pollog, T.E., *Implementation of the IAEA's radioactive material transport regulations*, International Journal of Radioactive Materials Transport, Volume 5 Nos.2-4 1994, Nuclear Technology Publishing (1994).