

# LEAFLET 31

## MUSEUMS

### CONTENTS

#### Paragraph

- 1 Scope
- 2 Introduction
- 4 Statutory requirements
- Duties
- 5 Commanding Officer/Head of Establishment (CO/HoE)
- 8 Radiation Safety Officer (RSO)
- 9 Radiation Protection Supervisor (RPS)
- 10 Workplace Supervisor (WPS)
- 11 Employees
- 12 Voluntary Groups and Individuals
- 13 Radiation hazard from museum exhibits
- 16 Radiation protection advice and visits
- 18 Receipt of articles containing radioactive material from MOD units
- 20 Arrangements for articles gifted or loaned by members of the public
- 21 Environmental Regulators' noting letters, letters of approval and charges
- 22 Risk assessments and contingency plans
- 24 Local Orders for radiation protection
- 25 Appointments and training
- 27 Display and storage of exhibits
- 30 Radiation monitoring surveys
- 31 Accounting for articles containing radioactive material
- 32 Work on articles containing radioactive material or generating radiation
- 33 Return of exhibits loaned by MOD
- 34 Return of exhibits loaned by a member of the public
- 35 Sale, gifting and disposal of exhibits
- 36 Transport of articles containing radioactive material
- 37 Incident Reporting
- 38 Records

#### Annexes

- A Types of items containing radioactive material or producing ionising radiation
- B Guidance for Museums on the application of EPR10/RSA93 and Annual Holdings Return

#### Table

- 1 Legal and MOD mandatory requirements

## Scope

1 This Leaflet is applicable to MOD units and establishments with responsibilities for museums and those who provide 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 applies directly or is applied indirectly through parallel arrangements designed to achieve equivalent standards:

- Ionising Radiations Regulations 1999 (IRR99) (apply directly).
- The Environmental Permitting (England & Wales) Regulations 2010 (EPR10) (as amended) (parallel arrangements)
- Radioactive Substances Act 1993 (Scotland & Northern Ireland) (RSA93) (as amended) (parallel arrangements).
- Carriage of Dangerous Goods and Transportable Pressure Equipment Regulations 2009 (apply directly).

## Duties

### Commanding Officer/Head of Establishment (CO/HoE)

5 The Commanding Officer/Head of Establishment (CO/HoE) 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/HoE 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 At the discretion of the CO/HoE, the museum may be staffed by volunteers. Where a CO/HoE allows a voluntary group or individuals to operate on a MOD site, they are personally liable for ensuring that the operations of volunteers do not adversely affect the health and safety of staff on the site or result in a breach of legislation. CO/HoEs are advised to have a written agreement with the group or individuals confirming that a condition of their continued presence is that health and safety and other legislation (detailed under paragraph 4, Statutory Requirements) is applied to their operations.

7 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)**

8 If appointed, and where authority has been delegated, the RSO will normally discharge the duties of both the CO and RSO as detailed in Leaflet 39. This will also include the actions outlined in this Leaflet.

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

9 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)**

10 In museums where there is no requirement to appoint an RPS, a WPS should be appointed with duties to ensure that work is carried out in accordance with the museum's 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**

11 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.

### **Voluntary Groups and Individuals**

12 Volunteers who are permitted onto MOD premises to work in the museum do so at the discretion of the CO/HoE and are required to comply with all local, MOD mandatory and statutory requirements for health, safety and the environment.

## **Radiation Protection Arrangements for Museums**

### **Radiation hazard from museum exhibits**

13 Because of the wide variety of exhibits found in museums and local displays within the MOD it is not realistic to detail the precise nature of the radiation hazard for all circumstances. Annex A lists typical museum exhibits that may contain radioactive material.

14 One of the most common sources of radioactivity on museum exhibits 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; therefore luminosity should not be used as a primary indicator to establish whether an item is radioactive.

15 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.

## **Radiation Protection Advice and Visits**

16 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 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 its legal obligations. The RPA, usually the Dstl Environmental Sciences RPA Body (Dstl ESD), 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.

17 Advice can be sought from Dstl ESD via telephone: Mil 9380 68130 or 02392 768130) or email: [LHPINM@dstl.gov.uk](mailto:LHPINM@dstl.gov.uk). Additional information on equipment containing radioactive material can also be found on the Dstl ESD radiation protection web page: <http://collab.dstl.r.mil.uk/DRPA/Pages/default.aspx>

## **Receipt of Articles Containing Radioactive Material from MoD Units**

18 Before articles containing radioactive material are accepted (including from MOD ships, units or establishments) museums are to request Safety Data Sheet(s) or prior risk assessments from the providers. Where 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.

19 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 15.

## **Arrangements for Articles Gifted or Loaned by Members of the Public**

20 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.

## **Environmental Regulators' Noting Letters, Letters of Approval and Charges**

21 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 under the EPR10/RSA93. 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/Radioactive Waste Advisor ((RWA) usually Dstl ESD) during their visit or through the focal point for radiation safety. Annex B contains generic guidance for museums on the requirement for Notification (or Permitting for non-MOD museums) under EPR10/RSA93.

## **Risk Assessments and Contingency Plans**

22 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. Although less common as museum exhibits, equipment capable of generating radiation, such as X-ray sets and some high voltage equipment should also be subject to risk assessment. 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 17.

23 As an outcome of any Risk Assessments, Contingency Plans for radioactive items will be required to mitigate against any risks identified e.g. in the event of a breakage and a fire. Details for contingency planning are in Leaflet 40 and advice is available from the RPA.

## **Local Orders for Radiation Protection**

24 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. Contact the RPA for further advice.

## Appointments and Training

25 A suitable person should be appointed as an RPS or WPS and trained to manage the items containing radioactive material. The requirements for appointments and training are set out in Leaflet 15. Guidance should be sought from the appropriate Service focal point or the appointed RPA if necessary.

26 Local training is also required for museum staff/volunteers that may come into contact with radioactive material. In conjunction with the localise training, these museum staff/volunteers should also sign and date the local orders (see paragraph 24) as evidence that they have been read and understood.

## Display and Storage of Exhibits

27 Exhibits that contain radioactive material are to be displayed so they cannot be handled by visitors and should be arranged so that radiation doses to visitors are as low as reasonably practicable (ALARP). The dose rate in areas that visitors have access to, wherever reasonably practicable, should not exceed  $1\mu\text{Sv/hr}$ . Any trefoils on exhibits should, where practicable, be discreetly positioned away from public view.

28 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  $7.5\mu\text{Sv/hr}$  and wherever reasonably practicable are to be less than  $1\mu\text{Sv/hr}$  (although up to  $2.5\mu\text{Sv/hr}$  might be permissible for an existing facility). Leaflet 9 provides further guidance on the storage of radioactive items.

29 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.

## Radiation Monitoring Surveys

30 It may be necessary to undertake radiation monitoring surveys of display and storage areas. The RPA will advise if this is necessary and recommend suitable monitoring instruments.

## Accounting for Articles Containing Radioactive Material

31 A record must be kept 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. The holdings are also to be recorded on the Annual Holdings Return (see Annex B paragraph 2.2).

## **Work on Articles Containing Radioactive Material or Generating Radiation**

32 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 (including the need for a prior risk assessment) are applied to working with radioactive material to avoid unnecessary radiation exposure.

## **Return of Exhibits Loaned by the MoD**

33 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 or RPA.

## **Return of exhibits loaned by a member of the public**

34 If an item containing radioactive material is returned to a member of the public, information about the hazards associated with the item must be provided to the owner. Contact the RPA for advice.

## **Sale, Gifting and Disposal of Exhibits**

35 The sale and gifting of items containing radioactive material is detailed in Leaflet 11 and disposal of same in Leaflet 12. In brief, it is MOD policy not to sell or gift items that contain Radium, but to send these items for authorised disposal. Strict conditions apply to the disposal of radioactive material and advice should be sought from the RPA.

## **Transport of Articles Containing Radioactive Material**

36 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. Advice on the transport of radioactive material should be sought from the RPA.

## **Incident Reporting**

37 Actions to be taken in the event of an incident related to radioactive items is detailed in Leaflet 14 and includes reporting of suspected radiation over-exposure, skin contamination, intake by inhalation or ingestion as well as loss, theft or spillage of an item.

## **Records**

38 Records are to be kept in accordance with MOD record retention policy (see JSP 441 Defence Records Management Policy & Procedures and Chapter 3 Record Keeping of JSP 392 Volume 1).





## Legal and MoD Mandatory Requirements

Table 1 Legal and MOD mandatory requirements

Requirement	Applicable	Comments	Related leaflet*
Environment Agency approval	✓	Only where exhibits are declared as waste.	3
HSE notification	✓	Keep a copy indefinitely. HSE will not usually provide acknowledgement of this.	3
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 of 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	See comment	Not generally. Seek advice of RPA	
Sale and Gifting	✓	Do not sell or gift items that contain Radium	11
Disposal	✓	Return to stores. Keep records for 2 years	12
Transport	✓	Museum items can generally be transported as excepted packages unless multiple items.	10, JSP 800 Vol. 4a & Vol. 4b
Incident Reporting	✓	For personal and environment exposure to radiation	14

\*JSP 392, unless otherwise stated

## Leaflet 31 Annex A

### Types of Items Containing Radioactive Material or Producing Ionising Radiation

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
- X-ray equipment
- Monitoring Instruments containing a check source or luminised dial.

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 ESD including some non-UK sourced items. Details can be obtained through Service focal points.

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## Leaflet 31 Annex B

### Guidance for Museums on the Application of EPR10/RSA93 and Annual Holdings Returns

1 The requirement for Notification (MOD) or Permit/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. The fact that a museum submits an annual holding return should not be taken to mean that a permit/registration (as opposed to a notification) is not required. See Table B1 below.

2 For most circumstances (subject to the minimum quantities of radioactive material being exceeded) this can be summarised in the following statements (to be applied independently):

2.1 An EA Permit or SEPA Registration is required if a museum is operated by an independent organisation and either the employees of that organisation are paid, or an entrance fee is charged. In all other cases MOD requires to submit an EA Notification.

2.2 An Annual Holdings Return is required for a museum operated by MOD personnel or on a MOD site (irrespective of who operates the museum).

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

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

MOD Operated or Independent?	On MOD Site?	MOD Funded?	MOD Employees?	Museum Paid Employees?	Entry Fee or Donation Levied?	Notification or Permit/Registration	AHR Required?
M	✓	✓	✓	n/a	n/a	N	✓
M	x	✓	✓	n/a	n/a	N	✓
I	✓	✓	✓	x	x	N	✓
I	✓	✓	✓	x	✓	P/R <sup>2</sup>	✓
I	✓	x	✓	✓	n/a	P/R	✓ <sup>3</sup>
I	✓	x	x	✓	n/a	PR	✓ <sup>3</sup>
I	✓	x	x	x	x	N <sup>1</sup>	✓ <sup>3</sup>
I	✓	x	x	x	✓	P/R <sup>2</sup>	✓ <sup>3</sup>
I	x	x	x	✓	n/a	P/R	x
I	x	x	x	x	x	n/a	x
I	x	x	x	x	✓	P/R <sup>2</sup>	x

#### Notes to Table B1

1. Because MOD has a duty of care as located on MOD property
2. Unless all monies raised are paid to MOD
3. Ideally the museum should have a separate AHR, but should be sent to Mod site RSO for action

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