5 RADIOACTIVE MATERIAL

IATA DGR Section 10

5.1 TRANSPORT OF RADIOACTIVE MATERIAL

Due to the nature of radioactive material and the potential hazard they may impose on the safety of passengers and crew, they have special requirements that must be satisfied to ensure safety and to protect people, property and the environment from the harmful effects of ionizing radiation during the transport of radioactive material by air.

These requirements are satisfied by:

1. Applying a graded approach to the limits of the contents for packages and aircraft and to the performance standards, which are applied to package designs depending upon the hazard of the radioactive contents.
2. Imposing conditions on the design and operation of packages and on the maintenance of the packaging, including consideration of the nature of the radioactive contents.
3. Requiring administrative controls including, where appropriate, approval by competent authorities, and
4. Making arrangements for planning and preparing emergency response to protect people, property, and the environment.

Some exceptions apply, such as:

1. Radioactive material implanted or incorporated into a person or live animal for diagnosis or treatment.
2. Radioactive material in or on a person who is to be transported for medical treatment because the person has been subject to accidental or deliberate intake of radioactive material or to contamination, taking into account the necessary radiological protection measures with respect to other passengers and crew, subject to approval by the operator.
3. Radioactive material in consumer products which have received regulatory approval, following their sale to the end user.
4. Natural material and ores containing naturally occurring radionuclides (which may have been processed).

IN ADDITION TO THE RADIOACTIVE AND FISSILE PROPERTIES, ANY SUBSIDIARY HAZARD OF THE CONTENTS OF A PACKAGE, SUCH AS EXPLOSIVENESS, FLAMMABILITY, PYROPHORICITY, CHEMICAL TOXICITY AND CORROSIVENESS, MUST ALSO BE TAKEN INTO ACCOUNT IN THE DOCUMENTATION, PACKING, LABELLING, MARKING, PLACARDING,

STOWAGE, SEGREGATION AND TRANSPORT, IN ORDER TO BE IN COMPLIANCE WITH ALL RELEVANT PROVISIONS FOR DANGEROUS GOODS OF THESE REGULATIONS.

5.2 LIMITATIONS

Prohibited Radioactive Material: The following items are forbidden on aircraft unless specifically exempted:

1. Type B(M) packages;
2. Packages requiring external cooling;
3. Packages needing operational controls;
4. Explosives;
5. Pyrophoric liquids.

Riyadh Air policy does not allow the transport of radioactive material by mail. Refer to Section 9.1and Section 9.2 for more information.

5.3 CLASSIFICATION

Radioactive material means any material containing radionuclides where both the activity concentration and the total activity in the consignment exceed the values permissible for Radioactive Materials transportation (Refer to IATA DGR Manual section 10.3.2).

Radioactive materials are classified as either "special form" or "other than special form" when being prepared for air transport.

1. Special form refers to radioactive contents that are insoluble and non-dispersible, such as encapsulated sources. This makes them less hazardous.
2. Other than special form covers radioactive contents that are more soluble or dispersible. This makes them a greater hazard.

Packaging activity limits are based on these two categories:

1. A1 is the activity limit for special form radioactive material. It is set at a higher level due to the reduced hazard.
2. A2 is the lower activity limit for other than special form radioactive material. The greater hazard requires more restrictive limits.

IATA Dangerous Goods Regulations, which are based on the International Atomic Energy Agency (IAEA) outline detailed classification of Radioactive materials. Major classifications are described in the following sections.

5.3.1 Special Form Radioactive Material

Special form radioactive material refers to sources that are designed and constructed to be very stable and leak resistant if damaged.

1. It can be a solid radioactive material made insoluble and non-dispersible.
2. Or it can be a sealed capsule containing radioactive material.

To qualify as special form, it must meet specific design requirements and pass rigorous testing:

1. withstand impact, bending, percussion, heat without breaking, melting, or leaking.
2. very limited radioactivity released if subjected to leaching assessments.
3. very low leakage from capsules based on volumetric tests.

Special form sources must get unilateral approval, verifying they meet performance standards. The stringent design and testing ensure enhanced containment of radioactive contents.

5.3.2 Low Specific Activity (LSA) Material

LSA refers to radioactive material with inherent limits on its specific activity, or radioactivity concentration per mass. It is categorized into three groups:

LSA-I

1. Uranium/thorium ores and concentrates.
2. Unirradiated natural/depleted uranium/thorium.
3. Unlimited A2 value material like tritium and carbon 14.
4. Other material with average specific activity ≤ 30x activity limit.

LSA-II

1. Water with tritium ≤ 0.8 TBq/L.
2. Other material with average specific activity ≤10-4 A2/g (solids/gases) or ≤10-5 A2/g (liquids).

LSA-III

1. Solids with uniform distributed radioactivity.
2. Average specific activity ≤ 2 x 10-3 A2/g.

LSA classification is based on the radioactive material's inherent properties and concentration limits. Proper categorization ensures radioactive contents with lower hazard are identified. External shielding is not considered.

5.3.3 Surface Contaminated Object

Surface Contaminated Object (SCO) means a solid object which is not elementally radioactive, but which has radioactive material distributed on its surfaces.

5.4 IDENTIFICATION

Radioactive material must be assigned to one of the proper shipping names/UN numbers according to their classification.

Each of the packages will be provided with a Certificate of Conformity from the manufacturer and a Radioactive Material, Excepted Package label affixed.

Figure 15: Radioactive Material, Excepted Package

5.5 PACKING

The shipper is responsible for all aspects of the packing of radioactive materials in compliance with International Air Transport Association Dangerous Goods Regulations (IATA DGR).

5.6 MARKING AND LABELLING

The shipper is responsible for all necessary marking and labeling of each package, overpack or freight container containing radioactive material in compliance with IATA DGR.

All markings must be so placed on the packaging or overpacks to ensure they are not covered or obscured by any part of or attachment to the packaging or overpack or any other label or mark. The required mark must not be located with other package marks that could substantially reduce their effectiveness.

Markings and labels should be written in English in addition to the language which may be required by the State of origin.

Label	Description
	Name: Radioactive Cargo Imp Code: RRY Minimum dimensions: 100 × 100 mm Symbol (trefoil): Black Background: Top half Yellow (Pantone Colour No. 109U) with White border, bottom half White
	Name: Radioactive Cargo Imp Code: RRY Minimum dimensions: 100 × 100 mm Symbol (trefoil): Black Background: Top half Yellow (Pantone Colour No. 109U) with White border, bottom half White
	Minimum dimensions: 100 × 100 mm Text (mandatory): "FISSILE" in black on white in upper half of label

Table 8 Marking and Labelling Details of Radioactive Material

5.7 DOCUMENTATION

The shipper is responsible for providing information applicable to a consignment of dangerous goods to the operator. The information may be provided on a prescribed declaration form, "Shipper's Declaration for Dangerous Goods" or, where an agreement exists with the operator.

The declaration form must be completed in the English language. The wording in English may be accompanied by an accurate translation in another language.

Specific information must be provided in each box of the Declaration Form:

1. Shipper: Full name and address of shipper
2. Consignee: Full name,
3. Air Waybill Number: Number of the Air Waybill to which the declaration form will be attached,
4. Page ... of ... pages
5. Aircraft Limitations: Passenger or cargo,
6. Airport of Departure,
7. Airport of Destination,
8. Shipment Type,
9. Nature and Quantity of Dangerous Goods,
10. First Sequence—Identification: Refer to IATA DGR manual for instructions,
11. Second Sequence—Quantity and Type of Packing: Refer to IATA DGR manual for instructions,
12. Third Sequence—Packing Instructions: Refer to IATA DGR manual for instructions,
13. Fourth Sequence—Authorizations: Refer to IATA DGR manual for instructions,
14. Additional handling information.

5.8 HANDLING

Radioactive material must be segregated sufficiently from workers and from members of the public. During acceptance and handling, exposure to radiation should be kept as low as reasonably achievable.

5.9 RADIOACTIVE MATERIALS INCIDENT REPORTING

Should an accident or incident occur that involves radioactive materials, do not move the package from its location. If there is suspicion of a leak from any package, and it is exposed, ensure it is covered to hinder the spread of any materials within (such as into surface water drains or the soil). Maintain a distance of at least ten meters from the affected package(s). In the event that the damage is discovered within the aircraft's hold, vacate the area at once.

Immediately communicate the incident to the 24-hour OCC emergency at (Contact Number: TBA)

Refer to Chapter 6.