CATEGORIES OF PACKAGES, OVERPACKS AND FREIGHT CONTAINERS and their UN MARKINGS
(Please refer AERB/NRF-TS/SC-1 (Rev.1) Safe Transport of Radioactive Material 2016, for the respective clauses)

Packages, overpacks and freight containers shall be assigned to either category I-WHITE, II-YELLOW or III-YELLOW in accordance with the conditions specified in Table XII and with the following requirements:

1) The Transport Index (TI) shall be determined following the provisions specified in clause 6.9
2) For a package, overpack or freight container, the TI and the surface radiation level conditions shall be taken into account in determining which category is appropriate. Where the TI satisfies the condition for one category but the surface radiation level satisfies the condition for a different category, the package, overpack or freight container shall be assigned to the higher category. For this purpose, category I-WHITE shall be regarded as the lowest category.

3) If the surface radiation level is greater than 2 $mSv.h^{-1}$, the package or overpack shall be transported under exclusive use and under the provisions of clauses 6.15.4.3 (a), 6.15.5.1 or 6.15.6.3, as appropriate.

4) A package transported under a special arrangement shall be assigned to category III-YELLOW except that, in the case of international transport, the categorization shall be in accordance with the approval certificate issued by the Competent Authority of the country of origin of the design of the package.

5) An overpack or freight container that contains packages transported under special arrangement shall be assigned to category III-YELLOW except that, in the case of international transport, the categorisation shall be in accordance with the approval certificate issued by the Competent Authority of the country of origin of the design of the package.

Table XII
CATEGORIES OF PACKAGES, OVERPACKS AND FREIGHT CONTAINERS

Conditions		**Category**
TI	Maximum radiation level at any point on external surface	
0[a]	Not more than 0.005 $mSv.h^{-1}$	I-WHITE
More than 0 but not more than 1[a]	More than 0.005 $mSv.h^{-1}$ but not more than 0.5 $mSv.h^{-1}$	II-YELLOW
More than 1 but not more than 10	More than 0.5 $mSv.h^{-1}$ but	III-YELLOW

	not more than 2 $mSv.h^{-1}$	
More than 10	More than 2 $mSv.h^{-1}$ but not more than 10 $mSv.h^{-1}$	III-YELLOW [b]

a If the measured TI is not greater than 0.05, the value quoted may be zero in accordance with clause 6.9.1(c).

b Shall also be transported under exclusive use except for freight containers.

UN MARKING FOR PACKAGES AND OVERPACKS

Item	**UN Marking[a]**
Package (other than an excepted package)	UN number, preceded by the letters 'UN', and the proper shipping name
Excepted package (other than those in consignments accepted for international movement by post)	UN number, preceded by the letters 'UN'
Overpack (other than an overpack containing only excepted packages)	UN number, preceded by the letters 'UN' for each applicable UN number in the overpack, followed by the proper shipping name in the case of a non-excepted package
Overpack containing only excepted packages (other than consignments accepted for international movement by post)	UN number, preceded by the letters 'UN' for each applicable UN number in the overpack
Consignment accepted for international movement by post	The requirement of clause 6.15.7.2

Each package that conforms to a design approved under one or more provisions of the safety code (clauses 7.4.1, 7.4.2.1, 7.4.2.2, 7.4.3.1, 7.4.3.2, 7.4.4.1 and 7.4.4.2) and under provisions for transitional arrangements (clause 7.6.2.1) shall be legibly and durably marked on the outside of the packaging with the following information:

The identification mark allocated to that design by the Competent Authority

A serial number to identify uniquely each packaging that conforms to that design

'TYPE B(U)', 'TYPE B(M)' or 'TYPE C', in the case of a Type B(U),Type B(M) package design.

Each package that conforms to a Type B(U), Type B(M) package design shall have on the outside of the outermost receptacle, that it is resistant to the effects of fire and water, plainly marked by embossing, stamping or other means resistant to the effects of fire and water with the trefoil symbol shown in Fig. 1.

Where LSA-I or SCO-I material is contained in receptacles or wrapping materials and is transported under exclusive use, as permitted by clauses 6.7.5 and 6.8.5, the outer surface of these receptacles or wrapping materials may bear the marking 'RADIOACTIVE LSA-I' or 'RADIOACTIVE SCO-I', as appropriate.

Labelling

Each package, overpack and freight container shall bear the labels conforming to the applicable models in Figs 2 to 4, except as allowed under the alternative provisions of clause 6.13.6.1 for large freight containers and tanks, according to the appropriate category. In addition, each package, overpack and freight container containing fissile material, other than fissile material excepted under the provisions of clause 4.6.1.1, shall bear labels conforming to the model in Fig. 5. Any labels that do not relate to the contents shall be removed or covered. For radioactive material having other dangerous properties, see clause 6.4.

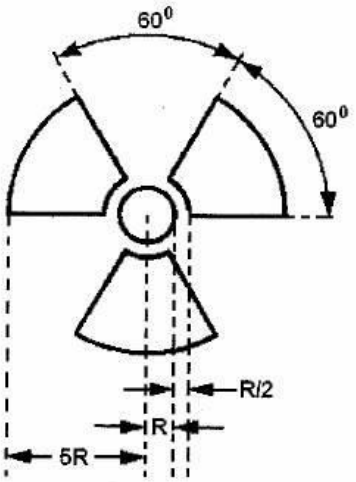

Fig. 1.
Radiation Symbol for Radioactive Sources

Fig. 1 shows the basic trefoil symbol with proportions based on a central circle of radius R. The minimum allowable size of R shall be 4 mm.

The labels conforming to the applicable models in Figs 2 to 4 shall be affixed to two opposite sides of the outside of a package or overpack or on the outside of all four sides of a freight container or tank. The labels conforming to the model in Fig. 5, where applicable, shall be affixed adjacent to the labels conforming to the applicable models in Figs 2 to 4. The labels shall not cover the markings specified above in this section (clauses 6.13.2.1 to 6.13.2.6).

Labelling for Radioactive Contents

Each label conforming to the applicable models in Figs 2 to 4 shall be completed with the following information:

FIG. 2. CATEGORY I-WHITE LABEL

The background colour of the label shall be white, the colour of the trefoil and the printing shall be black, and the colour of the category bar shall be red.

Contents:

Except for LSA-I material, the name(s) of the radionuclide(s) as taken from Table-I, using the symbols prescribed therein. For mixtures of radionuclides, the most restrictive nuclides must be listed to the extent the space on the line permits. The group of LSA or SCO shall be shown following the name(s) of the radionuclide(s). The terms 'LSA-II', 'LSA-III', 'SCO-I' and 'SCO-II' shall be used for this purpose.

For LSA-I material, the term 'LSA-I' is all that is necessary; the name of the radionuclide is not necessary.

Activity:

The maximum activity of the radioactive contents during transport expressed in units of becquerels (Bq) with the appropriate SI prefix symbol. For fissile material, the total mass of fissile nuclides in units of grams (g), or multiples thereof, may be used in place of activity.

For overpacks and freight containers, the 'contents' and 'activity' entries on the label shall bear the information required in sub-paras (a) and (b), above, respectively, totaled together for the entire contents of the overpack or freight container except that on labels for overpacks or freight containers

containing mixed loads of packages containing different radionuclides, such entries may read ‘See Transport Documents’.

TI: The number determined in accordance with the provisions of clause 6.9 (no TI entry is required for Category I-WHITE).

FIG. 3. CATEGORY II-YELLOW LABEL. THE BACKGROUND COLOUR OF THE UPPER HALF OF THE LABEL SHALL BE YELLOW AND THE LOWER HALF WHITE, THE COLOUR OF THE TREFOIL AND THE PRINTING SHALL BE BLACK, AND THE COLOUR OF THE CATEGORY BARS SHALL BE RED.

FIG. 4. CATEGORY III-YELLOW LABEL. THE BACKGROUND COLOUR OF THE UPPER HALF OF THE LABELSHALL BE YELLOW AND THE LOWER HALF WHITE, THE COLOUR OF THE TREFOIL AND THE PRINTING SHALL BE BLACK, AND THE COLOUR OF THE CATEGORY BARS SHALL BE RED.

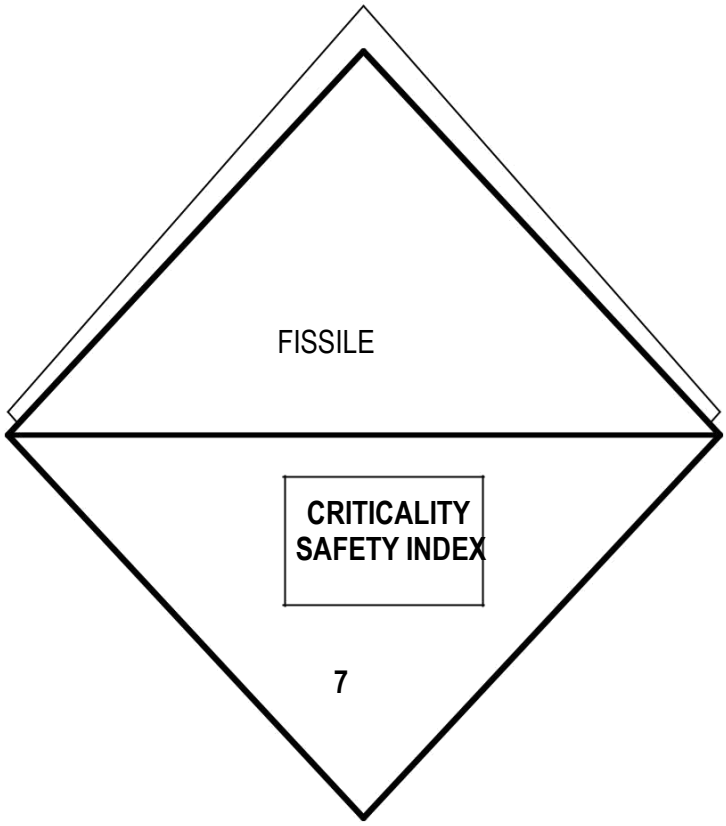

FIG. 5. CSI LABEL. THE BACKGROUND COLOUR OF THE LABEL SHALL BE WHITE, THE COLOUR OF THE PRINTING SHALL BE BLACK.

Labelling for Criticality Safety

Each label conforming to the model in Fig. 5 shall be completed with the CSI as stated in the certificate of approval applicable in the countries through or into which the consignment is transported and issued by the Competent Authority or as specified in clauses 5.10.2 or 5.10.3 of the AERB Safety Code SC/TR-1, 2016

For overpacks and freight containers, the label conforming to the model in Fig. 5 shall bear the sum of the CSIs of all the packages contained therein.

Placarding

Large freight containers carrying packages other than excepted packages, and tanks shall bear four placards that conform to the model given in Fig. 6. The placards shall be affixed in a vertical orientation to each side wall and to each end wall of the large freight container or tank. Any placards that do not relate to the contents shall be removed. Instead of using both labels and placards, it is permitted, as an alternative, to use enlarged labels only, where appropriate, as shown in Figs 2 to 4, except having the minimum size shown in Fig. 6.

Where the consignment in the freight container or tank is unpackaged LSA-I or SCO-I or where a consignment in a freight container is required to be shipped under exclusive use and is packaged radioactive material with a single UN number, the appropriate UN number for the consignment (see Table-II) shall also be displayed, in black digits not less than 65 mm high, either:

In the lower half of the placard shown in Fig. 6 and against the white background; or

On the placard shown in Fig. 7.

When the alternative given in (b) is used, the subsidiary placard shall be affixed immediately adjacent to the main placard, on all four sides of the freight container or tank.

Forwarding a Consignment for Transport

Except as otherwise provided in this safety code, the consignor shall ensure that when a radioactive material is forwarded for transport it is properly marked, labelled, placarded, described and certified on a transport document, and otherwise in a condition for transport as required by the provisions of this safety code.

Particulars of Consignment

The consignor shall include in the transport documents with each consignment the identification of the consignor and consignee, including their names and addresses, and the following information, as applicable, in the order given:

The UN number assigned to the material as specified in accordance with the provisions of this safety code, preceded by the letters 'UN' (clauses 3.1 and 6.13.1).

FIG. 6. PLACARD. EXCEPT AS PERMITTED BY CLAUSE 6.15.4.1, MINIMUM DIMENSIONS SHALL BE AS SHOWN; WHEN DIFFERENT DIMENSIONS ARE USED, THE RELATIVE PROPORTIONS SHALL BE MAINTAINED. THE NUMBER '7' SHALL NOT BE LESS THAN 25 mm HIGH. THE BACKGROUND COLOUR OF THE UPPER HALF OF THE PLACARD SHALL BE YELLOW AND THE LOWER HALF WHITE, THE COLOUR OF THE TREFOIL AND THE PRINTING SHALL BE BLACK. THE USE OF THE WORD 'RADIOACTIVE' IN THE BOTTOM HALF IS OPTIONAL, TO ALLOW THE ALTERNATIVE USE OF THIS PLACARD TO DISPLAY THE APPROPRIATE UN NUMBER FOR THE CONSIGNMENT.

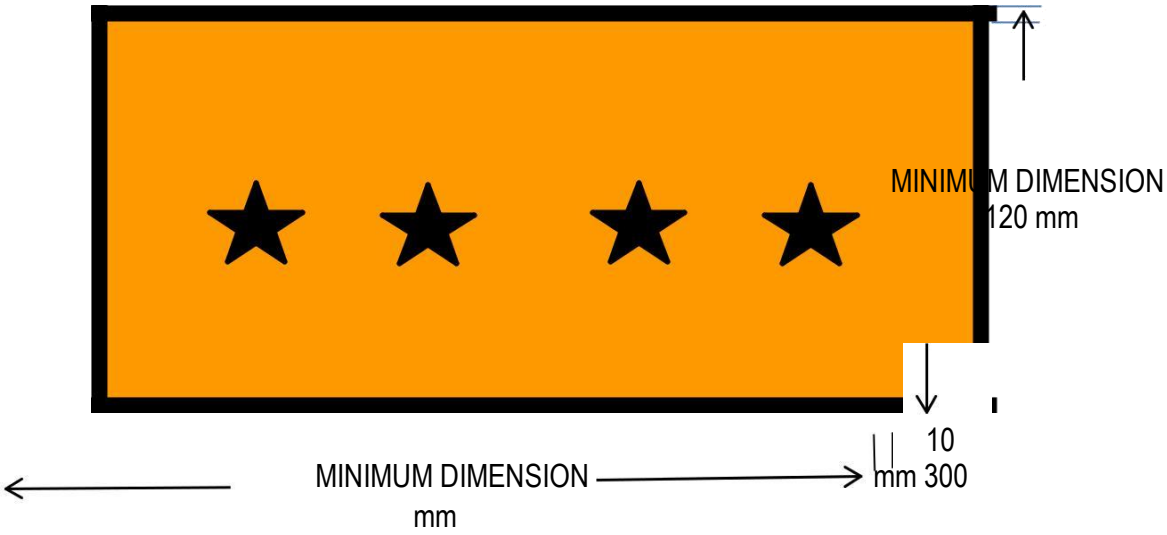

FIG. 7. PLACARD FOR SEPARATE DISPLAY OF UN NUMBER. THE BACKGROUND COLOUR OF THE PLACARD SHALL BE ORANGE AND THE BORDER AND UN NUMBER SHALL BE BLACK. THE SYMBOL '**' DENOTES THE SPACE IN WHICH THE APPROPRIATE UN NUMBER FOR RADIOACTIVE MATERIAL, AS SPECIFIED IN TABLE II, SHALL BE DISPLAYED.**

The proper shipping name, as specified in accordance with the provisions of clauses 3.1 and 6.13.1.
The UN class number '7'.
The subsidiary hazard class or division number(s) corresponding to the subsidiary risk label(s) required to be applied, when assigned, shall be entered following the primary hazard class or division and shall be enclosed in parentheses.
The name or symbol of each radionuclide or, for mixtures of radionuclides, an appropriate general description or a list of the most restrictive nuclides.
A description of the physical and chemical form of the material, or a notation that the material is special form radioactive material or low dispersible radioactive material. A generic chemical description is acceptable for chemical form.
The maximum activity of the radioactive contents during transport expressed in units of becquerels (Bq) with the appropriate SI prefix symbol. For fissile material, the mass of fissile material (or mass of each fissile nuclide for mixtures, when appropriate) in units of grams (g), or appropriate multiples thereof, may be used in place of activity.
The category of the package, i.e. I-WHITE, II-YELLOW, III-YELLOW.
The TI (for categories II-YELLOW and III-YELLOW only).
For fissile material:

Shipped under one exception of subparagraphs 4.6.1.1(a) to (f), reference to that clause
Shipped under clause 4.6.1.1(c) to (e), the total mass of fissile nuclides
Contained in a package for which one of clauses 5.10.2(a) to (c) or 5.10.3 is applied, reference to that clause
The CSI, where applicable.

The identification mark for each Competent Authority certificate of approval (special form radioactive material, low dispersible radioactive material, fissile material excepted under clause 4.6.1.1 (f), special arrangement, package design or shipment) applicable to the consignment.

For consignments of more than one package, the information contained in sub-paras (a) to (k) above, shall be given for each package. For packages in an overpack, freight container or conveyance, a detailed statement of the contents of each package within the overpack, freight container or conveyance and, where appropriate, of each overpack, freight container or conveyance shall be included. If packages are to be removed from the overpack, freight container or conveyance at a point of intermediate unloading, appropriate transport documents shall be made available.

Where a consignment is required to be shipped under exclusive use, the statement 'EXCLUSIVE USE SHIPMENT'.

For LSA-II, LSA-III, SCO-I and SCO-II, the total activity of the consignment as a multiple of A2. For radioactive material for which the A2 value is unlimited, the multiple of A2 shall be zero.