



University of Essex

Radiation emergency and contingency plan

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Emergency contacts

IN CASE OF A MAJOR EMERGENCY¹ THE UIRPO and DIRPS MUST BE CONTACTED

During working hours

Contact Type	Name	Contact Number
Departmental Ionising Radiation Protection Supervisor (DIRPS) (Life Sciences)	Dr Dima Svistunenko	01206 873149
Departmental Ionising Radiation Protection Supervisor (DIRPS) (Sport Rehabilitation and Exercise Sciences)	Dr Chris McManus	01206 874475
Deputy DIRPS (Life Sciences)	Dr Amanda Cavanagh	01206 872244
University Ionising Radiation Protection Officer UIRPO	Caroline Smith	01206 874655
Lead Radiation Protection Adviser	Niall Higbee, RPA Plus	Contact via UIRPO, or if UIRPO unavailable use the numbers below.
Deputy Radiation Protection Adviser	Mike Bone	Contact via UIRPO, or if UIRPO unavailable use the numbers below.

Out of office hours

Contact Type	Name	Contact Number
Out of hours Life Sciences emergency contacts	Dr David Knight Gregor Grant	Home emergency contact details kept by Information Centre

¹ Refer to annex for definition of major emergency

University Ionising Radiation Protection Officer UIRPO	Caroline Smith	Home emergency contact details kept by Information Centre: (01206 87) 2222
Lead Radiation Protection Adviser (RPA)	Niall Higbee, RPA Plus	Mobile: 07969 880075
Deputy Radiation Protection Adviser (DRPA) (Until February 2023).	Mike Bone	Work: 0172 8685392 Mobile: 07981 336529

Enforcement Agency

Contact Type	Name	Contact Number
Environment Agency:	Environmental incident hotline	0800 80 70 60 (24 hours) and say you are reporting a <i>radiation incident</i> .

The Patrol Officers are authorised to contact the University's Ionising Radiation Protection Officer (UIRPO) (who is the Professional Lead for Health and Safety (Academic Faculties), and the Life Sciences emergency contacts out of hours.

The Life Sciences emergency contacts are responsible for contacting the Department Ionising Radiation Protection Supervisor (DIRPS) out of hours.

In the event of the UIRPO and DIRPS not being contactable the University's Radiation Protection Advisor (RPA) should be contacted.

All departments must have contingency plans for emergency situations drawn up by the DIRPS, in consultation with the RPA and UIRPO.

1. Incidents and radiation accidents involving personal injury with contamination

- The treatment of serious injuries must take precedence over decontamination and containment of contamination. Give first aid.
- Call for first aid/ ambulance (for Colchester campus call the Information Centre on 2222). Advise them of the nature of the incident.
- Warn everyone in the area and control movement and the spread of contamination.
- Contact the DIRPS and UIRPO. If neither is available, contact the University's RPA
- Remove contaminated clothing carefully so as not to spread contamination.
- If contamination has entered the mouth collect sputum in a suitable container.
- Wash the skin with mild soap and water, use only mild abrasion wash. Repeat only three times. Monitor after each wash. If the eyes and ears are contaminated, irrigate with saline or clean water.
- Secure the entrance to the laboratory and attempt to identify a 'clean pathway' for first aider / ambulance personnel. Make overshoes, gloves available to anyone entering the area.
- Monitor patient for personal contamination, if contamination persists, cover the contaminated area prior to the arrival of the ambulance.
- Inform the ambulance staff of the nature of the contamination. However if the ambulance staff are reluctant to take the patient, suggest that the person is treated as someone with hepatitis.
- Retain all swabs, sputum samples and items of clothing place in a suitable bag or container and label.
- Follow contingency plan 2, (Incidents involving area contamination).
- Complete a [*Health and Safety Incident Form*](#) and submit it to the DIRPS and UIRPS. Include details of the level of contamination of the skin and body.

- The UIRPO will inform the RPA, Occupational Health Adviser and, where necessary, make a report to the HSE.

Further notes on decontamination:

Damp, but not dripping, paper swabs should be used first with soap and water, followed by detergents such as 1% Decon 90 in water, if time permits.

Ensure the skin is not broken by excessive rubbing during these procedures or contamination may be pushed deeper into the skin or the body.

Soap and water, or if necessary detergent or EDTA soap, should be used to remove any contamination of the hair.

Great care is needed when decontaminating the face to ensure that active liquid does not touch the lips or enter the eyes.

Any contamination of the skin surrounding the eye should be removed before irrigation using water or eyewash.

If the skin is actually broken in the area of contamination, the wound should be allowed to bleed, within reason and irrigated immediately with tap water or a saline solution, taking care to limit any spread of contamination on the skin.

Both the area of the wound and the object which caused it should be monitored for radioactive contamination.

It may be necessary to lay a mat of paper towels on the floor to absorb any spillages and prevent the floor from becoming slippery.

2. Radiation incidents involving contamination, with no immediate personal injury

2.1 Spills of radioactive substances

- Evacuate the laboratory / area, monitoring for personal contamination (checking clothes, hands and feet). Decontaminate contaminated personnel in a safe area. (See decontamination notes above).

- Contaminated clothing or materials used to contain spills or clean contaminated areas must be placed in a polythene bag, which must be marked “radioactive,” tagged and placed in the decay store for disposal (See section 8).
- Inform workers in the immediate vicinity of the lab.
- Prevent the spreading of contamination into the environment (via inappropriate drains, under doors and via river courses etc.).
- Turn off appropriate lab services (i.e. hot blocks), close windows and doors.
- Lock the lab or erect a barrier to prevent further access.
- The incident / accident must be reported, in writing, to the UIRPO and DIRPS. A [Health and Safety Incident Form](#) must be completed.
- The UIRPO will contact the RPA to ascertain reporting requirements to other bodies i.e. Environment Agency, HSE and the Police.

2.2 Recovery plan for the decontamination of the laboratory area, fixtures, or fittings

- Permission and direction from the DIRPS will direct the recovery phase of the contingency plan.
- Persons must wear appropriate Personal Protective Equipment (PPE) according to the Local Rules. A full contamination survey must be mounted using the appropriate monitors. In the case of H-3, smears must be taken and read by Liquid Scintillation Counting.
- Starting from the outer edge, decontaminate the area removing heavy contamination by blotting paper or absorbent tissues, then by wiping and scrubbing with detergent and water. If it is suspected that contaminated chemicals are hydrophobic, caustic, toxic, flammable or emit a heavy vapour then a new risk assessment and further written instructions must be drawn up.
- Monitor all persons and equipment involved in cleaning. Any contaminated equipment should be placed in polythene bags which must be labelled as radioactive.
- Contaminated equipment and materials that cannot be decontaminated must be tagged and placed in the decay store for disposal as radiation waste. (See section 8).
- The area, laboratory, equipment must be further monitored, according to local rules before clearance is given to resume work, by the DIRPS.

If iodination work is undertaken then these contingency plans must be revised.

3. Overexposure to external radiation

- If the exposure is from an X-ray apparatus, accelerator etc., immediately terminate the X-rays/beam by a stop button, shutter control, mains isolator or control unit but DO NOT CROSS A BEAM PATH.
- Remove all persons away from radioactive sources.
- If you are covered by the scheme of work, secure the closed radioactive source into the safe position or a shielded container.
- Lock the lab or erect a barrier to prevent further access.
- No one is allowed to use the apparatus / source until permission is given by the DIRPS.
- Inform the UIRPO and DIRPS and complete a [*Health and Safety Incident Form*](#).
- Try not to disturb anything that would hinder an investigation of how the accident happened and how much dose was received.

4. Radiation accidents involving fire

- In the event of fire, follow the University Fire Instructions, and state that radioactivity or radiation is involved.

5. Leakage of a sealed source

- If it is suspected that the source is leaking, it must be placed in a bag marked with the details of the source and a label with the notice “Do not use” attached and locked into a suitable store.
- The DIRPS must be contacted and monitoring commenced to trace any contamination in the work area, or on persons or their clothing. Any contamination must be removed immediately,

placing contaminated items in a plastic bag marked “radioactive” which should then be tagged and put in the decay store for disposal. (See section 8).

- If personal contamination has occurred, then decontamination procedures detailed in contingency plan 1 above must also be applied. Similarly, for contamination of an area / laboratory or fixtures and fittings then contingency plan 2 should be followed.
- If it is believed that the contamination has spread to public or other premises, barriers must be erected around the area. The areas must be monitored and decontaminated as soon as possible. Decontamination materials must be placed in a plastic bag marked “radioactive” which should then be tagged and put in the decay store for disposal. (See section 8).
- Also inform the UIRPO and complete H&S form.

6. Theft or loss of radioactive substances or sources

- Location of radioactive substances or sources is often more quickly done using a suitable detection instrument rather than by visual inspection.
- Inform the DIRPS and UIRPO first, who will decide if the RPA needs to be informed.
- When the DIRPS confirms that there are reasonable grounds for believing that a source or radioactive substances have been lost or stolen then the following action will be taken:
 - the UIRPO will inform the Head of Security, Police and the Environment Agency as soon as possible of the suspected theft or loss; and
 - all reasonably practicable steps will be taken forthwith to recover the source.
 - An investigation must be carried out into how the source was lost or stolen.
 - If the source is not recovered, its loss should be recorded on the appropriate radiation databases.
- Also inform the UIRPO and complete H&S form.

7. Wider communication

Depending on the seriousness of the incident, the UIRPO will inform the following:

- Deputy Vice-Chancellor
- Head of University's Crisis Management Group (CMG)
- Communications and External Relations (where there is likely to be media interest)

8. Disposal and accounting for contamination losses

All contaminated waste should be tagged and placed in the decay store and *Form 5: Record of Radioactive Isotope Accumulation and Disposal* completed. An estimate should be made of the amount radioactive substance recovered as solid/organic waste, the amount that may have been disposed of through other waste streams (e.g. via the sink or shower) and the amount lost as a result of the contamination. It will be necessary to record the information on the radiation databases, so that the waste is accounted for as part of permit requirements.

9. Emergency Equipment

An emergency box must be available in rooms where work on radioisotopes is carried out (3.02). The minimum contents of this box should be:

Decontaminant	Soft Nail brush
Washing up liquid	Tissues
Eye wash bottle (check date)	Cotton wool
Disposable Paper Overall	Overshoes
Benchkote absorbent paper	Refuse bag
Spillage absorbency pads	
Scouring pads (Scotchbrite)	Radiation Tape
2 x Radioactive waste bags	2 x J cloths

2 x black waste tags	2 x general purpose rubber gloves ²
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There must also be an “Eco spill” kit, designed to cope with spills up to 15 litres. NB: This is kept in a yellow bag.

The DIRPS should ensure that a **fortnightly check** is made to ensure the contents of the box and spills kit are correct and solutions are not beyond the use-by date stated on the packaging.

² (e.g. “Marigold” style washing up gloves)

Annex: Definition of a major incident / REPPIR

A MAJOR Emergency is defined as an incident involving activities in excess of those listed below.

Class of radioisotopes ³	Unsealed radioisotopes used at Essex	General radioisotopes	Biologically active radioisotopes
1	none	any amount of isotope	any amount of isotope
2	¹²⁵ I, ¹³¹ I	3.7 x 10 ⁸ Bq i. Ci)	3.7 x 10 ⁶ Bq (0.1 mCi)
3	¹⁴ C, ³² P, ³³ P, ³⁵ S,	3.7 x 10 ¹⁰ Bq (1 Ci)	3.7 x 10 ⁸ Bq (10mCi)
4	³ H	3.7 x 10 ¹² Bq (100 Ci)	3.7x 10 ¹⁰ Bq (1 Ci)

In the case of *volatile or gaseous* isotopes then any leak equivalent to *one tenth* of these amounts the laboratory must be evacuated immediately. If time permits all services should be switched off with the exception of lighting.

A major incident affecting members of the public is governed by 'The Radiation (Emergency Preparedness and Public Information) Regulations 2019. (REPPIR 19)

At the time of writing (June 2022), a REPPIR Assessment found that quantity ratios of radioactive substance do not exceed thresholds in Schedule 1 or 2 of REPPIR 19. Therefore, REPPIR does not apply. This would be true for the University's radioactive substances for the whole period since the REPPIR regulations were placed on the statute book.

³ as defined in Annex I of European Directive 80/836

