

**RADIOACTIVE SUBSTANCES ACT 1993
CERTIFICATE OF AUTHORISATION
AND
INTRODUCTORY NOTE
ACCUMULATION AND DISPOSAL
OF RADIOACTIVE WASTE
UNIVERSITY COLLEGE LONDON
THE EAR INSTITUTE
330-336 GRAY'S INN ROAD
LONDON
WC1X 8EE**

**AUTHORISATION NUMBER
BX6022/BZ9995**

INTRODUCTORY NOTE

- IN 1. This Note does not form part of the Certificate of Authorisation.
- IN 2. The following certificate contains details of an authorisation issued by the Environment Agency under the provisions of Sections 13 and 14 of the Radioactive Substances Act 1993 ("the Act"). The authorisation permits the accumulation and disposal of the specified radioactive wastes from the specified premises.
- IN 3. The Radioactive Substances Act 1993 is concerned with the control of radioactive material and any subsequent accumulation and disposal of radioactive waste. The conditions attached to the authorisation are concerned with the control and security of the accumulated radioactive waste and its subsequent disposal.
- IN 4. The holding and use of radioactive materials from which the radioactive waste covered by this authorisation is generated, is under the terms of a certificate of registration issued under sections 7 and/or 10 of the Act.
- IN 5. The authorisation does not permit contravention of any other enactment or any order made, granted or issued under any enactment; nor does it permit any contravention of any rule of law or breach of any agreement.
- In particular any requirements governing the use of radioactive material under the Health & Safety at Work etc Act 1974 will additionally need to be observed.
- IN 6. The undertaking to which this certificate relates may accumulate and dispose of the radionuclides P-32, P-33, S-35 and other radionuclides excluding alpha emitters. The radioactive waste included in the provisions of this certificate results from the use of registered open sources which are in the form of solutions or solids that may be divided (e.g. dilution). Such materials are used for the purposes of medical research and academic research or teaching, where there is a need to manipulate the radioactive materials themselves, rather than simply exploit the properties of their radiations. In performing these operations, a variety of radioactive waste is generated, including laboratory trash, and residues of the registered open sources.

Authorisation to Accumulate and Dispose of Radioactive Waste

UNIVERSITY COLLEGE LONDON

BX6022/BZ9995

This certifies that the Environment Agency ("the Agency") in exercise of its powers under sections 16(2) and 16(8) of the Radioactive Substances Act 1993 ("the Act") has authorised

UNIVERSITY COLLEGE LONDON

("the user")

whose Registered Office is

GOWER STREET
LONDON
WC1E 6BT

under sections 13(1), 13(3) and 14 of the Act, to accumulate the radioactive waste specified in paragraph 1 of Schedule 2 to this certificate on the premises (with a view to its subsequent disposal) and to dispose of the radioactive waste specified in paragraph 2 of Schedule 2 to this certificate, from the premises used by him at

THE EAR INSTITUTE
330-336 GRAY'S INN ROAD
LONDON WC1X 8EE

subject to the limitations and conditions in the Schedules to this Certificate of Authorisation.

This Authorisation came into effect on 4 JANUARY 2006.

Signed

[Redacted signature]

David Nicholson

Authorised to sign on behalf of the Environment Agency

Dated the 18/12/2006

Schedule 1

STANDARD CONDITIONS AND LIMITATIONS

MANAGEMENT

1. The user shall have a management system, organisational structure and resources which are sufficient to achieve compliance with the limitations and conditions of this Authorisation and which include:
 - a) provision for consultation with such suitable RPAs, or other such qualified experts as to compliance with the limitations and conditions of this Authorisation and, in particular, on the matters addressed in paragraphs 2 and 4 in this Schedule;
 - b) written operating procedures;
 - c) adequate supervision of the disposal of radioactive waste by suitably qualified and experienced persons, whose names shall be clearly displayed with each copy of the Certificate of Authorisation that is posted on the premises as required by section 19 of the Act.

DISPOSAL OF RADIOACTIVE WASTE

2. The user shall use the best practicable means to:
 - (a) minimise the activity in all disposals of radioactive waste;
 - (b) where authorised, minimise the volume of radioactive waste disposed of by transfer to other premises;
 - (c) dispose of radioactive waste at times, in a form, and in a manner so as to minimise the radiological effects on the environment and members of the public.
3. The user shall maintain in good repair the systems and equipment provided:
 - (a) to meet the requirements of paragraph 2 in this Schedule;
 - (b) for the disposal of radioactive waste.
4. The user shall check, at an appropriate frequency, the effectiveness of systems, equipment and procedures provided:
 - (a) to meet the requirements of paragraph 2 in this Schedule;
 - (b) for the disposal of radioactive waste.

ACCUMULATION OF RADIOACTIVE WASTE

5. The user shall so far as is reasonably practicable prevent -
- (a) the loss or escape of any accumulated radioactive waste; and
 - (b) the access to any accumulated radioactive waste by any person not authorised by the user.
6. The user shall so far as is reasonably practicable ensure that accumulated radioactive waste is kept either:

- (a) in a suitable container under continuous surveillance; or
- (b) in a suitable container in a suitable store both of which -
 - (i) are so constructed, maintained and used so as to prevent the loss or unauthorised removal of the waste; and
 - (ii) are constructed of non-combustible materials; and
 - (iii) do not contain nor are located close to any corrosive, explosive or flammable material; and
 - (iv) are clearly and legibly marked with the word 'Radioactive' and with the ionising radiation symbol complying with BS 3510: 1968 or ISO 361 and any other information necessary for the identification of the waste present.

7. The user shall so far as is reasonably practicable ensure that all relevant parts of the premises are constructed, maintained and used in such a manner that -
- (a) they do not readily become contaminated; and
 - (b) any contamination which does occur can be easily removed.

LOSS OF ACCUMULATED RADIOACTIVE WASTE

8. If the user believes or has reasonable grounds for believing that any accumulated radioactive waste has been lost or stolen he shall -
- (a) without delay inform the Police and the Agency;
 - (b) so far as is reasonably practicable recover the waste; and
 - (c) as soon as is practicable notify the Agency in writing of the circumstances of the occurrence and the means taken to recover the waste.

ESCAPE OF ACCUMULATED RADIOACTIVE WASTE

9. If the user believes or has reasonable grounds for believing that any radioactive waste is escaping or has escaped from any container or location in which it is accumulated he shall -

(a) without delay inform the Agency;

(b) so far as is reasonably practicable:-

(i) prevent any further escapes; and

(ii) minimise the spread of any contamination;

(c) ensure that any discharge of radioactive gas to the atmosphere is made in a manner which prevents so far as is reasonably practicable its entry into any building; and

(d) as soon as is practicable report the circumstances in writing to the Agency.

ACCUMULATION OR DISPOSAL NOT IN COMPLIANCE WITH AUTHORISATION

10. If the user believes or has reasonable grounds for believing that the accumulation or disposal of radioactive waste is occurring, has occurred or might occur which does not comply with the limitations and conditions of this authorisation he shall -

(a) without delay inform the Agency;

(b) so far as is reasonably practicable prevent the further accumulation or disposal of radioactive waste; and

(c) as soon as is practicable report the circumstances in writing to the Agency.

CHANGE OF NAME OR CESSATION OF ACCUMULATION AND DISPOSAL

11. The user shall inform the Agency in writing, at least 28 days in advance or, where this is not possible, without delay, of his intention to -

(a) change the name of the user; or

(b) cease to occupy the premises; or

(c) cease to accumulate and dispose of radioactive waste.

RECORDS

12. The user shall make, on the day of accumulation or disposal as appropriate, clear and legible records of accumulation and of disposal of radioactive waste.

13. The user shall, subject to paragraph 16 in this Schedule:

- (a) make and retain records sufficient to demonstrate whether the limitations and conditions of this Authorisation are complied with;
- (b) retain records made in accordance with any previous Authorisation issued to the user and related to the premises covered by this Authorisation;
- (c) retain records transferred to the user by any predecessor user which were made in accordance with any previous Authorisation related to the premises covered by this Authorisation.

- 14. If the user amends any record made in accordance with this Authorisation it shall ensure that the original entry remains clear and legible.
- 15. If required by the Agency, the user shall keep the records referred to in paragraph 12 and 13 in this Schedule in a manner and place approved by the Agency.
- 16. The user shall retain the records referred to in paragraphs 12 and 13 in this Schedule until notified in writing by the Agency that the records no longer need to be retained.

PROVISION OF INFORMATION

- 17. The user shall supply such information in such format and within such time as the Agency may specify.

SAMPLING AND ANALYSIS OF WASTE AND OTHER SUBSTANCES

18. The user shall:

- (a) take and analyse such samples of waste and conduct such other tests and surveys as the Agency may require;

(b) make and keep a record of each such analysis, test or survey; and

(c) retain such samples as may be directed by the Agency.

19. If required by the Agency, the user shall, as the Agency specifies -

(a) provide samples;

(b) dispatch samples for tests at a laboratory and ensure that the samples and residues thereof are collected from the laboratory within three months of receiving written notification that testing and repackaging in accordance with the appropriate transport regulations are complete.

INTERPRETATION

20. (1) In this Certificate of Authorisation -

"activity", expressed in becquerels, means the number of spontaneous nuclear transformations occurring in a period of one second in a radioactive substance;

"aqueous waste" means radioactive waste in the form of a continuous aqueous phase together with any entrained solids, gases and non-aqueous liquids;

"Bq, kBq, MBq, GBq, TBq and PBq" are used as abbreviations meaning becquerels, kilobecquerels, megabecquerels, gigabecquerels, terabecquerels and petabecquerels respectively;

"consignment" means an individual shipment of radioactive waste not greater in volume than 40 cubic metres or such lesser volume as specified in writing by the Agency;

"day" means a period of twenty-four consecutive hours commencing at midnight;

"decay products" means in relation to any radionuclide, the radionuclides succeeding it in the radioactive series in which it and they occur;

"drainage system" means any drainage system normally used for the disposal of foul water or trade effluent arising on the premises;

"half life" means the time taken for the activity of a radionuclide to lose half its value by decay;

"gaseous waste" means radioactive waste in the form of gases and associated mists and particulate matter;

"licensed landfill site" means a place where the deposit of waste is authorised by a waste management licence issued under Part II of the Environmental Protection Act 1990 or by a permit issued under The Pollution Prevention and Control (England and Wales) Regulations 2000;

"LLWR" means Low Level Waste Repository

"LLWR Operator" means the current holder of a site licence issued under the Nuclear Installations Act 1965 for the Low Level Waste Repository at Drigg;

"modifications" includes additions, alterations and omissions;

"month" means calendar month (ie 1-31 January, 1-28/29 February, 1-31 March, etc);

"operating procedures" means procedures for carrying out any operation that may have an effect on compliance with this Authorisation;

"organic liquid waste" means radioactive waste in the form of liquid, not being aqueous waste, containing one or more organic chemical compounds;

"period of accumulation" means the length of time that waste remains accumulated on the premises with a view to its subsequent disposal;

"radionuclide" means a species of atom characterised by its mass number and atomic number and subject to radioactive decay;

"record of accumulation" means a record made in such a manner as the Agency may require showing the origin, nature, volume and location of the accumulated waste together with such other information as may be specified by the Agency;

"record of disposal" means a record made in such a manner as the Agency may require showing the date, location, radioactive content of each disposal and in the case of waste transferred for the purpose of final disposal at the Low Level Waste Repository at Drigg, the nature of the waste, its weight and volume, together with such other information as may be specified by the Agency;

"relevant parts of the premises" includes for the purposes of paragraph 7 of this Schedule, the floor, ceiling, walls, fittings and furniture in any area where radioactive waste is accumulated or disposed of, and any associated drainage and ventilation systems;

"residual ash" includes cinders and other debris;

"RPA" means a Radiation Protection Adviser appointed under Regulation 13 of the Ionising Radiations Regulations 1999;

"Schedule" means a Schedule which forms part of this certificate;

"Sellafield Site Operator" means the current holder of a site licence issued under the Nuclear Installations Act 1965 for the Sellafield Site ;

"solid waste" means radioactive waste in the form of a solid and includes very low level waste;

"the Act" means the Radioactive Substances Act 1993;

"the Agency" means the Environment Agency;

"very low level waste" means waste in the form of solid, together with refuse which is not radioactive waste, in which at the time of removal from the premises either -

(i) there are no alpha emitting radionuclides, the sum total of kilobecquerels of all other radionuclides in any 0.1 cubic metres of the whole mass of radioactive waste and refuse does not exceed 400 and the sum total of kilobecquerels of all other radionuclides in any one item of waste does not exceed 40; or

(ii) the sum total of megabecquerels of all the carbon 14 and tritium in any 0.1 cubic metres of the whole mass of radioactive waste and refuse does not exceed 4, the sum total of kilobecquerels of carbon 14 and tritium in any one item of the waste does not exceed 400 and there are no other radionuclides;

"waste collection authority" has the same meaning as in Part II of the Environmental Protection Act 1990;

"year" means calendar year.

(2)

(a) In determining whether particular means are the "best practicable" for the purposes of this authorisation, the user shall not be required to incur expenditure whether in money, time or trouble which is, or is likely to be, grossly disproportionate to the benefits to be derived from, or likely to be derived from, or the efficacy of, or likely efficacy of, employing them, the benefits or results produced being, or likely to be, insignificant in relation to the expenditure;

(b) Where reference is made to the use of "best practicable means" in this Certificate of Authorisation, the means to be employed shall include:

(i) the provision, maintenance and manner of operation of any relevant plant, machinery or equipment;

(ii) the supervision of any relevant operation.

Schedule 2

- 1. RADIOACTIVE WASTE AUTHORISED FOR ACCUMULATION**
 - Aqueous Waste**
 - Organic Liquid Waste**
 - Very Low Level Waste**
 - Solid Waste**
- 2. RADIOACTIVE WASTE AUTHORISED FOR DISPOSAL**
 - Aqueous Waste**
 - Organic Liquid Waste**
 - Very Low Level Waste**
 - Solid Waste**

Schedule 3

**AQUEOUS WASTE
ACCUMULATION OF AQUEOUS WASTE**

1.

The user may only accumulate aqueous waste if -

- a. it is disposed of as soon as reasonably practicable;
- b. the activity of any radionuclide or group of radionuclides in the waste listed in Column 1 of Table 1 of this paragraph does not exceed the relevant limit specified in Column 2 of that Table;
- c. it contains only the radionuclides listed in Column 1 of Table 1 of this paragraph other than decay products in amounts which could be present through radioactive decay of a listed radionuclide in the waste;
- d. its volume does not exceed that specified in Table 2 of this paragraph; and
- e. the period of accumulation does not exceed that specified in Table 3 of this paragraph.

Table 1

Activity of Accumulated Aqueous Waste	
Column 1 Radionuclides	Column 2 Activity Limits
phosphorus 32 phosphorus 33 sulphur 35 total other radionuclides excluding alpha emitters	70 megabecquerels 70 megabecquerels 25 megabecquerels 70 megabecquerels

Table 2

Maximum Volume of Accumulated Waste
1m ³

Table 3

Maximum Period of Accumulation of Aqueous Waste
1 month

DISPOSAL OF AQUEOUS WASTE

2. The user may only dispose of aqueous waste if -

- a. it is disposed of by the route specified in Table 1 of this paragraph;
- b. so far as is reasonably practicable, all entrained solids, gases and non-aqueous liquids have been excluded;
- c. in any month the total activity of any radionuclide or any group of radionuclides in the waste listed in Column 1 of Table 2 of this paragraph does not exceed the relevant monthly disposal limit in Column 2 of that Table; and
- d. it contains only the radionuclides listed in Column 1 of Table 2 of this paragraph other than decay products in amounts which could be present through radioactive decay of a listed radionuclide in the waste.

Table 1	
Authorised Aqueous Disposal Route	the drainage system of the premises authorised for disposal (Beckton)

Table 2	
Aqueous Waste Disposal Limits	
Column 1 Radionuclides	Column 2 Monthly Disposal Limits
phosphorus 32 phosphorus 33 sulphur 35 total other radionuclides excluding alpha emitters	140 megabecquerels 140 megabecquerels 50 megabecquerels 140 megabecquerels

Schedule 4

**ORGANIC LIQUID WASTE
ACCUMULATION OF ORGANIC LIQUID WASTE**

1. The user may only accumulate organic liquid waste if -
 - (a) it is disposed of as soon as reasonably practicable;
 - (b) the activity of any radionuclide or group of radionuclides in the waste listed in Column 1 of Table 1 of this paragraph does not exceed the relevant limit specified in Column 2 of that Table;
 - (c) it contains only the radionuclides listed in Column 1 of Table 1 of this paragraph other than decay products in amounts which could be present through radioactive decay of a listed radionuclide in the waste;
 - (d) its volume does not exceed that specified in Table 2 of this paragraph; and
 - (e) the period of accumulation does not exceed that specified in Table 3 of this paragraph.

Table 1

Activity of Accumulated Organic Liquid Waste	
Column 1 Radionuclides	Column 2 Activity Limits
phosphorus 32 phosphorus 33 sulphur 35 total other radionuclides excluding alpha emitters	50 megabecquerels 50 megabecquerels 20 megabecquerels 50 megabecquerels

Table 2

Maximum Volume of Accumulated Organic Liquid Waste
1 m ³

Table 3

Maximum Period of Accumulation of Organic Liquid Waste
24 months

DISPOSAL OF ORGANIC LIQUID WASTE (Transfer to Other Person(s))

2. The user may only, unless otherwise authorised, dispose of organic liquid waste if -

- (a) it is transferred to a person specified in Column 1 of the Table in this paragraph in accordance with that person's directions;
- (b) in any year the total activity of any radionuclide or group of radionuclides in the waste listed in Column 2 of the table in this paragraph does not exceed the relevant disposal limit specified in Column 3 of that table in respect of the relevant person specified in Column 1 of that table;
- (c) it contains only the radionuclides listed in Column 2 of the table in this paragraph in respect of the relevant person specified in Column 1 of that table other than decay products in amounts which could be present through radioactive decay of a listed radionuclide in the waste;
- (d) it is in a suitable container constructed and maintained so as to prevent the loss of waste;
- (e) he ensures so far as is reasonably practicable that the waste is not delayed in transit and is accepted at the premises of the person to whom he transfers waste; and
- (f) the person to whom he transfers waste receives at the time of each transfer a consignment note signed on the user's behalf, stating the total activity in the consignment of each radionuclide or group of radionuclides, listed in Column 2 of the table in this paragraph and containing such other information as may be specified by the Agency.

Disposal Limits for Transfer of Organic Liquid Waste		
Column 1 Persons to whom organic liquid waste may be transferred	Column 2 Radionuclides	Column 3 Annual Disposal Limits
A person authorised under section 13 of the Act to dispose of organic liquid waste by incineration / by further transfer on or from the premises at: Lakeside Road Colnbrook Berkshire SL3 0EG OR Charleston Road Hardley Hythe Hampshire SO45 3ZA OR University College London Gower Street London WC1E 6BT		
phosphorus 32 phosphorus 33 sulphur 35 total other radionuclides excluding alpha emitters		
180 megabecquerels 180 megabecquerels 60 megabecquerels 180 megabecquerels		

Table

3. If required by the Agency, the user shall ensure that any consignment or part of any consignment of waste found, following transfer, not to be in accordance with the limitations and conditions of this Authorisation-
- (a) is packaged in accordance with the appropriate transport regulations; and
- (b) is returned as soon as is reasonably practicable to the user's premises.

VERY LOW LEVEL WASTE

ACCUMULATION OF VERY LOW LEVEL WASTE

1. The user may only accumulate very low level waste if -
- (a) it is disposed of as soon as reasonably practicable; and
- (b) the period of accumulation does not exceed that specified in the table in this paragraph.

Table

Maximum Period of Accumulation of Very Low Level Waste
14 days

DISPOSAL OF VERY LOW LEVEL WASTE

2. The user may only dispose of very low level waste, other than waste which is otherwise authorised for incineration or transfer by this certificate, if the waste is specified in the table in this paragraph and it is disposed of -
- (a) by causing or permitting its removal as refuse by waste collection authority or their contractors; or
- (b) depositing at or causing or permitting its removal by a contractor for disposal at a licensed landfill site used for the disposal of substantial quantities of waste which is not radioactive waste and where the radioactive waste is not to be deposited in any place set aside for that purpose.

(1)

Table

Very Low Level Waste Authorised for Disposal	
Waste in the form of a solid, together with refuse which is not radioactive waste, in which at the time of removal from the premises:	
i.	there are no alpha emitting radionuclides;
ii.	the sum total of kilobecquerels of all other radionuclides in any 0.1 cubic metres of the whole mass of radioactive waste and refuse does not exceed 400; and
iii.	the sum total of kilobecquerels of all other radionuclides in any one item of waste does not exceed 40.

Schedule 6

SOLID WASTE
ACCUMULATION OF SOLID WASTE

1. The user may only accumulate solid waste if -
 - a. it is disposed of as soon as reasonably practicable;
 - b. the activity of any radionuclide or group of radionuclides in the waste listed in Column 1 of Table 1 of this paragraph does not exceed the relevant limit specified in Column 2 of that Table;
 - c. it contains only the radionuclides listed in Column 1 of Table 1 of this paragraph other than decay products in amounts which could be present through radioactive decay of a listed radionuclide in the waste;
 - d. its volume does not exceed that specified in Table 2 of this paragraph; and
 - e. the period of accumulation does not exceed that specified in Table 3 of this paragraph.

Table 1

Activity of Accumulated Solid Waste	
Column 1 Radionuclides	Column 2 Activity Limits
phosphorus 32 phosphorus 33 sulphur 35 total other radionuclides excluding alpha emitters	90 megabecquerels 90 megabecquerels 30 megabecquerels 90 megabecquerels

Table 2

Maximum Volume of Accumulated Solid Waste
2m ³

Table 3

Maximum Period of Accumulation of Solid Waste
12 months

DISPOSAL OF SOLID WASTES (Transfer to other persons)

2. The user may only, unless otherwise authorised, dispose of solid waste if -

- (a) it is transferred to a person specified in Column 1 of the table in this paragraph in accordance with that person's directions;
- (b) in any year the total activity of any radionuclide or group of radionuclides in the waste listed in Column 2 of the table in this paragraph does not exceed the relevant disposal limit specified in Column 3 of that table, in respect of the relevant person specified in Column 1 of that Table;
- (c) it contains only the radionuclides listed in Column 2 of the table in this paragraph in respect of the relevant person specified in Column 1 of that table other than decay products in amounts which could be present through radioactive decay of a listed radionuclide in the waste;
- (d) it is in a suitable container constructed and maintained so as to prevent the loss of waste;
- (e) he ensures so far as is reasonably practicable that the waste is not delayed in transit and is accepted at the premises of the person to whom he transfers waste; and
- (f) the person to whom he transfers waste receives, at the time of each transfer, a consignment note signed on the user's behalf, stating the total activity in the consignment of each radionuclide or group of radionuclides, listed in Column 2 of the table in this paragraph and containing such other information as may be specified by the Agency.

Disposal Limits for Transfer of Solid Waste		
Column 1 Persons to whom solid waste may be transferred	Column 2 Radionuclides	Column 3 Annual Disposal Limits
A person authorised under section 13 of the Act to dispose of solid waste by incineration / by further transfer on or from the premises at: Lakeside Road Colnbrook Berkshire SL3 0EG OR Charleston Road Hardley Hythe Hampshire SO45 3ZA OR University College London Gower Street London WC1E 6BT	phosphorus 32 phosphorus 33 sulphur 35 total other radionuclides excluding alpha emitters	360 megabecquerels 360 megabecquerels 120 megabecquerels 360 megabecquerels
		360 megabecquerels

Table

3. If required by the Agency, the user shall ensure that any consignment or part of any consignment of waste found, following transfer, not to be in accordance with the limitations and conditions of this Authorisation-
- (a) is packaged in accordance with the appropriate transport regulations; and
- (b) is returned as soon as is reasonably practicable to the user's premises.

FURTHER CONDITIONS

None.

Schedule 7

