

# 10 Movement and Transport of Radioactive Materials

## Scope

1. This Chapter addresses the radiation safety requirements for the movement and transport of radioactive materials. The requirements outlined in this Chapter apply to all types of packages containing radioactive material and to all modes of transport
2. The instructions on how to package and consign radioactive items in excepted packages for transport are given in the Dangerous Goods Manual (DGM). For the transport of radioactive items other than excepted packages (described in the DGM), advice can be sought from the unit Dangerous Goods Safety Adviser (DGSA), the frontline command DGSA or the establishment's RPA if required. Advice on radiation protection arrangements during transport operations can be obtained from the establishment's RPA.

## Statutory Requirements

3. In addition to the general requirements of the Health and Safety at Work etc Act 1974 and the Management of Health and Safety at Work Regulations 1999, the following legislation applies directly:
  - a. Ionising Radiations Regulations 2017 (IRR17);
  - b. United Kingdom road transport: The Carriage of Dangerous Goods and Transportable Pressure Equipment Regulations (2009) (as amended) (CDG);
  - c. International transport: IAEA Safety Standards TS-R-1 (2018); and
  - d. European road transport: ADR Volumes I and II 2019.

## Duties

4. Duties as detailed in Chapter 39 apply. In addition, the following duties also apply.

### Unit Dangerous Goods Consignor (UDGC) / Radiation Safety Officer (RSO)

5. The UDGC, or if none is appointed, the RSO is to ensure that:
  - a. a quality assurance programme for transport operations and a radiation protection programme for radiation safety arrangements are produced for the unit or establishment;
  - b. all sections that prepare or consign radioactive items for transport have access to the quality assurance programme and radiation protection programme;
  - c. Quality Assurance and radiation protection programmes are subjected to quality audits, and that those parts of the organisation moving or transporting radioactive materials are subject to compliance audits and that systems are in place to follow-up on audit recommendations; and

- d. only suitably trained personnel are to consign radioactive materials (Class 7).

### **Radiation Protection Supervisor (RPS)**

6. Where sites and establishments have an RPS appointed, the RPS is to ensure that all staff involved in the transport of radioactive materials complies with the requirements of the quality assurance programme and radiation protection programme.

7. The RPS is to ensure that the transport operation complies with the requirements of all applicable legislation in respect of radiation exposures to those handling the package en route and members of the public.

### **Workplace Supervisor (Radioactive Materials) (WPS(RAM))**

8. In cases where a WPS is appointed, the WPS is to ensure that all staff involved in the transport of radioactive materials complies with the requirements of the quality assurance programme and radiation protection programme.

### **Quality Assurance Programme**

9. Each unit or establishment that transports radioactive materials is required to produce a quality assurance programme for such transport of radioactive materials. The programme will demonstrate how the unit or establishment, acting as consignor, carrier or consignee, complies with the regulations governing transport of radioactive material. For example, it could be in the form of a written instruction describing the procedure for transporting radioactive materials and how this procedure complies with the regulatory requirements. The programme must address the design, manufacture, testing, documentation, carriage, use, maintenance and inspection of:

- a. all special form radioactive material;
- b. all low dispersible radioactive material;
- c. all packages and packaging;
- d. all transport and in-transit operations;
- e. all special arrangements; and
- f. for accounting purposes under IRR17, details of all radioactive material must be supplied to the consignee.

### **Radiation Protection Programme**

10. Consignors, carriers and consignees are to establish a radiation protection programme to provide adequate instructions to restrict radiation exposure when transporting radioactive materials. The programme is to address such areas as:

- a. the measures taken to ensure radiation exposures remain as low as reasonably practicable (ALARP);
- b. compliance with the occupational radiation exposure limits that apply;

- c. any requirement to segregate radioactive consignments from workers and members of the public; and
  - d. emergency arrangements and contingency plans.
11. The RPA can be contacted for further advice on the radiation protection programme.
12. The radiation protection programme is to be reviewed at least every 3 years.

### **Movement of Radioactive Material within an Establishment**

13. When the movement occurs entirely within an establishment or base i.e. not involving transport on public roads, the requirements of the CDG are not applicable. However, the requirements of the IRR17 still apply to movement within an establishment and therefore radioactive materials are to be moved:

- a. in a suitable container to prevent the loss of radioactive material in transit during loading and unloading. The container is to be labelled or marked to indicate the radioactive contents. Where the use of a container is not practicable (such as for items that are physically too large) the items are to be adequately packaged to prevent the loss of radioactive material in transit and labelled or marked;
  - b. in such a way that the radiation doses to individuals from packaging, loading, movement and unloading are kept as low as reasonably practicable;
  - c. under written arrangements, when the criteria for controlled areas are exceeded and persons other than classified persons are employed (see Chapter 5);
  - d. accompanied by a written statement (e.g. Form 34D, Chapter 4 Annex A) detailing the nature and quantity of the radioactive substance and the appropriate action to be taken in the event of accident, spillage or dispersal of the material;
  - e. in accordance with local orders (see Chapter 16); and
  - f. movement should normally take place during normal working hours.
14. The consignor of the item(s) must make the consignee aware that the item(s) to be moved are radioactive and provide the consignee with details of the physical form, the nature of the radioactive material and its activity for correct storage and accounting. The consignee must also have agreed to receive the item(s) prior to their consignment.

### **Storage in Transit**

15. Transport packages in transit are to be separated from undeveloped photographic and radiographic film by a distance such that the dose to the film will not exceed 0.1 mSv. They are to be physically separated from other dangerous goods unless they are part of the same equipment.
16. For packages other than excepted packages, there are limits on the quantity of such packages that can be stored together. The storage area is to be clearly demarcated by a physical barrier and appropriate warning signs displayed. Further advice on storage requirements can be sought from the RPA.

## **Records**

17. A copy of each completed dangerous goods note as detailed in the Dangerous Goods Manual is to be retained by the establishment for a minimum period of 2 years after the date of consignment.