

LEAFLET 12**ACCUMULATION AND DISPOSAL OF RADIOACTIVE WASTE****CONTENTS****Para**

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SCOPE

1 This leaflet covers the requirements for accumulation and disposal of radioactive waste. The transfer, sale, re-use or recycling of items containing radioactive material are addressed in Leaflet 11.

INTRODUCTION

2 The disposal of radioactive material in the UK is controlled by the Radioactive Substances Act 1993 (RSA93) and associated Exemption Orders (EOs) and Agreements (those made under the Radioactive Substances Act 1960 (RSA60) and agreements remain in force until they are replaced by new EOs made under RSA 93 or new agreements). RSA93 does not apply to MOD, but the Secretary of State for Defence has stated that standards and arrangements will be introduced which will be, so far as is reasonably practicable, at least as good as those required by legislation. Government Policy on radioactive waste management is given in the Review of Radioactive Waste Management Policy: Final Conclusions (Cm2919, July 1995). The MOD policy for the management of Defence related radioactive wastes is given at JSP392 Volume 1 Chapter 5.

3 Before any radioactive material can be declared as waste or accumulated an Approval must be obtained from the appropriate regulatory authority unless RSA93 specifically excludes that type of radioactive material or it is the subject of an Exemption Order.

4 A suitably qualified and experienced person or organisation must be consulted at the earliest opportunity to advise on regulatory issues associated with declaration, accumulation or disposal of radioactive waste. This person or organisation will often also be the appointed radiation protection adviser.

5 Most units or establishments will not accumulate or dispose of radioactive waste, but will return items via the appropriate stores organisation as redundant items. It will normally be the duty of the stores organisation to declare the items as waste, if they cannot be utilised elsewhere.

6 Disposal of radioactive material that is not waste, for example by sale, loan or transfer, is addressed in Leaflet 11.

7 Radiation protection relating to transport of radioactive material is addressed in Leaflet 10. Transport operations must be undertaken in accordance with JSP800 Vol. 4b; Transport of Dangerous Goods by Road, Rail and Sea or JSP800 Vol. 4a Transport of Dangerous Goods by Air.

STATUTORY REQUIREMENTS

8 In addition to the general requirements of the Health and Safety at Work etc Act 1974 and the Management of Health and Safety Regulations 1999, the following specific legislation may apply:

- Ionising Radiations Regulations 1999 (IRR99) (apply directly);
- Radioactive Substances Act 1993 (RSA93) and associated Exemption Orders (parallel arrangements);
- Carriage of Dangerous Goods and Transportable Pressure Equipment Regulations 2007 (apply directly);
- High-activity Sealed Radioactive Sources and Orphan Sources Regulations 2005 (HASS2005) (parallel arrangements).

DUTIES

Commanding Officer and Head of Establishment (CO/HoE)

9 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 arrangements may be delegated to appropriate personnel, such as a Radiation Safety Officer (RSO).

Radiation Safety Officer (RSO)

10 If appointed and where authority has been delegated the Radiation Safety Officer (RSO) will normally discharge the duties of the CO/HoE with respect to seeking Approvals from the appropriate regulator.

Radiation Protection Supervisor (RPS)

11 A Radiation Protection Supervisor 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 procedures or system of work which should address the requirements of this leaflet.

Workplace Supervisor (WPS)

12 In units where it is unnecessary to appoint an RPS, a WPS 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 in the preparation of documentation requesting the Approval to accumulate or dispose of radioactive waste for submission to the regulatory authority with assistance of the RPA.

Employees

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

RADIATION DOSE LIMITS FOR THE PUBLIC FROM RADIOACTIVE WASTE

14 In addition to the requirement to keep any radiation exposure as low as reasonably practicable (ALARP) under IRR99 the process of seeking Approval from the EA or other regulator will require an assessment to be made, as part of the planning process for radiation protection, to determine whether the following maximum doses could be received by individuals as a result of the planned activity:

14.1 0.3 mSv per year from any source from which radioactive discharges are first made on or after 13th May 2000;

14.2 0.5 mSv per year from the discharges from any single site.

EXCLUDED OR EXEMPT RADIOACTIVE MATERIAL

15 Where an appropriate Exemption Order exists small quantities of certain radioactive materials may, subject to certain conditions, be deemed to be either excluded from or exempt from certain requirements of RSA93. A list of Exemption Orders is given at Annex A. Typically, Exemption Orders set out conditions which, when complied with, allow the disposal of limited quantities of radioactive waste without the need to obtain Approval from the appropriate environment regulator.

16 Disposal of radioactive material under the relevant Exemption Order may only take place, following consultation with the RPA, provided that:

16.1 The item contains only exempt radioactive material.

16.2 The disposal is not routine.

16.3 All conditions in the relevant Exemption Order are complied with.

16.4 Suitable records are kept (including description of the item, isotope, activity, date of receipt, method of disposal, and date of disposal) and the disposal is noted on the Annual Holdings Return.

17 Large quantities of very low level radioactive waste or exempt wastes such as thoriated engine casings and spoil from the remediation of sites should be disposed of through the Disposal Services Agency, MOD's central contract for the disposal of hazardous and special wastes. The appointed RPA will advise on whether this route or direct disposal via a waste contractor is most appropriate. Further details can be obtained from DSA, Zone C, 2nd Floor, St Georges Court, 2-12 Bloomsbury Way, London, WC1A 2SH Tel 0207 3053096. Records as detailed in Paragraph 16.4 are still required to be kept if this disposal option is used.

IDENTIFICATION OF CLEAN OR EXEMPT RADIOACTIVE WASTE

18 There are many instances, such as in the decommissioning of facilities, where items (e.g. tools, bricks etc) or materials (e.g. soil) may be found to be contaminated or potentially contaminated to low levels with radioactive material. In these situations it is important to correctly quantify the degree of contamination to enable appropriate disposal routes to be identified and applied.

19 To support this, the MOD has contributed to the Code of Practice (COP) Clearance & Exemption Principles, Processes and Practices for use by the Nuclear Industry – Issue 1. This document sets out industry good practice for identifying and sentencing exempt radioactive material. The code of practice is available at:-

http://www.cewg.safety-directors-forum.org/code/code_of_practice.html.

20 The COP interprets current legislation and provides, through the use of flow charts, clear guidance for commonly found material types. Those seeking to manage the waste disposal process, working with their RPA, should incorporate the requirements of the COP into local procedures and practices for the disposal, re-use or recycling of exempt radioactive material (see Leaflet 11).

21 Following local procedures that incorporate the principles of the COP will generally be sufficient to enable individual units and establishments to demonstrate that material is being appropriately sentenced in compliance with legislative and MOD requirements.

APPLICATION FOR AGREEMENT TO DISPOSE OF RADIOACTIVE WASTE ABOVE EXEMPTION LEVELS

22 No radioactive waste disposals other than those covered by an appropriate Exemption Order are to be made by MOD establishments or equipment managers without first obtaining an Approval from the Regulatory Authority (Environment Agency, Scottish Environment Protection Agency or the Environment and Heritage Service in Northern Ireland). Advice on the arrangements for disposal of radioactive material through an approved route should be sought from the RPA or other suitably qualified person.

23 Equipment managers, units and establishments without local RPAs, who require to dispose of radioactive waste, must seek assistance from Dstl RPA Body as soon as possible. The Regulatory Authorities require payment for issuing and maintaining Approval documents. Dstl RPA Body will arrange any necessary payment and should therefore be advised when an Approval is required to ensure that the appropriate financial provision can be made. Dstl RPA Body will then conduct the negotiation with the appropriate Regulatory Authority on behalf of the equipment manager, unit or establishment and arrange any necessary payment. A suitable Approval is then issued by the Regulatory Authority through Dstl RPA Body. MOD establishments with their own resident RPA may apply directly to the Regulatory Authority concerned, but must keep Dstl ESD informed by letter, as detailed in Leaflet 3 to ensure that funding arrangements are put in place.

24 Approval documents provided by the Regulatory Authority via Dstl ESD are to be held by the unit or establishment, and a copy of these documents is to be displayed on the unit or establishment main notice board, for example the SHEF notice board of the facility holding the Notification or Approval. MOD (Army) establishments are to send an additional copy to CESO (Army).

ACCUMULATION OF RADIOACTIVE WASTE

25 Radioactive waste is considered to be accumulated if it is stored at a site for more than 3 months. At the end of this 3-month period, radioactive waste must be disposed of, either in accordance with a current Approval for disposal or an exemption order. Where disposal within this timescale would not be practicable an Approval for the accumulation of waste over a longer period must be obtained from the appropriate regulatory authority. Agreement to accumulate waste is required from the appropriate TLB Safety Authority who will then instruct Dstl ESD to obtain an Approval from the regulatory authority.

26 Radioactive waste is to be disposed of in accordance with the terms of any Approvals and exemptions. Where it is necessary to accumulate waste, the waste should be stored in accordance with the requirements of Leaflet 9, and comply with the requirements of any conditions set out in the Approval.

DISPOSAL ARRANGEMENTS

27 Unless an exemption order applies, accumulation, discharge or disposal of radioactive waste can only take place after an Approval has been received. The disposal must take place in accordance with the conditions of the Approval.

28 If the radioactive material is a sealed source then it may, subject to compliance with certain conditions, be disposed of under the terms of the Waste Closed Sources Exemption Order without the need for an Approval. For this exemption order to apply the source must be disposed of via a person or organisation who is authorised under RSA93 to dispose of similar material, or via a person or organisation who produces radioactive material of the same type as is contained within the source. This could be the original source manufacturer or other user who has the appropriate Approvals in place. Records must be retained that detail:

28.1 The date of disposal of the waste source;

28.2 The name and total activity of each of the radionuclides contained;

28.3 The name and address of the person to whom the source was sent or of who removed it.

29 Paragraph 28 contains summary details of the requirements only. Additional advice should be sought from the appointed RPA or suitably qualified person before applying this exemption order.

30 Once a unit or establishment has no further requirement to dispose of radioactive waste, they are to inform the TLB Authority and Dstl ESD, who will initiate proceedings to cancel the Approval.

31 It should be noted that High Activity Sealed Sources (HASS) should not normally be disposed of, but will generally be transferred to an organisation approved to accept such sources, for example a manufacturer, see Leaflet 3.

DISPOSAL OF RADIOACTIVE SPECIAL/HAZARDOUS WASTES

32 In some circumstances, hazardous waste may become contaminated with radioactive material. Where this applies, and such substances are therefore declared as radioactive waste, the advice of the RPA is to be sought as special disposal and recording procedures may need to be followed. Where an equipment manager, unit or establishment is uncertain whether or not a substance is a listed substance advice should be sought from the relevant RPA. The disposal of certain radioactively contaminated hazardous wastes may also be available through the contract detailed in Paragraph 17.

33 Hazardous waste is waste which exhibits one or more of the properties that are hazardous to health or the environment. These hazardous properties are listed in the European Commission Hazardous Waste Directive (91/689/EC) as the Hazardous Waste List and incorporated into the revised European Waste Catalogue (EWC) as a six digit code denoted with an asterisk.

34 In addition to radioactivity, properties of waste that render them hazardous include:

- Explosive; oxidising; highly flammable and flammable; irritant; harmful; toxic; carcinogenic; corrosive; infectious; teratogenic; mutagenic; substances and preparations which emit toxic or very toxic gases in contact with water, air or an acid; substances and preparations capable by any means, after disposal, of yielding another substance e.g. leachate, which possess any of the characteristics listed above; and ecotoxic.

35 Hazardous or special waste is subject to separate regulation and guidance should be sought from the appropriate local Environment Officer or SHEF representative.

RECORDING OF DISPOSALS

36 A record of all disposals of radioactive waste is to be kept by the equipment manager, unit or establishment disposing of the waste. Records are required for some disposals under an exemption order. Advice should be sought from the RPA or suitably qualified person. Records of disposals are to be kept indefinitely or for such time as specified in the disposal Approval document. Suitable forms are provided at Annex B and should be used for recording solid and liquid waste disposals, respectively. Details of gaseous or airborne particulate waste disposals should be recorded on an appropriate form containing the following information:

- 36.1 Details of discharge
- 36.2 Radionuclide, its chemical form and total activity
- 36.3 Date, time and duration of release.

37 A statement of all radioactive waste disposals made in that calendar year is to be forwarded to Dstl ESD by all Naval (including ships and submarines), RAF, Army and Defence Agency units and establishments at the end of each calendar year. This should reach Dstl by 31 March of the year following that being reported on. To assist in this procedure, Dstl will distribute blank copies of the reporting form during January of each year, included as a section of the Annual Holdings Return. Additional forms can be provided on request.

38 It should be noted that radioactive items returned to stores or permanently transferred to another establishment are not classed as waste and should not be included on the Disposals page of the Annual Holdings Return.

DISPOSAL OF WASTE OVERSEAS

39 Establishments situated overseas are to dispose of radioactive waste in accordance with local national regulations, where permitted to do so. Where regulations on the disposal of radioactive waste do not exist, advice should be sought from the relevant RPA or service authority.

LEGAL AND MOD MANDATORY REQUIREMENTS

Table 1 Legal and MOD mandatory requirements

Requirement	Applicable	Comments	Related leaflet*
HSE Notification	✓	Keep a copy indefinitely. Review as appropriate. HSE will not provide acknowledgement of this	3
Risk assessment	✓	Equipment specific risk assessments or prior risk assessments may be required	2
Accounting	✓	Storage and retention of disposal records	9
Approval to accumulate or dispose**	✓	Copy information to Dstl RPA Body	3
Re-use, recycling	✓	Good practice	11
Local orders	✓	Should address disposal requirements for redundant equipment or waste items	16
Designated areas	✓		4
Transport	✓	See also JSP800 Vol. 4b Transport of Dangerous Goods by Road, Rail and Sea	10

*JSP 392, unless otherwise stated

**Environment Agency (EA) for England and Wales, Scottish Environmental Protection Agency (SEPA) for Scotland and Environmental and Heritage Service for Northern Ireland (EHSNI)

LEAFLET 12 ANNEX A**CURRENT EXEMPTION ORDERS OF RELEVANCE TO MOD RADIOACTIVE SOURCES**

1 The following exemption orders remain current. Advice should be sought from the RPA on application of these exemption orders.

Title	Statutory Instrument
The Radioactive Substances (Smoke Detectors) Exemption Order (as amended 1991) 1980	No. 953 1991 No. 477
The Radioactive Substances (Electronic Valves) Exemption Order 1967	1967 No. 1797
The Radioactive Substances (Luminous Articles) Exemption Order 1985	1985 No. 1048
The Radioactive Substance (Testing Instruments) Exemption Order 2006	2006 No. 1500
The Radioactive Substances (Waste Closed Sources) Exemption Order 1963	1963 No. 1831
The Radioactive Substance (Prepared Uranium and Thorium Compounds) Exemption Order 1962	1962 No. 2711
The Radioactive Substance (Hospitals) Exemption Order 1990	1990 No. 2512
The Radioactive Substance (Gaseous Tritium Light Devices) Exemption Order 1985	1985 No. 1047
The Radioactive Substance (Substances of Low Activity) Exemption Order (as amended 1992) 1986	No. 1002 1992 No. 647
The Radioactive Substances (Uranium and Thorium) Exemption Order 1962	1962 No. 2710
The Radioactive Substances (Phosphatic Substances, Rare Earths, etc) Exemption Order 1962	1962 No. 2648
The Radioactive Substances (Schools etc) Exemption Order 1963	1963 No. 1832
The Radioactive Substances (Exhibitions) Exemption Order 1962	1962 No. 2648

NOTE

The above Exemption Orders apply to England and Wales. The corresponding Exemption Orders for Scotland and Northern Ireland have identical or similar wording, but carry different Statutory Instrument number.

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LEAFLET 12 ANNEX B

RADIOACTIVE WASTE DISPOSAL FORMS

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Table B1 Radioactive Waste Disposal

Radioactive Waste Disposal

Ship or establishment _____

Package no and date	Description & nuclide	Surface dose rate $\mu\text{Sv h}^{-1}$	Surface contamination Bq cm^{-2}	Place and method of disposal	Remarks (estimated total activity if known)

Table B2 Radioactive waste disposal form (liquid)**RADIOACTIVE WASTE DISPOSAL FORM (LIQUID)**

Ship or establishment

Unit reference no and date	Description & nuclide	Surface dose rate $\mu\text{Sv h}^{-1}$	Surface contamination Bq ml^{-1}	Specific activity Bq ml^{-1}	Volume ml	Total activity Bq	Place and method of disposal	Remarks