Section 2. Environment Agency Permits

This section outlines the requirements for and limits set by the Environment Agency permits for the acquisition, accumulation and disposal of radioactive isotopes. The permits only apply to the Wivenhoe Park Campus and have not been granted for any other location which the University occupies.

All limits are absolute and ***must not be exceeded***. The Environment Agency may issue an enforcement notice and/or prosecute the University if they are. The limits apply to the whole University. They may not be varied without application to the Environment Agency (who has the final say). Applications are costly, may need extensive documentation and may take 3-4 months to be granted. If variation is required for a specific project the cost will need to be met through the research grant.

Please note that under current legislation only SI units (Becquerels) are recognised, values based on Curies are provided for additional guidance only.

The current versions of the formal permits for unsealed sources issued by the Environment Agency ***must be displayed*** in all areas where unsealed sources are kept or used. There is no requirement to display permits for sealed sources.

The University has one permit (**EPR/YB3135DR**) which covers acquisition, keeping and use of open sources, accumulation of waste and disposal.

2.1 Open Sources Permit (EPR/YB3135DR)

2.1.1 Acquisition, Keeping and Use

Isotope	Activity Becquerels	Activity Curies
Tritium	1GBq	27mCi
Carbon 14	1GBq	27mCi
Phosphorus 32	200MBq	5.4mCi
All other radionuclides except Alpha emitters	200MBq	5.4mCi

2.1.2 Accumulation of Waste

The University is only permitted to accumulate waste in the following categories:

Solid and Organic Liquid Waste (Any radionuclide except Alpha emitters)

Total of all radionuclides except Alpha Emitters

Specified waste type	Total Activity Becquerels	Total Activity Curies	Total Volume	Maximum Storage Period (Days)
Solid	300 MBq	8.11mCi	$2m^3$	365
Organic Liquid	30 MBq (in total)	0.81mCi	80.0 litres (0.08 m^3)	365

Very Low Level Waste

Accumulation is limited to 14 Days. This is only permitted if authorised by the UIRPO.

The definition of **Very Low Level Waste** is

a. There are no alpha emitting radioisotopes, the sum total of kilobecquerels of all other radioisotopes in ***any*** 0.1 m^3 of the whole mass of radioactive waste and refuge does not exceed 400 kBq and the sum total of kilobecquerels of all other radioisotopes in any one item of waste does not exceed 40 kBq; or,

b. The sum total of Megabecquerels of all the carbon 14 and tritium in any 0.1 m^3 (i.e. black bin bag full) of the whole mass of radioactive waste and refuge does not exceed 4 MBq, the sum total of kilobecquerels of all the carbon 14 and tritium in any one item of waste does not exceed 400 kBq and there are no other radioisotopes.

2.1.3 Disposal of Waste

Groups must not produce non-combustible solid waste without written consent of the UIRPO and should note that the preferred disposal route is via a designated sink.

The University is only permitted to dispose of waste in the following categories

Gaseous Waste

Isotope	Daily Disposal Limit	Annual Disposal Limit (Jan-Dec)	Authorised Discharge Points
^{14}C	37.0MBq	250MBq	Laboratories: Room 3.02

Aqueous Liquid Waste

Disposal is permitted down authorised sinks (in room 3.02) subject to the limits below. These limits are for each type of the isotopes listed.

Isotope	Monthly Limit Bequerels	Monthly Limit Curies
Tritium	200 MBq	5.4mCi
Carbon 14	200 MBq	5.4mCi
Phosphorus 32	200 MBq	5.4mCi
All other radionuclides except Alpha emitters (Total).	200 MBq (Total)	5.4mCi

Solid Waste and Organic Liquid by Transfer to Authorised Contractor

Transfer to authorised contractor for disposal by incineration

Specified waste type	Isotope	Annual limit
Solid waste	Any radionuclides except Alpha emitters	300MBq
Organic liquid waste		100MBq

Very Low Level Waste

It is permitted to dispose of Very Low level Waste to a controlled landfill site. Any such disposal may only be made if authorised in writing by the UIRPO.

2.2 Other Radioactive Substances and Sources of Ionising Radiation

The University may also acquire, keep and use certain other radioactive substances under a range of exemption orders which give exemption from the need for a permit, although other strict conditions apply such as to limit the activity and quantity of substances to be held at any one time.

Typical radioactive substances and equipment covered by these orders are Thorium and Uranium Salts, Rare Earths, teaching sources, smoke detectors, ionisation source of a gas chromatography apparatus and Liquid Scintillation Counters.

No department or group may lease, borrow, purchase or otherwise acquire any radioactive substance to which an exemption order applies without having first obtained the approval of the UIRPO.

The UIRPO MUST also be informed in advance whenever it is proposed to purchase any instrument or device that contains radioactive material or is likely to generate X-rays either as part of its operation or adventitiously.

X-ray generators are defined as any equipment with a vacuum and with an operating potential of 5kV or above (apart from cathode ray tubes). For example: electron microscopes.

2.3 General

The above disposal limits apply to the whole of the University.

The University is not permitted to dispose of sealed sources without special permission. Any proposed disposals of sealed sources must be discussed with the UIRPO.

Sealed sources may be present in laboratory equipment such as scintillation counters and GLC's. Disposal of such equipment must be authorised by the UIRPO.

Note:

Permit AX0305 / CB1079 (22/02/07)) (mobile open sources (Unsealed Isotopes)) was surrendered in October 2011

Permits BX41192 (closed sources) and BR9936 (mobile closed sources were surrendered in April 2014.