

Proceedings of the 15th International Symposium on the
Packaging and Transportation of Radioactive Materials
PATRAM 2007
October 21-26, 2007, Miami, Florida, USA

**SCHEDULES OF PROVISIONS OF THE IAEA REGULATIONS FOR THE
SAFE TRANSPORT OF RADIOACTIVE MATERIAL, TS-R-1 (2005
EDITION)**

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ABSTRACT

New schedules have been prepared to support the IAEA Transport Regulations. They replace Safety Series No. 80, Schedules for the Transport of Specified Types of Radioactive Material Consignments.

The new schedules are aimed at the end users wanting to transport radioactive materials. They describe how to categorise radioactive materials so that the right package can be selected for the transport of the radioactive materials. This categorisation is done using the appropriate UN numbers. Once categorised the specific requirements for the shipment of that package are given.

The schedules were developed by collecting the requirements applicable to each type of shipment from the regulations and then paraphrasing the regulation for simplicity and conciseness. A regulatory reference is provided so that the original regulation can be readily consulted.

These schedules have been written around the overall work flow for the preparation and transport of radioactive packages to make them more practical and easier to apply.

Due to the reference to the UN number for each schedule a direct link to the UN Recommendations is provided which supports harmonisation between IAEA Regulations and UN Recommendations.

INTRODUCTION

The IAEA Regulations for the Safe Transport of Radioactive Material, TS-R-1 establish the standards of safety which provide an acceptable level of control of the radiation, criticality and thermal hazards to persons, property and the environment that are associated with the transport of radioactive material.

The Regulations are supplemented by Safety Guides that provide information for compliance with the Regulations.

Currently, there is a 2005 edition of the Regulations [1] and a supporting Guidance Document [2], which is scheduled for publication in 2008. These two documents will be supported by a new set of schedules that provide information to users of the Regulations to help with their implementation. This paper describes the production of these new schedules and the changes needed to meet the objectives.

OBJECTIVE

The objective of the schedules is to provide information to the users of the Regulations (consignor, shipper, but also authorities) to help with their implementation. The schedules are based on the requirements of the Regulations and provide a summary of the main provisions for each specified type of radioactive material consignment. The references used in the Schedules are to paragraph numbers, table numbers and figure numbers in the Regulations. If there are any discrepancies between the Regulations and the Schedules, the requirements in the Regulations apply.

DEVELOPMENT OF DOCUMENT

The IAEA Safety Guide “Schedule of Requirements for the Transport of Specified Types of Radioactive Material Consignments”, Safety Series No. 80, [3] was first published in 1986. The 1996 edition of the Transport Regulations incorporated the schedules, and the publication Safety Series No. 80 was therefore discontinued.

During the 2004/2005 Review/Revision Cycle of the Regulations a proposal for removing these schedules from the Regulations was approved by the Transport Safety Standards Committee, TRANSSC. However, TRANSSC understood that while the schedules may be removed from the Regulations, they should be preserved as a separate publication such as a Safety Guide. TRANSSC, therefore, recommended the publication of the schedules as a separate guide.

For the 13th meeting of TRANSSC the Secretariat submitted draft DS 387, “Schedule of Provisions of the IAEA Transport Regulations,” TS-G-1.6. During the meeting, several countries provided comments. The UK, in particular, concluded that there were many inconsistencies, which needed to be addressed before a new set of schedules could be published.

A Consultants' Meeting took place from 22 to 26 January 2007 to revise the draft safety guide. The Consultants concluded that 25 schedules, one for each UN number, were needed to reflect how the Regulations would be applied. The UK then provided a new Schedules document, with the 25 individual Schedules, for a Technical Meeting that took place in August

2007. This meeting revised the overall document into its final form, which was presented at the 15th TRANSSC meeting in October 2007. TRANSSC accepted the document and has now sent it out to Member States for 120-day period for comments. It is hoped that, following incorporation of any Member States comments, the document will be issued in 2008.

STRUCTURE OF DOCUMENT

The overall Schedules document is in three sections.

Section 1 is an introduction to the document.

Section 2 describes how the radioactive material is classified and assigned to the appropriate UN number with the associated Proper Shipping Name.

Section 3 contains the 25 schedules corresponding to the UN numbers and proper shipping names for the radioactive material to be shipped.

Each individual Schedule describes the requirements for the safe transport of radioactive materials. The information provided in each Schedule follows a sequence of work to package and transport the radioactive materials and provides the wording or a précis of the individual regulatory requirements.

WORKFLOW

Table 1 shows the individual steps required to packaging and transport radioactive materials. Clearly describing all these steps in the Schedules would be complex so the individual steps were summarised into eight main headings.

The eight headings are:

- General Provisions
- Contents Limits for Packages
- Contamination
- Maximum Radiation Levels
- Categories of Packages and Overpacks
- Marking and Labelling
- Requirements before Shipment
- Provisions Concerning Transport Operations.

In order to use the Schedules document two main processes are followed. The first process is the correct classification of the radioactive material to be transported into the right UN classification, which allows the correct identification of the package needed to transport the material. To aid this process a flow diagram is included in the Schedules document.

The second process is the actual packing and safe transport of the material. The regulatory requirements needed to achieve this in practice are presented in the individual Schedules.

CLASSIFICATION OF RADIOACTIVE MATERIALS TO UN NUMBERS

The UN numbers for radioactive material to be transported are stated in Table 8 of the IAEA Transport Regulations TS-R-1 [1]. Radioactive material is assigned to one of these UN numbers using two Tables in the Schedules depending on the activity level of the radionuclides contained in a package, the fissile or non-fissile properties of these radionuclides, the type of package, and the nature or form of the contents of the package, or special arrangements governing the transport operation. Table 2 in this paper is the Table used in the Schedules.

SCHEDULES

Once the correct UN classification is known, UN 2910 for example, then the individual Schedule can be referred to in the document. The individual Schedules give the regulatory requirements for that specific classification of radioactive material.

Limited trials have been conducted with users and regulators using these Schedules. Users found them useful, as they were certain that despite having to use a complex set of regulations they had not inadvertently missed a regulatory requirement. Regulators found them useful, as they were able to answer telephone queries about package requirements more easily.

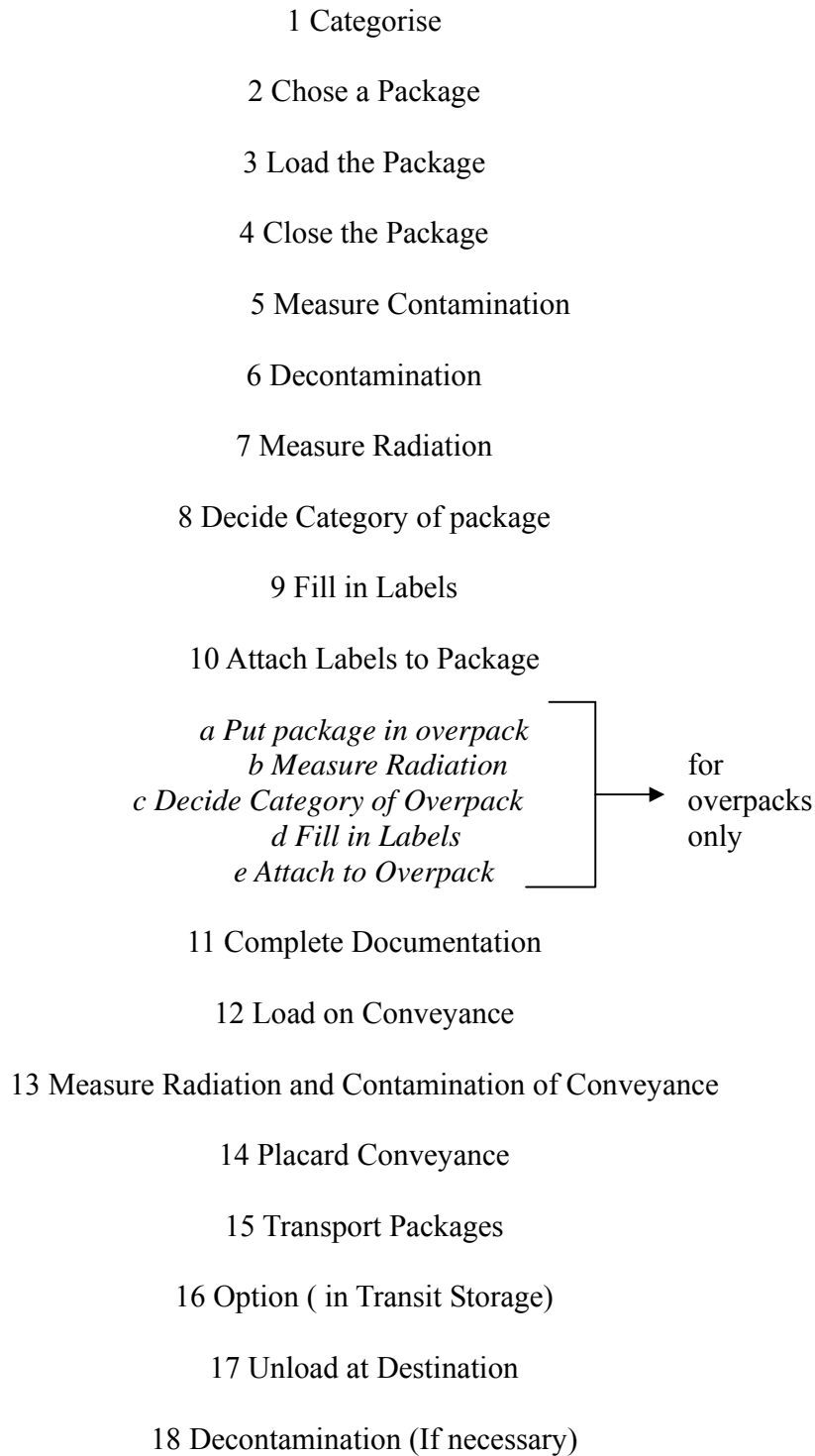
ACKNOWLEDGEMENTS

A considerable number of people have been involved with the production of this document from the various Consultants' Meeting but the authors would like to thank particularly Mr Sannen for his excellent diagrams used to classify radioactive materials into the appropriate UN numbers and Mr Jim Stewart for his work flow process diagram.

REFERENCES

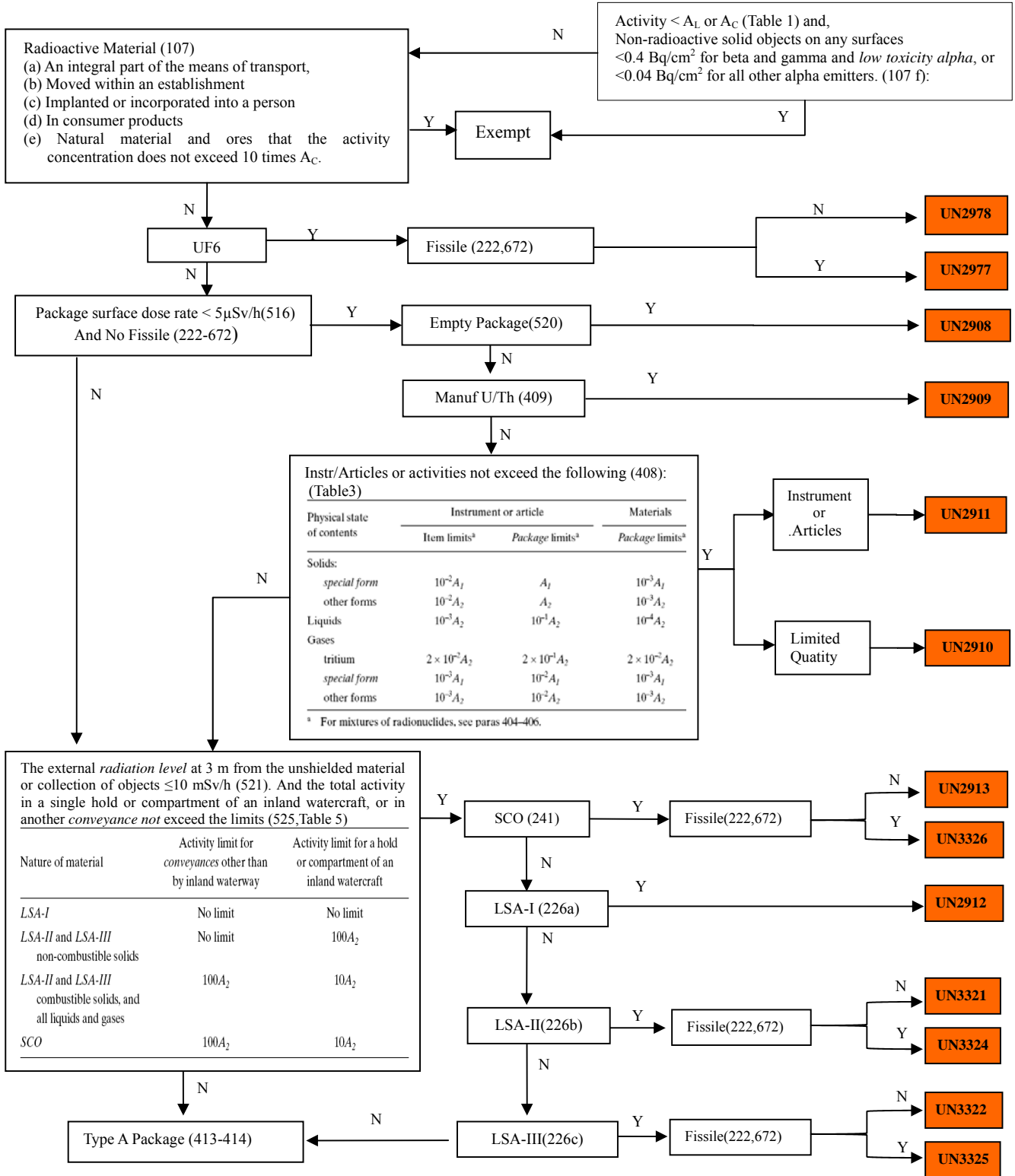
- [1] Regulations for the Safe Transport of Radioactive Materials TS-R-1, 2005 Edition, International Atomic Energy Agency, Vienna, 2005
- [2] Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material, TS-G-1.1, International Atomic Energy Agency, Vienna, 2005
- [3] Schedules of Requirements for the Transport of Specified Types of Radioactive Material Consignments, Safety Series No.80, International Atomic Energy Agency, Vienna, 1986

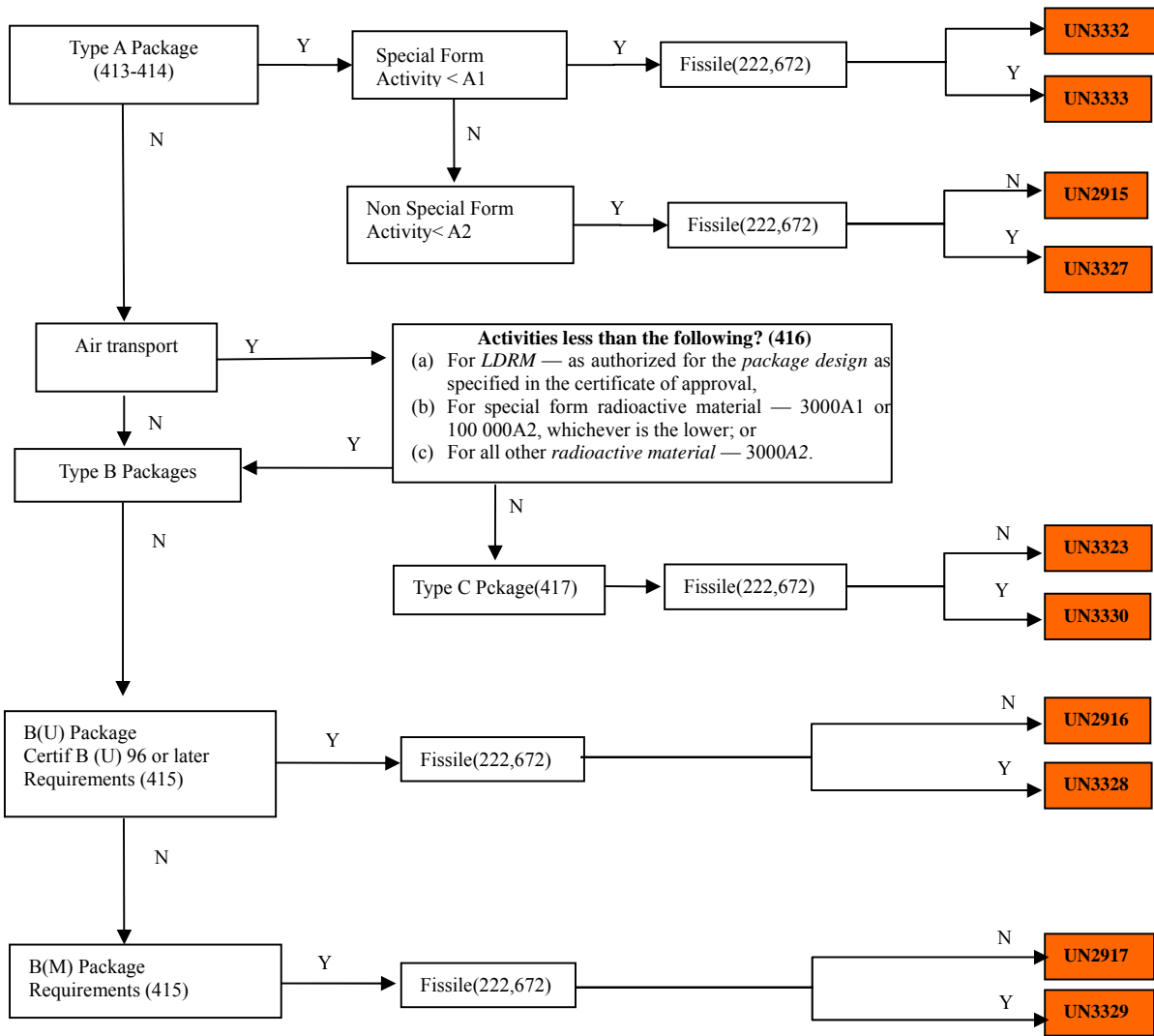
Table 1. Overall process for packaging and transport of radioactive materials



Note: Not all of these stages are necessary for all type of package (e.g. excepted packages don't require placard)

Table 2. Assignment of UN-Numbers





Radioactive Material as specified in the appropriate certificate of shipment under special arrangement, may be transported, subject to the implementation of special provisions approved by the competent authority (or competent authorities of all countries in or through which the shipment takes place). These provisions will be established to ensure that the overall level of safety in transport and during storage in transit shall be at least equivalent to that which would be provided if all the applicable requirements of the applicable schedule as appropriate, had been satisfied.

