LEAFLET 3

INTRODUCTION AND USE OF RADIOACTIVE SUBSTANCES AND RADIATION GENERATORS

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Scope

1 This Leaflet covers the agreement for and assessment of the introduction and use of sources of ionising radiation including radioactive substances. The following information describes the legal and MOD requirements for the introduction and use of such items, materials and sources of radiation, and the procedure to ensure that these requirements are met. The requirement to notify regulatory bodies (Health and Safety Executive (HSE), Environment Agency (EA) for England and Wales, Scottish Environment Protection Agency (SEPA) for Scotland and Environment and Heritage Service for Northern Ireland (EHSNI)) or MOD authorities of the occurrence of radiation incidents, accidents, and over exposures is addressed in Leaflet 14.

Introduction

2 Before any source of ionising radiation is introduced, permanently or temporarily, (including for trials) into the unit or establishment, a number of requirements must be met.

3 The Radiation Protection Adviser (RPA) must be consulted at the earliest opportunity to advise on regulatory issues associated with the introduction into service of a new source, or modifications to an existing source, of ionising radiation.

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:

a. Justification of Practices Involving Ionising Radiation Regulations 2004 (parallel arrangements);

b. Ionising Radiations Regulations 1999 (IRR99) (apply directly);

c. The Environmental Permitting (England & Wales) Regulations 2010 (ERP10) (as amended) (parallel arrangements);

d. Radioactive Substances Act (Scotland & Northern Ireland) 1993 (RSA93) (as amended) and associated Exemption Order (parallel arrangements);

e. High-activity Sealed Radioactive Sources and Orphan Sources Regulations 2005 (HASS) (Scotland & Northern Ireland only) (parallel arrangements);

f. Radiation (Emergency Preparedness and Public Information) Regulations 2001 (REPPIR) (apply directly);

g. Medicines (Administration of Radioactive Substances) Amendment Regulations 2006 (apply directly).

5 The requirements for notification, approval and assessment to meet MOD policy and these regulations are set out in the following paragraphs. Advice is to be sought from the appointed RPA on the scope of application of any particular legislation.

Duties

Commanding Officer and Head of Establishment (CO/HoE)

6 The 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. The CO/HoE's authority (but not responsibility) for radiation safety management may be delegated to appropriate personnel, such as a Radiation Safety Officer (RSO).

Radiation Safety Officer (RSO)

7 If appointed and where authority has been delegated, the RSO will normally discharge the duties of the CO/HoE with respect to application for any notification or approvals. This will include the actions outlined below under specific legislation.

Radiation Waste Adviser (RWA)

8 The CO/HoE has a duty to appoint an RWA to ensure compliance with the requirements of any approval/permit issued under radioactive waste legislation. The RWA for most units and establishments outside the nuclear programmes is Dstl.

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 addresses the requirements of this Leaflet.

Workplace Supervisor (WPS)

10 In areas where there is no requirement for an RPS, a WPS should to be appointed to carry out duties that ensure work is carried out in accordance with local orders for radiation safety. In addition to those duties, a WPS may be required to assist in the preparation of the submissions required by this Leaflet.

Employees

11 It is the responsibility of all employees to ensure that any changes to holdings of or work with radioactive material, or radiation generators are notified to the RSO or other appropriate persons and that all relevant local instructions are complied with.

Route for Notification and Agreement for Introduction or Modification

12 The requirements of the procurement process to be followed for equipment incorporating sources of ionising radiation are set out in Leaflet 1, particularly with reference to Projects where DE&S have responsibility.

13 Units, establishments and sponsors of new equipment are to direct their requests for agreement to introduce or modify equipment through the Top Level Budget (TLB) Safety Authority (e.g. CESO for the TLB), ensuring that potential issues for radiation safety are raised and an RPA is consulted as appropriate. Routinely, no radioactive material should be procured until it is confirmed (generally by Dstl) that any necessary notifications or approvals are in place. The request for introduction is to include the following information:

13.1 Name and address of the establishment;

13.2 Brief description of the proposed introduction or modification;

13.3 Proposed date of introduction;

13.4 Prior risk assessment (see Leaflet 2).

14 For installations e.g. radiography facilities, approvals may be conditional upon confirmatory radiation measurements being taken as part of the commissioning or acceptance procedure.

15 Any request for introduction is to be made at an early stage (before any procurement action commences) and is to include a suitable and sufficient prior risk assessment, where required (see Leaflet 2). Where the proposal concerns the design of new equipment, the responsibility lies with the MOD design authority to seek approval for the introduction through TLB Safety Authority, ensuring that radiation safety is addressed, before the detailed design is undertaken.

16 Sponsors of new equipment or components (whether to be introduced permanently or on trial), or individuals making changes to existing apparatus that could have a radiation health and safety implication, are also to inform and seek approval through relevant channels, including the RPA (see Leaflet 1). This is to be undertaken at an early stage (before any firm commitments are entered into) and is to either include a new prior risk assessment, or an updated version of a previously written prior risk assessment (see Leaflet 2).

Actions Required Under Specific Legislation

Justification of Practices Involving Ionising Radiation Regulations 2004 (JPIIRR)

17 Whilst these Regulations do not apply directly to defence activities, it is recognised that justification is the first principle of radiological protection, as recommended by the International Commission on Radiological Protection (ICRP). In accordance with the Secretary of State's Policy Statement, the MOD will develop arrangements that are, so far as reasonably practicable at least as good as those required by these Regulations.

18 The Department for Environment, Food and Rural Affairs (DEFRA) has published a list of existing practices that pre-date the requirement of the Regulations on the Gov.UK website: (https://www.gov.uk/government/policies/managing-the-use-and-disposal-of-radioactive-and-nuclear-substances-and-waste). Most of the non-nuclear activities carried on by MOD will come under one of these existing practices. Practice has a very wide, generic meaning and does not relate to any particular site or location. It will therefore be unusual for there to be a new type or class of practice.

19 Any unit or organisation intending to introduce a new type or class of practice within the meaning of the Regulations is to notify the Occupational Health and Safety and Radiation Protection team, DSEA, MOD Main Building, Whitehall, LONDON, SW1A 2HB of details of the activity in good time before its proposed introduction date. Additionally, DSEA is to be notified if new and important evidence about an existing practice's efficacy or consequences is acquired.

Ionising Radiations Regulations 1999 (IRR99)

Authorisation of specified practices (Regulation 5)

20 A prior authorisation granted by the HSE must be obtained in writing by each unit or establishment carrying out the following types of work, for the first time:

20.1 The use of X-ray generators for -

20.1.1 Industrial radiography;

20.1.2 The processing of products;

20.1.3 Research;

20.1.4 The exposure of persons for medical treatment.

20.2 The use of an accelerator, except electron microscopes.

21 The HSE has issued generic prior authorisations for X-ray machines (Annex A) and accelerators (Annex B). They contain conditions to be met by the above categories of work. If a unit or establishment can fulfil all of the criteria contained in the appropriate generic prior authorisation and a copy of it is held by the unit or establishment, no further action is required. Further equipment specific guidance is located in the appropriate JSP392 Leaflets. Such documents are to be made available to HSE inspectors and RPAs during their visits. Units and establishments will be expected to demonstrate compliance with the criteria they contain. X-ray machines which are used for security purposes do not require prior authorisation.

22 Units and establishments who undertake the above work but who are unable to meet the generic authorisation criteria are to apply for an individual authorisation from the HSE before undertaking any practice listed in paragraph 20. Advice on the need for such a prior authorisation and the procedure for seeking it is to be sought from the RPA. Copies of the application and correspondence received from the HSE are to be copied to the RPA. For units and establishments overseas, applications are to be made through normal channels, seeking advice from the RPA on appropriate standards (i.e. those of the host nation or UK) to be met as appropriate.

23 Material changes in circumstances or to working practices related to the authorisation are to be notified to the HSE. Advice on whether changes should be notified to the HSE is to be sought from the RPA.

Notification to HSE of specified work (Regulation 6)

24 Units and establishments within Great Britain are to notify the HSE of all work involving ionising radiations. For establishments in Northern Ireland, the Health & Safety Executive Northern Ireland is to be notified of all work involving ionising radiations. This will normally include any work with radioactive sources and other radioactive substances (including radioactive valves and equipment with radioactively luminous components), X-ray sets, accelerators and other radiation generators (including equipment such as radar equipment where ionising radiation (parasitic x-rays) is produced incidental to their intended use). Such notifications are to be submitted at least twenty-eight days prior to commencing the work for the first time or such shorter time as the regulators may agree. In the particular case of work in radon atmospheres or with naturally occurring radionuclides, notification is to be made as soon as possible after the work has commenced. The procedure for notification is given at Annex C.

25 Issues of security arising from the provision of information to the HSE are to be raised through normal staff channels. For units and establishments with more than one employer, the local officer in overall control of the MOD site shall carry out the notification to HSE for the MOD work at that site or establishment. Overseas establishments are to notify the relevant competent authority where appropriate. Advice is to be sought from the RPA as necessary.

26 There are some exemptions from the requirement to notify the HSE of work with ionising radiations. The types of practices that are exempt from notification are listed in Annex D. Categories of equipment that are of a type approved by the HSE are exempt from the notification requirements, for example many smoke detectors in common use are exempt. Further advice on the need to supply notification is to be obtained from the normal staff channels, or with their agreement, from the RPA.

27 In addition to submitting the notification to the HSE a copy of the notification is to be sent to:

27.1 The TLB Safety Authority (e.g. CESO for the TLB);

27.2 Dstl Environmental Sciences Radiation Protection Group, (Dstl ESD) Institute of Naval Medicine, Alverstoke, Gosport, Hants PO12 2DL

27.3 The RPA (if not Dstl);

28 A further notification will be required immediately following any material change to the particulars notified to the HSE. Again the information is to be copied to the authorities in the paragraph above.

29 Similarly, HSE are to be notified when work with ionising radiation ceases on site.

Environmental Permitting (England & Wales) Regulations 2010 (EPR10) (as amended) and the Radioactive Substances Act (Scotland & Northern Ireland) 1993 (RSA93) (as amended) and associated Exemption Order

Application for Notifications and Approvals to EA, SEPA and EHSNI

30 EPR10/RSA93 does not apply to premises occupied on behalf of the Crown for defence purposes. However, MOD has a policy to implement parallel arrangements to those required by the Act. Dstl ESD is tasked to provide advice to CO/HoEs on how they comply with such arrangements. When an application for notification or approval has been made and granted, the key to achieving compliance is to read, understand and act on the conditions contained within any permit (notification or approval) issued or exemption order applied.

31 To enable MOD to apply parallel arrangements to those set out under EPR10/RSA93, Dstl ESD maintains a database of radioactive material holdings for all units and establishments. In order to ensure that this database is accurately maintained, units and establishments are to comply with the following procedure:

31.1 In January of each year Dstl ESD will send out an Annual Holdings Return to all units and establishments that will detail any radioactive material previously notified to Dstl ESD;

31.2 The CO/HoE is responsible for ensuring that the information on the Annual Holdings Return is updated, complete and accurate (nuclear weapons and ammunition containing DU should not be declared). The Annual Holdings Return (including a nil return) is to be returned to Dstl ESD by 31 March of each year. The full detail on the requirements for Annual Holdings Returns is detailed in Leaflet 9.

32 In addition to the above, within one month of introduction of new types of radioactive materials, a unit or establishment is to submit a revised list of radioactive holdings to Dstl ESD, as detailed in paragraph 31.

33 As a result of applying for a notification to the appropriate environment agency, each unit or establishment is issued with a notification detailing the authorised holdings of radioactive materials. Dstl ESD forwards a copy of this notification to the RSO for retention by the unit or establishment. Standard conditions are set out at the beginning of all notifications and must be complied with. It is advised that units liaise closely with their RPA with regards to compliance.

34 Revised notifications are issued to units and establishments when amendments to authorised holdings are required and are not usually re-issued on an annual basis.

35 New notifications and approvals are issued in the name of the MOD. If there is a change in the unit holding the radioactive material at the site, the new unit is to notify Dstl ESD and the unit's RPA of the change of name forthwith. Both units involved must muster their radioactive holdings and produce a written record, which they are to retain for a minimum period of 2 years from the date of the last entry (see Leaflet 9). However, if a unit changes its name, an amendment to the EPR/RSA documentation will not be required until the normal review falls due at which point the name will be amended to the MOD.

36 Radioactive materials held at units and establishments in accordance with an exemption are exempt from the requirement to apply for a notification, see Annex I. However, they are not exempt from the other requirements of the EPR10/RSA93; in particular, the requirement to keep records. *All* radioactive materials, including those exempt from the need for a notification, are to be recorded and accounted for in accordance with Leaflet 9. (It should be noted however that exemption applies only to the storing and accumulation of radioactive materials under the requirements of the respective environmental legislation. Notification to the HSE (or HSE NI) under IRR99 for the use of radioactive materials or radiation generators IS required (see paragraphs 24 – 29 herein.)

37 In the United Kingdom Dstl ESD will act as central focal point for payment in support of notifications and approvals direct to the appropriate regulatory authority on behalf of Commanding Officers, Chief Executives, Heads of Establishment and Directors.

Public disclosure of information

38 The regulatory authorities (EA, SEPA, and EHSNI) place applications for notifications for open sources (but not sealed sources) and approvals on the public record unless specific instructions to the contrary are given. Dstl ESD is to be advised of any reasons for withholding information from the public record as soon as possible. In the absence of any information to the contrary, Dstl ESD will allow approvals only to be placed on the public register.

39 Notwithstanding the above, even where information has been supplied to the regulatory authority but kept off the public register, then that authority may still be obliged to release the information in responding to a Freedom of Information or Environmental Impact Assessment enquiry. A statement to this effect will be sent to all units and establishments with the Annual Holdings Return in January of each year. The regulatory authorities do not place information relating to notifications for sealed or mobile sources on the public register.

Pollution inventory reporting

40 The Environment Agency has expanded the scope of the Pollution Inventory for England and Wales to include radioactive waste. Where a unit or establishment holds an approval for the accumulation and disposal of radioactive waste, the CO/HoE is responsible for ensuring that a Pollution Inventory reporting form (supplied by the EA) is completed and returned on an annual basis. Copies of the forms are to be retained as they will be required from time to time for incorporation into MOD statistics on radioactive waste disposal.

Inspections by the environmental regulatory authorities

41 The environmental regulatory authorities are authorised to inspect those units and establishments with notifications or approvals. CO/HoEs must be provided with at least 48 hours notice of an inspection. The visiting inspectors are to be given the fullest co-operation at all times. The CO/HoE is normally to inform appropriate TLB Safety Authority (e.g. the CESO) and Dstl ESD prior to such visits taking place. The CO/HoE should inform DSEA, their CESO and the Dstl ESD of the outcome of any inspection.

42 Not all inspectors are security cleared for access to classified information and must not be afforded such access unless they are known to have the appropriate security clearance. Inspectors must not, under any circumstances, be made aware of the presence of nuclear weapons or their components during a site inspection. In cases of doubt, the regulatory authority shall be denied access and guidance sought, in the first instance, from DSEA.

Ships and overseas establishments

43 Notifications and approval documents are not required for radioactive material held by HM Ships (other than shore establishments) or overseas Service units and establishments. However, in order to ensure that a complete database of radioactive material is maintained at Dstl ESD, action is to be taken in accordance with paragraphs 31.1 to 31.2.

Breaches of arrangement to hold/dispose of radioactive substances

44 Units or establishments that, as a result of an inspection by environmental regulatory authorities, are informed that they are not fully compliant with a notification, approval or exemption Order must report such non-compliances through the accident and incident reporting systems within TLBs business processes. Copies of letters etc., specifying enforcement action must be copied to the Dstl RPA Body.

45 Any MOD unit transferred to the private sector thus becoming a commercial company is no longer exempt from the requirements of the EPR10/RSA93 and will need to formally register, with the environmental regulatory authorities, its premises in respect of keeping and use of radioactive material and the accumulation and disposal of radioactive waste. Prior to transfer of assets, the unit is to notify Dstl ESD of the transfer of radioactive material and waste. The unit is to produce a muster record and preserve it in accordance with the requirements of paragraph 61 unless an alternative period is specified in the registration document.

46 Disposal of radioactive material is addressed in Leaflets 11 and 12.

High Activity Sealed Radioactive Sources and Orphan Source (HASS) requirements

47 HASS requirements in England and Wales are now incorporated into the EPR10 regulations. The requirements for Scotland and Northern Ireland are covered by the High Activity Sealed Radioactive Sources and Orphan Source Regulations 2005 (HASS).

48 High activity sealed sources (see Annex I) are subject to special authorisation, control and transfer. In addition to the MOD accounting arrangements set out in Leaflet 9, high activity sealed sources are to be accounted for on a HASS Record Form. The form is to be obtained from the relevant environment agency and, once completed, should be forwarded to Dstl ESD as well as the agency. HASS are to be identified separately on the Annual Holdings Return as advised by Dstl ESD. RPA advice must be sought before acquiring a high activity sealed source.

49 Other than at MOD nuclear authorised sites, arrangements for notification of the environment agencies described under EPR10/RSA93 above have been extended to encompass the additional requirements for HASS. The main features which extend or differ from the EPR10/RSA93 parallel arrangements are:

49.1 An application for a HASS notification is to be made by the prospective holder direct to the relevant environment agency. The application must include the documentary evidence required by the relevant environment agency. The practice or task for which the HASS will be used shall not commence until the notification has been certified by the relevant environment agency;

49.2 The certificate of HASS notification, when received, will be accompanied by a set of terms and conditions including the requirement to forward certain records to the relevant agency. Compliance with these terms and conditions is mandatory under the parallel arrangements;

49.3 Arrangements for the physical security of HASS are, so far as reasonably practicable, to parallel those in place on civil sites. The document Security Requirements for Radioactive Sources produced by the National Counter Terrorism Security Office (NaCTSO) sets out the requirements for civil sites. While these explicitly do not apply to MOD, the Secretary of State requires that equivalent standards be applied (JSP815). While the requirements of JSP 440 will need to be considered, advice on meeting physical security requirements is to be sought from MOD CTSAs through the Principal Security Adviser of the TLB concerned.

50 Arrangements for the control of HASS held by MOD nuclear authorisees mirror those applicable to civil nuclear licensees. The arrangements are administered by the Defence Nuclear Safety Regulator (DNSR). These arrangements do not extend to mobile HASS held by authorisees or to HASS held beyond the nuclear authorised site boundary – in these cases, the normal parallel arrangements pertaining to non-nuclear sites apply with HASS reports being submitted to the appropriate environmental regulator as a condition of the notification.

51 Any unit or establishments holding HASS should expect to be visited on an annual basis by the regulatory authority. The CO/HoE should inform the appropriate TLB Safety Authority (e.g. the CESO), the RPA and the NaCTSO Police Officer prior to such visits taking place. The CO/HoE should inform DSEA, their CESO and the Dstl ESD of the outcome of any inspection

Radiation (Emergency Preparedness and Public Information) Regulations 2001 (REPPIR)

Provision of Hazard Identification and Risk Evaluation Documentation to HSE

52 Where radioactive materials in excess of the quantities contained in Annex E are held on premises or transported then the CO/HoE or carrier, as appropriate, shall make or ensure that a Hazard Identification and Risk Evaluation (HIRE) has been made and a report produced. This will normally be made in collaboration with the RPA and will affect very few units and establishments. The assessment is to demonstrate that all hazards arising from the work with the potential to cause a radiation accident have been identified and the nature and the magnitude of risks to employees and other persons arising from those hazards have been evaluated. Where the assessment shows that a radiation risk to employees or others exists from an identifiable radiation accident, the operator or carrier is to take all reasonably practicable steps to prevent such an accident and to limit the consequences of any such accident that could occur.

53 The report of the HIRE is to be sent direct to HSE but guidance and direction should be obtained by contacting the RPA. Any HIRE report for the Naval Nuclear Propulsion Programme (NNPP) should also be copied to the Defence Nuclear Safety Regulator (DNSR). The information required by REPPIR is given in Annex G. For new operators the HIRE report is to be forwarded to the HSE at least 12 months before commencement of work and for transport operations the carrier is to send the report to HSE at least 28 days before commencement of the activity. The requirement to undertake a HIRE does not apply to foreign nuclear powered warships due to the exemption issued by the Secretary of State. There is no requirement, under the current regulations, for HIRE documentation to be submitted to Government Departments in Gibraltar.

54 The HIRE is to be reviewed every three years or whenever there is a material change in the work with ionising radiations. This may require a further HIRE or, where there are no changes the CO/HoE (or the carrier), shall sign a declaration to that effect. The revised HIRE or declaration is to be made to the HSE within 28 days of the review or declaration being made.

55 Other actions may be required arising from the requirements of REPPIR. They include, making the HIRE publicly available, the preparation of an operator's emergency plan, use of emergency exposures, supply of sufficient information to local authorities to enable them to develop an offsite plan, the testing and exercising of plans at regular intervals and provision of prior information for members of the public who may receive a whole body dose of 5 mSv in a year following the radiation emergency (see Annex H). Units and establishments within the NNPP and nuclear weapons programmes make their own arrangements, and advice on REPPIR issues for these units and establishments is to be sought from the authority given in paragraph 53. All other establishments and units, to whom REPPIR is applicable, must seek advice from their RPA.

56 The overall arrangements for the provision of information to the HSE are given in the General Agreement between MOD and HSE (see JSP 375). Where applicable, a copy of the REPPIR HIRE and the operator's emergency plan is to be sent to the HSE. Where there are issues of industrial, commercial or personal confidentiality, public security or national defence or other concerns, the unit or establishment is to discuss the matter with DSEA who will consult with the relevant MOD authorities. In most circumstances special arrangements to enable appropriate HSE inspectors to examine classified information can be made.

Medicines (Administration of Radioactive Substances) Amendment Regulations 2006

57 This section applies only if it is intended to administer radioactive substances to persons for research purposes.

58 Only doctors and dentists who have a valid certificate issued by the Administration of Radioactive Substances Advisory Committee (ARSAC) shall administer radioactive substances to patients for research or to other persons such as volunteers for research projects. The necessary application forms, together with the subject Notes of Guidance can be obtained from:

ARSAC Support Unit
Public Health England
Centre for Radiation, Chemical and Environmental Hazards
Radiation Protection Division
Chilton
Didcot
Oxon OX11 0RQ
Tel: 01235 834925
Web: www.arsac.org.uk

59 All applications and subsequent certifications are to be notified to Dstl ESD through the appropriate Agency or single-Service Medical Directorate.

60 In addition to specific ARSAC certification requirements, any proposal for radioactive substances to be administered to volunteers for research purposes, or any other irradiation of patients or other persons for research, require appropriate Agency or single-Service medical and ethical clearance. This clearance must be sought from:

DMETA and DDS:	The Surgeon General, who will co-opt, or direct the formation of, an ethical committee appropriate to the purpose. For research in MOD Hospital Units (MDHUs), both Surgeon General's and local NHS approval will be required.
Navy:	The Clinical Research Sub-Committee through the Medical Officer-in-Charge, Institute of Naval Medicine.

Army:	Defence Medical Research Approval Committee, Royal Defence Medical College, Fort Blockhouse, Gosport.
RAF:	The RAF Clinical Research Committee through the appropriate Adviser and Director of Primary Health Services (DPHS).
Dstl:	Established Research Medical Ethical Committee as appropriate.

RECORDS

61 Any records generated shall be retained in accordance with MOD record retention policy (see JSP392 Volume 1, Chapter 3).

Related Leaflets

62 JSP392 Leaflets referred to herein are shown in Table 1.

Table 1 Related Leaflets

Leaflet Number	Leaflet Title
1	Acquisition of radioactive material and radiation generators
2	Risk assessments
4	Restriction of exposure to radiation
9	Storage and accounting for radioactive materials
11	Sale of radioactive and contaminated goods
12	Accumulation and disposal of radioactive waste
14	Investigation, notification and reporting of unusual radiation events
16	Local orders for radiation safety
17	Radioactive electronic valves
18	Smoke detectors containing Am-241
19	Gaseous tritium light sources and devices
21	Instrument check sources
22	Radioactive luminised equipment

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Leaflet 3 Annex A

Prior Authorisation for the Use of Electrical Equipment Intended to Produce X-rays

IONISING RADIATIONS REGULATIONS 1999
Prior authorisation for the use of electrical equipment intended to produce X-rays

1 For the purposes of Regulation 5(2) of the IRR99, the Health and Safety Executive (HSE) hereby authorises the type of practice referred to in paragraph 3 subject to any such practice being carried out in accordance with the conditions hereby approved by HSE as set out in paragraph 4.

2 Notwithstanding the prior authorisation given in paragraph 1, radiation employers must comply with all other relevant requirements of these Regulations, including notifying HSE of their intention to work with radiation in accordance with Regulation 6.

3 The type of practice referred to in paragraph 1 is:

The use of electrical equipment intended to produce X-rays ("X-ray sets") for: industrial radiography; processing of products; research; or exposure of persons for medical treatment.

4 The conditions referred to in paragraph 1 are as follows. The radiation employer shall:

4.1 As part of satisfying the general requirement in Regulation 8 of the Ionising Radiations Regulations 1999 to keep exposure as low as reasonably practicable, take specific steps before starting the work to provide engineering controls, design features, safety devices and warning devices which include at least the following:

(a) Where the work is to be carried out in a room, purpose made structure, other enclosure or a cabinet:

(i) Adequate shielding as far as reasonably practicable;

(ii) Except in the use of X-ray sets for radiotherapy at or below 50kV, interlocks or trapped key systems or other appropriate safety devices in order to prevent access to high dose rate areas (e.g. in which employed persons could receive an effective dose greater than 20 mSv or an equivalent dose in excess of a dose limit within several minutes when radiation emission is underway). The control system for such safety devices should comply with paragraphs 4.4 or 4.5.

(b) In other cases, adequate local shielding as far as reasonably practicable and, in the case of site radiography, a suitable system for ensuring that:

(i) Persons other than those directly involved in the exposure are excluded from the area by means of a barrier or other suitable means;

(ii) Where employees of another employer may be present in the same workplace, there is co-operation and co-ordination with the other employer(s) for the purposes of restricting access to the controlled area;

(iii) Warning notices displayed at the perimeter of the controlled area;

(iv) Monitoring of radiation levels to establish that controlled areas have been properly designated.

(c) Where there is a risk of significant exposure arising from unauthorised or malicious operation, equipment which has been fitted with locking-off arrangements to prevent its uncontrolled use;

(d) Initiation of exposures under key control, or some equally effective means, so as to prevent unintended or accidental emission of a radiation beam;

(e) Suitable warning devices which indicate when the tube is in a state of readiness to emit radiation and, except for diagnostic radiology equipment, give a signal when the useful beam is about to be emitted and a distinguishable signal when the emission is underway, unless this is impracticable.

4.2 Arrange for adequate and suitable personal protective equipment to be provided where appropriate.

4.3 Arrange for suitable maintenance and testing schedules for the control measures selected.

4.4 Provide safety devices, as referred to in 4.1 which for routine operations should be configured so that the control system will ensure that an exposure:

(a) Cannot commence while any relevant access door, access hatch, cover or appropriate barrier is open, or safety device is triggered;

(b) Is interrupted if the access door, access hatch, cover or barrier is opened;

(c) Does not re-commence on the mere act of closing a door, access hatch, cover or barrier, or

4.5 For non-routine operations such as setting up or aligning equipment, where the safeguards for routine operation are not in use, provide a procedure for an alternative method of working that affords equivalent protection from the risk of exposure which should be documented and incorporated into the local rules.

Signed **Margaret Clare** **A person approved by the Health and Safety Executive to perform the functions under regulation 6(2) of the Ionising Radiations Regulations 1999.**	**Dated** **6 March 2000**

NOTES

(1) Work referred to in paragraph 3 when carried out in accordance with the conditions in paragraph 4 is not subject to the requirement for individual prior authorisation pursuant to Regulation 5(1) of the Ionising Radiations Regulations 1999.

(2) This authorisation is without prejudice to the requirements or prohibitions imposed by any other enactment, in particular, the Health and Safety at Work etc. Act 1974 and the Ionising Radiations Regulations 1999, and to the provisions of the Approved Code of Practice on the IRR99.

Leaflet 3 Annex B

Prior Authorisation for the use of Accelerators (other than electron microscopes)

IONISING RADIATIONS REGULATIONS 1999
Prior authorisation for the use of accelerators (other than electron microscopes)

1 For the purposes of Regulation 5(2) of the Ionising Radiations Regulations 1999, the Health and Safety Executive (HSE) hereby authorises the type of practice referred to in paragraph 3 subject to any such practice being carried out in accordance with the conditions hereby approved by HSE as set out in paragraph 4.

2 Notwithstanding the prior authorisation given in paragraph 1, radiation employers must comply with all other relevant requirements of these Regulations, including notifying HSE of their intention to work with radiation in accordance with Regulation 6.

3 The type of practice referred to in paragraph 1 is:

The use of accelerators (other than electron microscopes).

NOTE

The scope covers all uses of accelerators (other than electron microscopes), including medical and veterinary purposes (an accelerator is an apparatus or installation in which particles are accelerated and which emits ionising radiation with an energy higher than 1 MeV).

4 The conditions referred to in paragraph 1 are as follows. The radiation employer shall:

4.1 As part of satisfying the general requirement in Regulation 8 of the Ionising Radiations Regulations 1999 to keep exposure as low as reasonably practicable, take specific steps before starting the work to provide engineering controls, design features, safety devices and warning devices which include at least the following:

(a) Where the work is to be carried out in a room, purpose made structure, other enclosure or a cabinet:

(i) Adequate shielding as far as reasonably practicable;

(ii) Interlocks or trapped key systems or other appropriate safety devices in order to prevent access to high dose rate areas (e.g. in which employed persons could receive an effective dose greater than 20 mSv or an equivalent dose in excess of a dose limit within several minutes when radiation emission is underway). The control system for such safety devices should comply with paragraph 4.4.

(b) In other cases, adequate local shielding as far as reasonably practicable and, in the case of site radiography, a suitable system for ensuring that:

(i) Persons other than those directly involved in the exposure are excluded from the area by means of a barrier or other suitable means;

(ii) Where employees of another employer may be present in the same workplace, there is co-operation and co-ordination with the other employer(s) for the purposes of restricting access to the controlled area;

(iii) Warning notices are displayed at the perimeter of the controlled area;

(iv) Radiation levels are monitored to establish that controlled areas have been properly designated.

(c) Suitable means to minimise exposure so far as is reasonably practicable from substances that have been activated by the accelerator.

(d) A suitable assessment of the hazards arising from the production of adventitious radiation.

(e) Where there is a risk of significant exposure arising from unauthorised or malicious operation, equipment which has been fitted with locking-off arrangements to prevent its uncontrolled use.

(f) Initiation of exposures under key control, or some equally effective means, so as to prevent unintended or accidental emission of a radiation beam; and

(g) Suitable warning devices which indicate when the accelerator is preparing to produce radiation and give a signal when the radiation is about to be produced and a distinguishable signal when the emission is underway, unless this is impracticable.

4.2 Arrange for adequate and suitable personal protective equipment to be provided where appropriate.

4.3 Arrange for suitable maintenance and testing schedules for the control measures selected; and

4.4 Provide safety devices, as referred to in 4.1.1, which should be configured so that the control system will ensure that an exposure:

(a) Cannot commence while any relevant access door, access hatch, cover or appropriate barrier is open, or safety device is triggered.

(b) Is interrupted if the access door, access hatch, cover or barrier is opened; and

(c) Does not re-commence on the mere act of closing a door, access hatch, cover or barrier

Signed **Margaret Clare** **A person approved by the Health and Safety Executive to perform the functions under regulation 6(2) of the Ionising Radiations Regulations 1999.**	**Dated** **6 March 2000**

NOTES

(1) Work referred to in paragraph 3 when carried out in accordance with the conditions in paragraph 4 is not subject to the requirement for individual prior authorisation pursuant to regulation 5(1) of the Ionising Radiations Regulations 1999.

(2) This authorisation is without prejudice to the requirements or prohibitions imposed by any other enactment, in particular, the Health and Safety at Work etc. Act 1974 and the Ionising Radiations Regulations 1999, and to the provisions of the Approved Code of Practice supporting the Ionising Radiations Regulations 1999.

(3) Electron microscopes are not covered by the authorisation as they do not need to be authorised under the Ionising Radiations Regulations 1999.

Leaflet 3 Annex C

Particulars to be provided to the HSE in a Notification Under Regulation 6(2)

1 The Notification is to be made using the form that is located on the HSE webpage at: **http://www.hse.gov.uk/radiation/ionising/notification.htm.**

2 The following particulars are to be included:

2.1 The name and address of the employer (e.g. CO/HoE) and a contact telephone, fax or e-mail address;

2.2 The address of the unit or establishment at which the work activity is to be carried out and a telephone, fax or e-mail address, at the premises;

2.3 The nature of the business of the employer (use the standard wording: “Defence of the United Kingdom, Overseas Territories, our people and interests”)

2.4 The category of the source of ionising radiation:

2.4.1 Sealed source;

2.4.2 Unsealed radioactive substance;

2.4.3 Electrical equipment (including X-ray equipment);

2.4.4 An atmosphere containing the short-lived daughters of radon-222.

2.5 Whether or not the source is to be used at premises other than the address given in paragraph 1.1;

2.6 Dates of notification and commencement of the work activity.

3 On the ‘Additional Information’ field on Page 3 of the IRR6 form, the following should be included: “Acknowledgement of Notification (including categories notified) should be copied to: LHPINM@dstl.gov.uk “.

4 Should the HSE request additional information, then the TLB Safety Authority is to be informed and advice sought on the supply of further information, including from the RPA if appropriate.

5 Consult the RPA for further advice.

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Leaflet 3 Annex D

Exemption from Notification to HSE

1 Units and establishments are exempt from notification to the Health and Safety Executive (HSE) where the only work with ionising radiation that is being carried out by the unit or establishment is in one or more of the following categories:

1.1 Where the quantity of a radioactive substance does not exceed the concentration specified in column 2 of Schedule 8 of the Ionising Radiations Regulations 1999;

1.2 Where the quantity of radioactive substance involved does not exceed that specified in column 3 of Schedule 8 of the Ionising Radiations Regulations 1999;

1.3 Where apparatus contains a radioactive substance in a quantity exceeding the values in paragraphs 1.1 and 1.2 provided that it:

1.3.1 Is a type approved by the HSE;

1.3.2 Is constructed in the form of a sealed source;

1.3.3 Does not give rise to dose rates above 1 μSv/hr at 0.1 metre from any accessible surface;

1.3.4 Has disposal arrangements agreed with the appropriate environment agency;

1.4 Operation of electrical apparatus of a type already approved by the HSE and where the dose rate at 0.1 m from any accessible surface is less than 1 μSv/hr;

1.5 Operation of any cathode ray tube intended for the display of visual images or any other electrical apparatus operating at less than 30 kV, provided the maximum dose rate under normal operating conditions is less than 1 μSv/hr at 0.1 m from any accessible surface;

1.6 Where the work involves material contaminated with radioactive substances resulting from authorised releases which the appropriate environment agency has declared not to be subject to further controls.

2 A summary of common radionuclides used by MOD is given in Table 1 below.

Table D 1 Summary of quantity for notification of selected isotopes

Radionuclide	Concentration for Notification (Bq/g)	Quantity for Notification (Bq)
Tritium (Hydrogen –3)	$1x10^{6}$	$1x10^{9}$
Carbon –14	$1x10^{4}$	$1x10^{7}$
Chlorine –36	$1x10^{4}$	$1x10^{6}$
Cobalt –60	$1x10^{1}$	$1x10^{5}$
Nickel –63	$1x10^{5}$	$1x10^{8}$
Krypton-85	$1x10^{5}$	$1x10^{4}$
Strontium –90	$1x10^{3}$	$1x10^{4}$
Caesium-137	$1x10^{1}$	$1x10^{4}$
Promethium –147	$1x10^{2}$	$1x10^{7}$
Thallium – 204	$1x10^{4}$	$1x10^{4}$
Radium –226	$1x10^{1}$	$1x10^{4}$
Plutonium –239	$1x10^{0}$	$1x10^{4}$
Americium-241	$1x10^{0}$	$1x10^{4}$

For radionuclides not specified refer to the Ionising Radiations Regulations, Schedule 8

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Leaflet 3 Annex E

Quantities of Radioactive Substances Requiring Hazard Identification and Risk Evaluation

1 All quantities of radioactive materials exceeding the values in paragraphs 2 and 3 below will require hazard identification and risk assessment unless it is:

1.1 A non-dispersible source, except for the transport of such a source;

1.2 Any radioactive substance which has an activity concentration of not more than 100Bqg^{-1} , except for the transport of such a source;

1.3 Any special form radioactive substance;

1.4 Any radioactive substance, which is in a package which complies in every respect with either the requirements for Type B packages, or for Special Arrangements Transport Operations for the equivalent of a Type B package, within the meaning of the Regulations for the Safe Transport of Radioactive Materials published by the International Atomic Energy Agency as revised or re-issued from time to time and is certified as complying with them;

1.5 The transport of any radioactive substance in the form of a low specific activity material conforming to the specifications for low specific activity materials (LSA) categories LSA-I, LSA-II or LSA-III within the meaning of the regulations in 1.4 above where the transport forms part of an international transport operation;

1.6 The transport of any radioactive substance in the form of a surface contaminated object (SCO) conforming to the specifications for SCO-I or SCO-II within the meaning of the regulations in 1.4 above where the transport forms part of an international transport operation;

1.7 The presence of a radioactive substance while it is in or on the live body or corpse of a human being or animal where that presence occurs otherwise than in consequence of a radiation emergency.

2 Specified masses of fissile material requiring a hazard identification and risk evaluation are:

2.1 Plutonium as Pu-239 or Pu-241 or as a mixture of plutonium isotopes containing Pu-239 or Pu-241: 150 grams;

2.2 Uranium as U-233: 150 grams;

2.3 Uranium enriched in U-235 to no more than 1% but not more than 5%: 500 grams;

2.4 Uranium enriched in U-235 to more than 5%: 250 grams.

3 Quantities of radioactive material that will require a hazard identification and risk evaluation are given in Table 1. Where more than one radionuclide is present, the fraction of the REPPIR limit must be determined for each radionuclide and if the sum of the fractions exceeds one, then a REPPIR assessment will still be required.

Table E 1 Quantities of radioactive material requiring a REPPIR assessment

(1) Radionuclide	(2) Site Total Activity Bq	(3) Transport operation Total Activity Bq
Tritium (H-3) – tritiated water	$7\ 10^{13}$	$4\ 10^{13}$
Tritium gas	$1\ 10^{18}$	$4\ 10^{13}$
Tritium organically bound	$1\ 10^{14}$	$4\ 10^{13}$
Carbon (C-14) vapour	$4\ 10^{13}$	$3\ 10^{12}$
Carbon (C-14) monoxide gas	$1\ 10^{16}$	$3\ 10^{12}$
Carbon (C-14) dioxide gas	$3\ 10^{15}$	$3\ 10^{12}$
Manganese (Mn-54)	$3\ 10^{11}$	$1\ 10^{12}$
Iron (Fe-55)	$8\ 10^{12}$	$4\ 10^{13}$
Cobalt (Co-60)	$6\ 10^{10}$	$4\ 10^{11}$
Nickel (Ni-63)	$1\ 10^{13}$	$3\ 10^{13}$
Krypton (Kr-85)	$1\ 10^{16}$	$1\ 10^{13}$
Strontium (Sr-90)	$8\ 10^{10}$	$3\ 10^{11}$
Technetium (Tc-99m)	$1\ 10^{13}$	$4\ 10^{12}$
Caesium(Cs-137)	$1\ 10^{11}$	$6\ 10^{11}$
Iridium (Ir-192)	$6\ 10^{11}$	$6\ 10^{11}$
Radium (Ra-226)	$2\ 10^{9}$	$3\ 10^{9}$
Natural Thorium (Th-232) + daughters	$2\ 10^{8}$	Unlimited
Uranium (U-238)	$3\ 10^{9}$	Unlimited
Uranium (U-235)	$3\ 10^{9}$	Unlimited
Plutonium (Pu-239)	$2\ 10^{8}$	$1\ 10^{9}$
Americium (Am-241)	$3\ 10^{8}$	$1\ 10^{9}$
Californium (Cf-252)	$1\ 10^{9}$	$3\ 10^{9}$

For radionuclides not specified refer to Schedule 2 (site) or Schedule 4 (transport) of REPPIR2001. Further advice can be sought from the RPA.

Leaflet 3 Annex F

Particulars to be Included in a REPPIR Hire

1 The following particulars are to be included in a REPPIR Hazard Identification and Risk Evaluation (HIRE) :

1.1 Name and address of the operator or carrier;

1.2 The postal address of the place where the radioactive substance will be processed, manufactured, used or stored, or where the facilities for processing, manufacture, use or storage exist or, in the case of transport, the postal address of the transport undertaking;

1.3 The date on which it is anticipated that the operation will commence or, if it has already commenced, a statement to that effect;

1.4 A general description of the premises or place including the geographical location, metrological, geological, hydrographical conditions and, where material, the history of the premises, except that in the case of transport a general description shall be given of either:

1.4.1 The starting and end points of the journeys, the mode of transport and transhipment points, or

1.4.2 The criteria to be used for route selection.

1.5 In the case of a HIRE by an operator, a description of any radioactive substance on the premises which is likely to exceed any mass specified in Annex E or any quantity in column 2 of Table 1, which description shall where practicable include details of the radionuclides present and their likely maximum quantities;

1.6 In the case of a HIRE by a carrier, a description of any radioactive substance which is likely to exceed any mass specified in Annex E or any quantity in column 3 of Table 1, which description shall where practicable include details of the radionuclides present and their likely maximum quantities;

1.7 Except in the case of a HIRE relating to transport, a plan of the site in question and a map of the environs to a scale large enough to enable the site and any features which could affect the general risk in an emergency to be identified;

1.8 A diagram and description of any single plant or enclosed system containing more than the quantity of any mass specified in Annex E or any quantity in column 2 of Table 1 or, in the case of transport any mass specified in Annex E or any quantity in column 3 of Table 1, the nature of the containment for the radioactive substance, the type of vehicle and the means of securing the load within or on the vehicle;

1.9 Factors which could precipitate a major release of any radioactive substance and the measures to be taken to prevent or control such release and information showing the maximum quantity of radioactive substance which, in the event of a major failure of containment, would be released to the atmosphere including, in respect of premises, the identification of plant and other activities anywhere on the premises which could precipitate such release;

1.10 Factors which could precipitate a smaller but continuing release of any radioactive substance and the measures to be taken to prevent or control such releases to atmosphere;

1.11 Factors that could give rise to an incident involving the initiation of an unintended self-sustaining nuclear chain reaction or the loss of control of an intended self-sustaining nuclear chain reaction and, in either case, the measures to be taken to prevent or control any such incident;

1.12 The management system and staffing arrangements by which the radioactive substance is controlled and by which the procedures are controlled;

1.13 Except in the case of a HIRE relating to transport, information about the size and distribution of the population in the vicinity of premises to which the report relates;

1.14 An assessment of the area which is likely to be affected by the dispersal of any radioactive substance as a result of any radiation emergency and the period of time over which such dispersal is likely to take place;

1.15 An assessment of the likely exposures to ionising radiation of any person or class of persons as a result of any radiation emergency;

1.16 An assessment of the necessity for an emergency plan to be prepared by the operator or carrier.

2 The Health and Safety Executive may request a further assessment and report containing the following:

2.1 The analysis carried out to establish the likely consequences of any hazard, including the likely doses of ionising radiation to which members of the public might be exposed, and the probability of the occurrence of such a hazard;

2.2 The number of persons whose health or safety might be affected by the hazard;

2.3 Management systems and staffing arrangements by which any hazard is to be or is controlled;

2.4 The safety systems and procedures and monitoring systems by which any hazard is to be or is controlled;

2.5 The qualifications, experience and training of staff concerned;

2.6 Design, construction, operation or maintenance of any equipment (including the incorporation of adequate safety or reliability features of such equipment) which is used for the purposes of intervention or which is used to control any hazard;

2.7 Design and operating documentation;

2.8 The design and operation of containment and pressure systems;

2.9 The protection of persons from the effects of loss of containment;

2.10 The procedures for reporting of and learning from radiation emergencies.

Leaflet 3 Annex G

Prior Information to be Supplied and Made Publicly Available under REPPIR

1 Basic facts about radioactivity and its effects on persons and on the environment.

2 The various types of radiation emergency covered and their consequences for the general public and the environment.

3 Emergency measures envisaged to alert, protect and assist the general public in the event of a radiation emergency.

4 Appropriate information on action to be taken by the general public in the event of a radiation emergency.

5 The authority or authorities responsible for implementing the emergency measures and action referred to in paragraphs 3 and 4 above.

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Leaflet 3 Annex H

Exemption from Notification/Permitting under the Environmental Permitting (England & Wales) Regulations 2010 (as amended) (EPR10) and the Radioactive Substances Act 1993 (Scotland & Northern Ireland) (as amended) (RSA93)

1 Table H1 lists the most common items within the MOD which do not require notification/permitting under the legislation. Further exemptions from notification/permitting exist for other materials and the requirements and implementation. Advice should be sought from the RPA/RWA on the application of exemptions.

2 Exemption from EPR10/RSA93 does not preclude exemption from notification to the HSE and the requirements of paragraphs 24-29, Annex C and Annex D are to be actioned by the unit or establishment.

Table H1 Common items used within MOD with no requirement for Notification/Permitting under EPR10/RSA93

RADIOACTIVE MATERIAL OR ACCUMULATED RADIOACTIVE WASTE TYPE (each line should be treated independently i.e. a unit or establishment can hold smoke detectors and sealed sources and electronic valves provided the quantities in column 3 are not exceeded)	**Maximum quantity of radionuclides for each individual item of material or waste****	**Maximum quantity of radionuclides**: -on any premises in items of the material or waste which satisfy the limit in column 2; -in mobile radioactive apparatus held by a person
SMOKE DETECTORS		
Americium-241 (Am^{241})	4 MBq	No limit if installed
Any other radionuclide	4 MBq	No limit if installed
Uninstalled smoke detectors	4 MBq	200MBq
Uninstalled smoke detectors	40 kBq	< 5000 items in total
SEALED SOURCES		
Sealed source (other than listed)	4 MBq	200 MBq
Electrodeposited source – Iron-55 (Fe^{55})	200 MBq	600 GBq
Electrodeposited source – Nickel-63 (Ni^{63})	600 MBq	600 GBq
ELECTRONIC VALVES		
Tritium (H^3)	20 GBq	5 TBq
Any other radionuclide	4 MBq	200 MBq
LUMINISED ARTICLES		
Tritium (H^3)	4 GBq	200 GBq
Promethium-147 (Pm^{147})	80 MBq	40 GBq
GASEOUS TRITIUM LIGHT SOURCES		
Class A – item that does not exceed:	20 GBq	5 TBq
Class B – items that does not exceed:	1 TBq	30 TBq
Class C – item installed (or awaiting installation) in vehicles/aircraft/equipment used by armed forces of the Crown (MOD)	1 TBq	No limit if installed

**Unless advised otherwise by the RPA/RWA, all items must be back-loaded via the appropriate channel e.g. Donnington or Portsmouth.

EXEMPTION CONDITIONS

3 The exemption quantities shown in Table H 1 only apply if the following conditions are met:

3.1 Keep a record of the radioactive material including the location of the items;

3.2 That the radioactive item(s) or the container (or storage location) are marked or labelled as radioactive;

3.3 That the radioactive item(s) are stored safely and securely to prevent accidental damage, loss or theft;

3.4 That no occurance takes place (e.g. modifications) that could cause a loss of containment of the radioactive material.

EXEMPTION GUIDANCE

4 Advice is to be sought from the RPA/RWA on application of the exemption orders.

Table H2 Exemption Guidance documents

EXEMPTION GUIDANCE TITLE AND DESCRIPTION*
General Guidance on the Use of Exemption Provisions How to determine if radioactive material is 'out of scope', 'exempt' or requires a permit
Very Low Level Radioactive Waste Limited amounts of solid waste combined with non-radioactive waste or "dustbin" waste, including tritium and carbon-14 but not GTLSs.
Medical and Veterinary Uses of Radioactive Sources Radioactive material used to diagnose or treat humans and animals.
Radioactivity in Museums Closed and open sources luminised with radium, promethium or tritium and items containing thorium.
Waste Sealed Radioactive Sources Includes industrial radiography and gauge sources, sources in obsolete equipment or beyond working life and spare sources unlikely to be used.
Small Sealed Radioactive Sources GTLDs, electro-deposited sources of nickel-63 and tritium and other small sealed sources.
Uranium and Thorium Used as chemical compounds or in metals such as thoriated tungsten or magnesium.
Small Amounts of Open Radioactive Sources Also called unsealed sources such as liquids or solid open sources that contain artificial or naturally occurring radioactive material.
Guidance on Lamps Containing Radioactive Sources Lamps that contain, for example, krypton-85 or thorium-232, generally contained in electrical equipment.
Guidance on Radioactive Material and Radioactive Waste Stored in Transit Definition of "Waste Stored in Transit" and what conditions apply.
Guidance on interpretation of 'Relevant liquid' Definition of Relevant liquid e.g. non-aqueous or has specified hazard classes or categories.
Guidance for NORM industrial activities on how to comply with the radioactive substances exemption regime

*Current versions of the Exemption Guidance documents listed above and any others under development will be found on the Environment Agency's website (www.environment-agency.gov.uk)

Leaflet 3 Annex I

Control of High Activity Sealed Sources (HASS)

1 The High Activity Sealed Radioactive Sources and Orphan Sources Regulations 2005 (SI 2005 No.2686) were made in order to transpose EU Council Directive 2003/122/EURATOM of 22 Dec 2003 into UK law and came into force on 20 October 2005. Due to changes to legislation in 2010, the HASS requirements for England and Wales now fall under the Environmental Permitting (England and Wales) Regulations 2010 (EPR10). The requirements for Scotland and Northern Ireland remain under the High Activity Sealed Radioactive Sources and Orphan Sources Regulations 2005 (HASS05). The Regulations do not apply in law to MOD holders of HASS but, to meet the Secretary of State's policy, parallel arrangements are in place to ensure that standards and management arrangements must, so far as is reasonably practicable be at least as good as those required by legislation. .

2 High activity sealed sources are sealed radioactive sources whose activity level at the time of manufacture exceeds a threshold level shown in Table 1. They are **not** routinely contained in military equipment but they **are** used in industrial radiography, thickness, density or moisture gauges, instrument calibration, medical therapy and sterilisation and so may be found in the MOD.

3 The Regulations require that the location of each high activity source to be identified recorded and verified from manufacture to the time it is placed in a recognised installation for its long-term storage or disposal. The Regulations place a number of requirements on holders of HASS including the requirement to obtain prior authorisation for any practice involving a HASS.

4 The Regulations do not apply to gaseous tritium light sources, gaseous tritium light devices, nuclear fuel and radioactive waste.

Table 1 High Activity Sealed Sources - activity levels for selected radionuclides

Radionuclide	Activity Level (GBq)
Iron-55	400
Cobalt-60	4
Selenium-75	30
Krypton-85	100
Strontium-90	3
Caesium-137	20
Promethium-147	400
Iridium-192	10
Thallium-204	100
Radium-226	2
Americium-241	100
Californium-252	0.5

5 For radionuclides not shown in Table 1, the relevant activity is one hundredth of the corresponding A1 value given in the IAEA Regulations for the safe transport of radioactive materials.

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