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**SCOPE**

1 This leaflet is applicable to MOD units and establishments with responsibilities for museums and those who supply equipment or articles containing radioactive material or generators producing ionising radiation to these museums. This leaflet also outlines radiation protection requirements for museums that are sited on the defence estate, or are funded by MOD, or to whom the MOD provide all or some of the workforce. In these circumstances the MOD is likely to have retained health and safety responsibilities for the museum, its employees, visitors or other persons.

**INTRODUCTION**

2 The term museum in this leaflet is taken to include trusts and similar voluntary bodies who preserve or renovate historic artefacts or equipment for display.

3 Museums on the defence estate or to which MOD has loaned, sold, gifted or donated items often include in their catalogue items that contain radioactive material or have the potential to emit ionising radiation. Unless specifically advised, museum personnel may not be aware of the hazards posed by such equipment. MOD has a duty of care in these circumstances to provide such information to the museum in accordance with the Secretary of State's Health and Safety Policy Statement and national legislation.

## **STATUTORY REQUIREMENTS**

4 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 specific legislation may apply:

- Ionising Radiations Regulations 1999 (IRR99) (apply directly).
- Radioactive Substances Act 1993 (RSA93) (parallel arrangements).
- Carriage of Dangerous Goods and Transportable Pressure Equipment Regulations 2007 (apply directly).

## **DUTIES**

### **Commanding Officer (CO) and Head of Establishment**

5 The Commanding Officer (CO) has a duty to the Secretary of State, and a personal responsibility, to protect the environment and secure the health, safety and welfare of their staff at work. The CO is also required to protect persons not in MOD employment (e.g. members of the public) against risks to their health and safety arising from the MOD work activities. This includes radiation safety.

6 If a museum sited on the defence estate is physically separated from, and totally independent of, Ministry of Defence units on the same site, the primary responsibility for radiation health and safety rests entirely with the management of the museum.

### **Radiation Safety Officer (RSO)**

7 If appointed and where authority has been delegated the RSO will normally discharge the duties of the CO. This will include the actions outlined elsewhere in this leaflet.

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

8 An RPS must be appointed where it is necessary to designate areas as controlled or supervised (see Leaflet 4). Where an RPS is so appointed they are to ensure that the work is carried out in accordance with local orders for radiation safety (see Leaflet 16) which should address the requirements of this leaflet.

### **Workplace Supervisor (WPS)**

9 In units where it is unnecessary to appoint an RPS, a WPS (Radioactive Materials) may need to be appointed with duties to ensure that work is carried out in accordance with local orders for radiation safety. In addition to those duties, a WPS may be required to assist the RSO, if appointed, in meeting the provisions of this leaflet.

### **Employees**

10 It is the responsibility of all employees, whether or not directly involved in the operation of the museum, to ensure that any local instruction is complied with and that radioactive items are handled correctly and not deliberately misused or interfered with. Any incidents should be reported appropriately.

## **RADIATION PROTECTION ARRANGEMENTS FOR MUSEUMS**

### **Radiation protection advisory visits**

11 Museums holding items described in Annex A, or who suspect that they hold other radioactive items that are not listed, are to request an advisory visit from a radiation protection adviser (RPA) through the appropriate Service focal point for radiation safety. The most common source of radioactivity is paint that has been applied to equipment at some stage of its life to make it luminescent. It should be noted however that such luminescence may long since have faded away despite the item still being radioactive; hence luminosity should not be used as a primary indicator to establish whether an item is radioactive. The objective of such a visit will be to identify equipment, articles and exhibits containing radioactive material and provide radiation protection advice to the museum to enable it to comply with legal requirements. The RPA, usually Dstl RPA Body, can also undertake regular subsequent visits, the frequency of which will be determined by the degree of radiation hazard and the level of support requested. Where MOD is not the employer, advice should be sought from their appointed RPA.

### **Administrative arrangements**

12 The Director or Curator of the Museum is to draft local orders which set out the responsibilities and arrangements for radiation protection within the museum. Leaflet 16 sets out the requirements for this documentation which should contain procedures to limit staff and public exposure to ionising radiation.

13 A suitable person should be appointed and trained to manage the items containing radioactive material. The requirements are set out in Leaflet 15. Guidance should be sought from the appropriate Service focal point or the appointed RPA if necessary.

### **Advice**

14 Radiation protection issues within museums are in the first instance to be brought to the attention of the WPS, RPS or RSO, where appointed, either in the museum or the local MOD unit or establishment. In their absence radiation protection advice on the topics listed below should be sought from the RPA through the focal point for radiation safety. For those without a resident RPA, advice should be sought from Dstl RPA Body (Mil 9380 68130 or 02392 768130).

### **Notification**

15 Notification requirements are set out in Leaflet 3. Annex B of this leaflet contains generic guidance, based on the degree of MOD's involvement, for museums on the requirement for Notification under RSA93.

### **Risk assessments**

16 Risk assessments are to be carried out by the museum for each type of article or equipment containing radioactive material, and for each radiation emitting equipment that is received or held. A single generic risk assessment would be appropriate to cover equipment of a similar nature, e.g. luminised instruments, provided that it covers all requirements (including identification, storage, use and repair) for each article. Records of these assessments are to be kept by the museum. Requirements for risk assessments are set out in Leaflet 2 and further assistance can be sought from the appointed RPA, see paragraph 14.

### **Display of exhibits**

17 Exhibits that contain radioactive material and are exhibited by a museum are to be displayed such that they cannot be handled by visitors and measures are to be put in place to minimise the dose rate to which visitors are exposed. Exhibits should be arranged such that radiation doses to visitors are as low as reasonably practicable (ALARP). The dose rate in areas that visitors have access to must not exceed  $7.5 \mu\text{Sv h}^{-1}$  and should generally not exceed  $1 \mu\text{Sv h}^{-1}$ . Any trefoils on exhibits should, where practicable, be discreetly positioned away from public view.

18 Articles held in store are to be segregated and kept in a dedicated secure store marked with a radiation warning sign. Dose rates on the outside of the store are not to exceed  $7.5 \mu\text{Sv h}^{-1}$  and whenever reasonably practicable should be less than  $2.5 \mu\text{Sv h}^{-1}$  ( $1 \mu\text{Sv h}^{-1}$  for a new facility). Leaflet 9 provides further guidance on the storage of radioactive items.

19 Where the radiation dose rate in areas that can be accessed by the public or outside storage areas cannot be reduced below  $2.5 \mu\text{Sv h}^{-1}$  then the advice of the appointed RPA should be sought, see paragraph 14.

#### **Receipt of articles containing radioactive material from MOD units**

20 Before articles containing radioactive material are accepted (including from MOD ships, units or establishments) museums are to request Safety Data Sheet(s) from the suppliers. Provided that the museum's policy for accepting radioactive materials permits the receipt of such items, the information from Safety Data Sheets can be used to determine whether they can meet statutory and MOD requirements and safely handle, store, display and, if necessary, work on and dispose of these articles. Such datasheets will form part of the basis of decision making when accepting or declining these items.

21 For articles already held, the museum is to generate its own Safety Data Sheets. Safety Data Sheets for some radioactive articles are contained in JSP 515, the Hazardous Stores Information System. It should be noted that the museum is responsible for ensuring that the data used is both current and correct. Where articles of a similar nature are held then a generic datasheet is sufficient. Assistance in obtaining or producing Safety Data Sheets may be obtained as detailed at paragraph 14.

#### **Arrangements for articles gifted or loaned by members of the public**

22 Museums are to put in place arrangements for dealing with articles that are gifted or loaned by members of the public. As a general rule no item should be formally accepted until its radioactive content has been determined. Items that are suspected of containing radioactive material should, as a minimum, be quarantined by sealing them in a polythene bag, if practicable, and locking them in a cabinet or store (not containing other hazardous materials) until they can be investigated, for example by data search, monitoring or analysis. In any case, RPA advice is to be sought early on. Such arrangements are to be included in local orders.

#### **Noting letters, letters of approval and charges**

23 Museums for which MOD has responsibilities and which hold radioactive material are required to have Noting Letters issued by the appropriate Regulatory Authority as detailed in Leaflet 3, unless covered by an Exemption Order made under the Radioactive Substances Act. These Noting Letters stipulate limits on the quantities of radioactive material that can be held by the museum. Similarly, Letters of Approval are required to accumulate for disposal, and to dispose of radioactive waste (unwanted articles containing radioactive material declared as radioactive waste). Charges will be levied by the Regulatory Authority. Funds are held centrally to pay some of these charges. Advice on the need for these Letters, their provision and payment of fees will be provided by the RPA during their visit or through the focal point for radiation safety. Annex B contains generic guidance for museums on the requirement for Notification (or Registration for non-MOD museums) under RSA93.

#### **Accounting for articles containing radioactive material**

24 A record should be kept by the museum of all articles containing radioactive material as detailed in Leaflet 9. This record should include a description of the item, serial number, date received, location held, type of radioactive material, activity if known, date removed and transfer or disposal route. Sources should be mustered as detailed in Leaflet 9. Annually, an audit of the source list is to be undertaken to verify the accuracy of the records. A record of this audit is to be kept by the museum. Other requirements, including leak testing, storage and transport, are detailed in Table 1.

**Work on articles containing radioactive material or generating radiation**

25 Safety Data Sheets are to be made available to all persons coming into contact with an article containing radioactive material. Before any work is undertaken on items containing radioactive material advice should be sought from the RPA as strict conditions are applied to working with radioactive material to avoid unnecessary radiation exposure.

**Return of equipment containing radioactive material**

26 All equipment loaned by the MOD to a Museum is to be returned to the unit or establishment from which the museum obtained the equipment when it is no longer required. If this is not possible, the equipment is to be returned to an appropriate MOD unit or establishment. Further information can be obtained from the focal point for radiation safety.

**Disposal and transport of articles containing radioactive material**

27 Articles containing radioactive material that are to be transported on public roads have to be packaged and transported in accordance with the requirements of JSP 800 Vol. 4b. Similarly, strict conditions apply to the disposal of articles containing radioactive material. Sources of advice on the transport and disposal of articles containing radioactive material are given in Paragraph 14 and in Leaflets 10, 11 and 12 respectively.

**HAZARD**

28 Because of the wide variety of exhibits found in museums and local display within the MOD it is not realistic to detail the precise nature of the radiation hazard for all circumstances. Annex A lists typical types of museum exhibit that may contain radioactive material. JSP 392 contains leaflets written specifically to address the radiation protection matters associated with many of these items. Once the type of radioactive material or radiation emitted has been identified (e.g. thorium alloy, radium luminised item, X-ray generator, GTLS), then an appropriate leaflet from JSP 392 should be consulted if available. Where no specific leaflet is appropriate advice should be sought from the appointed RPA.

**LEGAL AND MOD MANDATORY REQUIREMENTS**

Table 1 Legal and MOD mandatory requirements

Requirement	Applicable	Comments	Related leaflet*
Relevant environment agency authorisation	✓	Only where exhibits are declared as waste.	3
HSE notification	✓	Keep a copy indefinitely. HSE will not usually provide acknowledgement of this.	3
Relevant environment agency notification	✓	Unless an exemption order applies.	3
Risk assessment	✓		2
Restriction of exposure	✓	Comply with local orders – see annex of leaflet 16.	4
PPE	✓	Eg gloves if handling damaged or potentially contaminated exhibits.	4
Maintenance of radiation engineering controls	✗		
Contingency plans	✓	See Leaflet 40.	40
Designation areas	✗	Requirement unlikely – seek advice of RPA.	
Monitoring	✓	Radiation and contamination monitoring required if radium luminised items present.	8
Training for users	✓	Information and Instruction only.	15
Local orders	✓	See annex of Leaflet 16.	16
RPS / WPS	✓	Dependant on holdings – seek RPA advice.	3
Storage	✓	In a segregated, labelled and secure container/cupboard.	9
Accounting	✓	Regularly mustered, recorded and retained for 2 years. Recorded on a source list, copy retained for 2 years. Recorded on Dstl Annual Holdings Return, copy retained for 1 year.	9
Leak testing	✓	The procedure for leak testing may be detailed in the operator/maintenance manual or contact the RPA for details.  Details of the leak test undertaken and the results obtained are to be retained for 2 years.	-
Personal dosimetry	✗ (but see comment)	Not generally. Seek advice of RPA	
Transport	✓	Museum items can generally be transported as excepted packages unless multiple items.	10, JSP 800 Vol. 4a & Vol. 4b
Disposal	✓	Return to stores. Keep records for 2 years	12

\*JSP 392, unless otherwise stated

**LEAFLET 31 ANNEX A****TYPES OF ITEMS CONTAINING RADIOACTIVE MATERIAL**

1 A listing of items that may contain radioactive material is as follows. This list is intended as a guide only and is not exhaustive. Museums should note that items from other countries can also contain radioactive components.

- Compasses (including escape compasses sometimes incorporated into uniforms etc.)
- Radios
- Gun sights
- Camera lenses and filters
- Aircraft instruments and gauges
- Vehicle instruments and gauges
- Ship instruments
- Wrist watches
- Thermal imaging equipment
- Clocks
- Aircraft engines
- Radars
- Electronic Valves
- Smoke Detectors
- Aldis lamps
- Telephones and switchboards
- Other articles painted with luminous paint

2 Further information on articles containing radioactive material referenced by NATO stock number or Section and Reference Number should be sought from JSP 515 Hazardous Stores Information System in the first instance, and additional information is held by Dstl RPA Body including some non-UK sourced items. Details can be obtained through Service focal points.

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## LEAFLET 31 ANNEX B

## GUIDANCE ON THE APPLICATION OF RSA93 AND ANNUAL HOLDINGS RETURNS TO MUSEUMS

Table	Page
B1 Factors influencing the need for relevant environment agency registration/notification and completion of Annual Holdings Return.....	1

1 The requirement for notification (MOD) or registration (Commercial) with the relevant environment agency for holding radioactive material at a museum depends on a number of factors. These factors include who operates or funds the museum, whether it is located on a MOD establishment, whether the museum is staffed by MOD personnel, whether it uses paid or volunteer personnel and whether an entrance fee is charged. Table B1 below sets out these factors and provides pragmatic guidance on the requirement.

2 For most circumstances this can be summarised in the following statements:

2.1 A museum operated either by MOD personnel or on a MOD site (whether operated by MOD or not) requires to complete an Annual Holdings Return.

2.2 A museum operated by an independent organisation is required to submit a relevant environment agency registration wherever employees of that organisation are paid, or where an entrance fee is charged.

3 In all other cases MOD requires the submission of an appropriate environment agency notification.

4 Generally museums will keep or transfer radioactive items rather than dispose of radioactive waste. Hence the table below is aimed at situations where a Notification or Registration is required, see Leaflet 3. Where radioactive waste is to be accumulated or disposed of then the term Notification or Registration should be changed to Approval or Authorisation respectively.

Table B1 Factors influencing the need for relevant environment agency registration/notification and completion of Annual Holdings Return (AHR)

MOD operated or independent?	Museum on MOD site?	MOD funded?	MOD employees?	Museum paid employees?	Notification or Registration	Annual Holdings Return required?
MOD	✓	✓	✓	✗	Notification	✓
MOD	✗	✓	✓	✗	Notification	✓
Independent	✓	✓	✓	✗	Notification	✓
Independent	✓	✗	✓	✓	Registration	✓ <sup>2</sup>
Independent	✓	✗	✗	✓	Registration	✓ <sup>2</sup>
Independent	✓	✗	✗	✗	Notification <sup>1</sup>	✓ <sup>2</sup>

Note:

<sup>1</sup> MOD has a duty of care towards museum as it is located on MOD premises.

<sup>2</sup> Ideally the museum should have a separate AHR, which should be sent to the MOD site's RSO for action.

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