# Application for an approved scheme of work for working with ionising radiations (Incorporating the Radiation Risk Assessment) (Form 4)

Please refer to the Guidance on completing the application for an approved scheme of work for working with ionising radiations for help with completing this form.

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| **Scheme Title:** |  |
| **Period of approved scheme (start date- end date):**  (Not to exceed 3 years) (dd/mm/yyyy) | **From**:  **To**: |

**The Declaration and Sections 1 to 5 must be completed by the Scheme Supervisor who must also be a Radiation Worker.**

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| **DECLARATION** |
| I have read the University of Essex Local Rules for working with radioactive materials and I agree to adhere to the Regulations set out therein. I also agree to act as the Scheme Radiation Protection Supervisor for this Scheme. |
| **Name:**  Supervisor / Group Leader |
| **Signed**: |
| **Name of Deputy:**  In Supervisor / Group Leader’s Absence |
| **Date:**  (dd/mm/yyyy) |

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| **APPROVAL *[For office use only]***  Subject to any conditions stated below, approval has been given for this Scheme of Work to commence. |
| **Reviewed by**:  Departmental Ionising Radiation Protection Supervisor |
| **Date**:  (dd/mm/yyyy) |
| **Approved by**:  University Ionising Radiation Protection Officer |
| **Date**:  (dd/mm/yyyy) |
| **Approval Conditions**: |
| **Comments**: |
| **SECTION 1: PROCEDURES** |
| **Brief Description of the work to be carried out, including number of experiments likely in one year:** |
| Details of hazardous operations:  (e.g. generating aerosols) |
| **SECTION 2: RADIOISOTOPES[[1]](#footnote-1)** |
| **Principle radiations and energies (The Hazards):** |
| **External radiation hazard**  **Yes / No** |
| Type of emission (ß , γ) and energies: |
| **Internal radiation Hazard**  **Yes / No** |
| **Route(s) of exposure**  Inhalation (Yes/ No):  Ingestion (Yes/No):  Skin absorption (Yes/No): |
| **What is the half life?** |
| **Room stock isotope will be kept in (room number):** |
| **Laboratory where work will be carried out (room number):** |
| **Radioisotopes to be used outside of the University:**  Arrangements for storage and transportation: |

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| **Isotope** | **Maximum order activity (kBq)** | **Activity in laboratory (kBq)** | **Maximum activity per experiment (kBq)** |
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*Continue details of work and hazardous operations on a separate sheet here if necessary*

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| **SECTION 3: RADIATION HAZARDS (All radiation doses in µSv)** |
| **3(a) EXTERNAL RADIATION HAZARD** |
| Estimated maximum radiation dose to which workers could be exposed during normal work without the control measures in place: |
| **When dispensing in controlled area (Hot Room):**  Experiments per year:  Dose per experiment (Sv) extremities:  Dose per experiment (Sv) unshielded worker: |
| **Experiment in laboratory (supervised area):**  Experiments per year:  Dose per experiment (Sv) extremities:  Dose per experiment (Sv) unshielded worker: |
| **Control Measures for external radiation hazard:**  Detail measures which will reduce exposure (ALARP[[2]](#footnote-2)) to the research workers and other persons who may be affected by the work (e.g. shielding, fume cupboard, manipulation devices, time restraints, working practices). Refer to guidance for notes on Local Rules. |
| **Controlled area** |
| **Laboratory (supervised area)** |
| **To protect the foetus \* (required where research workers include women of childbearing age)** e.g. relocating higher risk tasks such as handling stock solutions to other workers, the use of shielding.  \*These and other measures may be implemented, after consultation with the RPA, if an employee declares she is pregnant. |
| Detail any personal protective equipment (PPE) to be used:  PPE must not be used in place of engineering controls such as fume cupboards or shielding*.* |

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| **3(b) INTERNAL RADIATION HAZARD** (Refer to the guidance for details of how to calculate) |
| For experiments using more than 40MBq, determine the likely ingestion of radionucides and the effects on the researcher, other persons, foetus\* or breastfeeding infants.  \*Note: P32, P33, Ca45 and Ca47 can concentrate in the foetus at 11- 17 x the maternal level and risk is greatest at 35 weeks into pregnancy |
| **Control measures for internal radiation hazard:** Detail measures which will reduce any spread of contamination to ALARP levels e.g. the design of the supplier’s stock container, trays, bench coat, demarcated areas and working practices. |
| **3(c) RADIATION ACCIDENTS** |
| Estimated maximum exposure in the event of a radiation accident µSv:  *Note:* *A formal investigation level of 1mSV has been selected by the Employer. This is the dose received by any employee that if exceeded for the first time in any calendar year, triggers a review of working conditions to make sure that the exposure is being restricted so far as possible.* |
| Describe all potential causes of radiation accidents and how you will reduce the risk of an accident occurring or its severity |
| **Describe the actions that will be taken in the event of any accidental spillages or other foreseeable event not part of the experimental procedure** |
| **RISK SUMMARY & CONCLUSIONS Tick those statements which apply below:** |
| The dose received by workers can be described as ALARP |
| The risk posed is insignificant and unlikely to increase during the course of the project. |
| The risk is significant, but will be effectively controlled. |
| There is uncertainty about the level of risk. |
| The risk is significant and cannot be effectively controlled. |

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| **SECTION 4: BEST AVAILABLE TECHNIQUE (BAT) AND WASTE STREAMS**  (Refer to guidance for explanation of BAT and notes on justification and optimisation.) |
| **Justification:** What is your justification for THIS use of radioactive material?  There are no practical alternatives to using a technique that utilises radioactive material  There are no practical alternatives to using a technique that utilises radioactive material  There are no other practical substitutes that utilise radioactive material which is less harmful to the environment  Or detail justification below: |
| **Optimisation:** Explain how the amount of radioactive material to be used / ordered is the minimum possible to conduct the work successfully. List engineering controls used to prevent or minimise the spread of contamination into the environment. |
| **Optimising disposal:** List all possible waste disposal routes and select the ones which after optimisation is the Best Available Technique, taking time, trouble, money and operator safety into account. |
| Waste streams |
| Will the procedure produce dust, volatile or gaseous material? YES / NO |
| The expected Radiation Waste Streams and Product to be produced each month by the above Scheme of Work is calculated as: |
| **Waste Stream (% of Original Activity)** |
| Sink Aqueous: |
| Incineration Solid: |
| Incineration Liquid: |
| Decay: |
| Gaseous (C14 only): |
| Expected Total activity to be produced each month (Kbq): |

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| SECTION 5: AUTHORISED WORKERS |
| All Radiation Workers must be registered and competent for the specific scheme. List the Radiation Workers nominated to work on the Scheme and for which you will act as the Scheme Radiation Protection Supervisor.  **The UIRPO must be informed of any amendments or additions to the nominated workers list.** |

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| **Name (print)** | **Position** | **Trained** | **May Order Isotope? Yes /No** | **Name (print)** |
|  | Supervisor/Group Leader |  |  |  |
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| **Training:** If Radiation Workers are not fully competent please outline how training is going to be delivered and by whom. If they are competent, attach their existing training record (Form 3). (NB: Where expertise is not available at the University, you may have to identify and fund training from another provider). Refer to the guidance and Section 3(b) of the Local Rules for further information on training requirements. |
| Confirm whether the nominated workers have already been registered as Radiation Workers, and whether they have completed the registration form (Form 1) and training record (Form 3), which should also be submitted.[[3]](#footnote-3) |
| **FORM 1**  Attached / To follow / Already a Registered Worker |
| **FORM 3**  Attached / to Follow |

**COSHH**

You are required to carry out a separate risk assessment of the hazards associated with this scheme under the Control of Substances Hazardous to Health Regulations (COSHH). The COSHH Risk Assessment must be attached.

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| COSHH Risk Assessment attached? | YES / NO |

1. Details can be referenced from “Radionuclide and Radiation Protection Data Handbook 2002” D Delacroix et al” [↑](#footnote-ref-1)
2. ALARP = As low as reasonably practicable [↑](#footnote-ref-2)
3. Where this form is submitted without forms 1 and 3, the forms must be submitted to the UIRPO before the Scheme starts. (NB: Forms 2 and 3 should be submitted for visiting Radiation Workers). [↑](#footnote-ref-3)