|  |
| --- |
| Safety Department  Imperial College London  [radiation.protection@imperial.ac.uk](mailto:radiation.protection@imperial.ac.uk) |

Risk Assessment, Regulation 8 of the Ionising Radiations Regulations 2017

|  |
| --- |
|  |
| |  |  |  | | --- | --- | --- | | **Work Registration Form H**  **Positron Emitting (PET) and other radioisotopes used in imaging or imaging research.** | **Work Registration Number.** |  | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Guidance:**   * Use this form for all work involving PET & SPECT radioisotopes. * Complete Parts H0 and H6 and then all other relevant sections (e.g. if you are doing PET Chemistry work, you need to complete part H0, H6 and part H3 only). * Forms will not be accepted and may be returned to you (resulting in delays to your work) if they are not completed properly and/or do not have all the necessary signatures. * It may take up to 2 weeks to process this form and for the RPA/O to authorise work to begin. Please bear this in mind when planning your work. * Guidance for work with ionising radiations can be found at <http://www.imperial.ac.uk/safety/safety-by-topic/laboratory-safety/ionising-radiation-safety/> * Copies of this, and other relevant forms, can be downloaded at : <https://www.imperial.ac.uk/safety/safety-by-topic/laboratory-safety/ionising-radiation-safety/ionising-radiation-forms/>  |  |  |  |  | | --- | --- | --- | --- | | **Radiation Protection Contacts** | | **Mobile** | **E-mail address** | | Ross Manson | RPM / RPA | 07714 051 510 | [r.manson@imperial.ac.uk](mailto:r.manson@imperial.ac.uk) | | Mark Keeping | RPO | 07725 159 734 | [m.keeping@imperial.ac.uk](mailto:m.keeping@imperial.ac.uk) | | Jon Fear | RPO | 07711 684 746 | [j.fear@imperial.ac.uk](mailto:j.fear@imperial.ac.uk) | |

**Part H0 – General Information:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Radioactive Materials** | **Quantities (MBq)** | | | | | |
| Radionuclide | **F-18** | **C-11** | **Ga-68** | **N-13** | **Tc-99m** | **Other (please state nuclide)** |
| Maximum activity acquired |  |  |  |  |  |  |
| Maximum activity during the work |  |  |  |  |  |  |
| Form of activity  (solid, liquid, gas) |  |  |  |  |  |  |
| If liquid, state volume of radioisotope (l) |  |  |  |  |  |  |
| Details of storage location (campus, building, floor, room, storage place in room). |  | | | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **Where will the work take place (please indicate all that apply and state campus, building, floor, room)?** | | | |
| Imperial College Laboratory. |  | Wolfson Imaging Centre, Hammersmith. |  |
| Biological Imaging Centre (BIC), Hammersmith. |  | Imanova, Hammersmith. |  |
| NHS Trust Area - please provide details. |  | Other (please provide details. |  |

|  |  |  |  |
| --- | --- | --- | --- |
| How many hours each week will you be working with radioisotopes? |  | How often will you carry out the work: |  |

|  |  |
| --- | --- |
| Name & contact details of relevant departmental/divisional Safety Officer. |  |
| Name & contact details of the Radiation Protection Supervisor(s) for your work (RPS). |  |

**Relevant Training**

**Suitable and sufficient training must have been undertaken.**

|  |  |
| --- | --- |
| **Training Type** | **Date of completion** |
|
| *All College employees undertaking this work must have completed the relevant radiation protection training as well as “Local Induction” training; please give details below.* | |
| Relevant on-line radiation protection training modules |  |
| Local induction training. |  |
| Task specific training. |  |
| Previous/other training  (Outside of Imperial College). |  |

|  |  |
| --- | --- |
| **Delivery & receipt of radioisotopes:** | |
| Name of the supplier(s). |  |
| Delivery location (campus, building, floor, room). |  |
| Name of the person receiving the delivery. |  |
| Details of packaging (container type & description). |  |

|  |  |  |
| --- | --- | --- |
|  | **Proposed use of the radioisotopes (tick all that apply and then complete the other relevant section(s) of this form):** | |
| 1. | Draw up, injection & scanning of human subjects – section H1 | Yes  No |
| 2. | Taking samples from radioactive human subjects or animals – section H2 | Yes  No |
| 3. | PET Chemistry &/or analysis of biological samples - section H3 | Yes  No |
| 4. | Draw up, injection & imaging of animal subjects - section H4 | Yes  No |
| 5. | Calibration & testing - section H5 | Yes  No |

**Section H1 – Draw up, injection & scanning of human subjects**

*If you are not carrying out this type of work, do not complete this section of the form.*

|  |
| --- |
| **The Ionising Radiation (Medical Exposure) Regulations 2018:**  **If it is to be administered to humans, give the holder of the ARSAC certificate under whose direction the radioactive substance is administered.** |

|  |  |  |  |
| --- | --- | --- | --- |
| ARSAC Certificate Holder |  | Certificate No. |  |
| Signature of Certificate Holder: | | *Type name or print off and sign* | |

If this work will involve patients and is not covered by ARSAC approval, please tick here:

|  |  |  |  |
| --- | --- | --- | --- |
| Has the work been approved by the local Research Ethics Committee (Y/N) | Yes  No | Give the local Research Ethics Committee approval reference number |  |

|  |  |  |
| --- | --- | --- |
| **Exposure Factor** |  | **Details - (e.g. material type, thickness)**  **If “N” explain why not.** |
|
| Radio isotope will be stored prior to usage. | Yes  No |  |
| Bench Shielding used during draw up. | Yes  No |  |
| Syringe shielding used. | Yes  No |  |
| Syringe transport boxes used. | Yes  No |  |
| Personal shielding & PPE will be used. | Yes  No |  |
| Will any moveable or mobile shielding be used? If yes, give details. | Yes  No |  |
| Estimate of time taken for injection procedure  (from draw up to injection). |  | |
| Estimate of total time spent with patient once they have been injected. |  | |
| Will biological samples be taken from the subject – If yes, complete section H2 of this form. | Yes  No |  |

**Section H2 – Taking samples from radioactive subjects or animals.**

* *If you are not carrying out this type of work, do not complete this section of the form.*

|  |  |
| --- | --- |
|  | **Details - (e.g. material type, thickness)** |
|
| Radionuclide used in study. |  |
| How much activity will be initially injected (MBq)? |  |
| State the time(s) after injection sample(s) are to be taken. |  |
| Volume(s) of sample taken (ml). |  |
| Estimate of activity contained in each sample taken (MBq). |  |
| Provide details of the type of container the samples will be stored in. |  |
| Estimate of the time taken to collect each sample. |  |
| Estimate of distance from subject when taking the sample. |  |
| Will the samples be transferred for analysis elsewhere? If yes, state where to (a local laboratory or off site to another institute of IC Campus). |  |
| If samples will be transported off site, how will this be done (provide courier’s name)? |  |
| Provide details of how the samples will be packaged for transport or transfer. |  |
| Will you be involved in the subsequent analysis of the patient samples? If “yes”, complete Section H3. |  |

**Section H3 – PET Chemistry and/or analysis of biological samples.**

* *Full laboratory protocol details must be sent in along with this form. They must detail all the steps involved in the work and contain estimates of the activity (in MBq) of radioisotopes that you could be exposed to at each step.*
* *If you are not carrying out this type of work, do not complete this section of the form.*

**Exposure Controls**

|  |  |
| --- | --- |
| **Exposure Factor** | **Details / Mitigation / Controls** |
|
| Heating |  |
| Creating volatile substances |  |
| Creating aerosols |  |
| Creating fine powders |  |
| Using pipettes |  |
| Using explosive substances |  |
| Pressurised vessels |  |
| Using centrifuges |  |
| Using needles / Syringes / Sharp objects |  |
| Direct handling |  |
| Exposure to direct radiation |  |
| Exposure to contamination |  |
| Contact with radioactive subjects (e.g. animals or patients). |  |

**Waste**

|  |
| --- |
| **For this work with ionising radiations, what radioactive waste is created, accumulated and disposed of?** |

|  |  |  |  |
| --- | --- | --- | --- |
| **Radioactive Waste** | **Estimated Split**  **(% of total activity)** | **Disposal Method**  **see guidance**  <https://www.imperial.ac.uk/safety/safety-by-topic/laboratory-safety/ionising-radiation-safety/> | **Details of disposal method:**   * *for aqueous waste provide the location of the sink (building/floor/room).* * *for solid waste provide details of storage location (building/floor/room) and final disposal method once decayed.* |
| Solid |  |  |  |
| Aqueous liquid |  |  |  |
| Organic liquid |  |  |  |
| Gaseous |  |  |  |
| Clinical ‘active’ waste |  |  |  |
| Decay Storage |  |  |  |

**Engineering Controls**

|  |
| --- |
| **For the source of ionising radiations, engineering controls should be used to reduce exposure to as low as is reasonably practicable before personal protective equipment is considered. This relates both to use and storage of radioactive material. Please give details below.** |

|  |  |  |
| --- | --- | --- |
| **Engineering Control** | **Location (building/floor/room)** | **Other relevant details.**  (e.g. Make/model / Last Test Date / specifications / thickness of shielding) |
| Hot Cell |  |  |
| Lead shielding |  |  |
| Fume cupboard |  |  |
| Other local exhaust ventilation |  |  |
| Microbiological Safety Cabinet |  |  |
| Stock Storage facility |  |  |
| Sample Storage facility |  |  |
| Other shielding |  |  |
| “Hot” animal facilities |  |  |
| Syringe Shields |  |  |
| Other |  |  |

**Good Radiological Protection Practice**

|  |
| --- |
| **For the source of ionising radiations, good radiological protection practice should be maintained at all times to reduce exposure before personal protective equipment is considered.** |

|  |  |
| --- | --- |
| **Good Practice** | **Description & Other Information** |
|
| Will only the minimum source activity/strength needed been acquired? |  |
| Describe how you will minimise exposure time. |  |
| Describe how you will maximise your distance from the source. |  |
| Use shielding | See Section (H3) |

**Radiation and Contamination Monitoring**

|  |
| --- |
| **For the source of ionising radiations, suitable and sufficient monitoring is required to help ensure exposure is minimised** |

|  |  |
| --- | --- |
| **Monitoring** | **Provide details of monitor type, probe type & last test date** |
|
| Radiation dose-rate  monitoring |  |
| Contamination  (direct probe) monitoring |  |
| “Stack” monitors |  |
| Other techniques |  |

**Part H4 – Draw up, injection & imaging of animal subjects**

|  |  |  |  |
| --- | --- | --- | --- |
| Does the work have Home Office Approval (Y/N) | Yes  No | Give the project licence number |  |

|  |  |
| --- | --- |
| **Exposure Factor** | **Details - (e.g. material type, thickness)** |
|
| Give details of how the radio isotope will be stored prior to usage. |  |
| Give details of bench shielding used during draw up. |  |
| Give details of syringe shielding used. |  |
| Give details of syringe transport boxes used. |  |
| Give details of personal shielding & PPE that will be used. |  |
| Will any moveable or mobile shielding be used? If yes, give details. |  |
| Estimate of time taken for injection procedure  (from draw up to injection). |  |
| Estimate of total time spent with animal once it has been injected. |  |
| Will biological samples be taken from the subject?  (Y/N) – If yes, complete section H2 of this form. | Yes  No |
| Could there be contaminated fluids produced by subject (e.g. urine, sweat, vomit)? If so, provide details of contingencies in place to deal with these. |  |

**Section H5 – Calibration & Testing**

*If you are not carrying out this type of work, do not complete this section of the form.*

|  |  |  |
| --- | --- | --- |
| **Exposure Factor** |  | **Details - (e.g. material type, thickness)**  **If “N” explain why not.** |
|
| Radio isotope will be stored prior to usage. | Yes  No |  |
| Bench Shielding used during draw up. | Yes  No |  |
| Syringe shielding used. | Yes  No |  |
| Syringe transport boxes used. | Yes  No |  |
| Personal shielding & PPE will be used. | Yes  No |  |
| Will any moveable or mobile shielding be used? If yes, give details | Yes  No |  |
| Estimate of time taken for injection procedure  (from draw up to injection). |  | |

**Good Radiological Protection Practice**

|  |
| --- |
| **For the source of ionising radiations, good radiological protection practice should be maintained at all times to reduce exposure before personal protective equipment is considered.** |

|  |  |
| --- | --- |
| **Good Practice** | **Description & Other Information** |
|
| Has only the minimum source activity/strength needed been acquired? |  |
| Describe how you will minimise exposure time. |  |
| Describe how you will maximise your distance from the source. |  |

**Radiation and Contamination Monitoring**

|  |
| --- |
| **For the source of ionising radiations, suitable and sufficient monitoring is required to help ensure exposure is minimised** |

|  |  |
| --- | --- |
| **Monitoring** | **Provide details of monitor type, probe type & last test date** |
|
| Radiation dose-rate monitoring |  |
| Contamination  (direct probe) monitoring |  |
| “Stack” monitors |  |
| Other techniques |  |

**Part H6 - Endorsements**

|  |
| --- |
| **To complete this work registration the endorsement of a number of key personnel with safety responsibility is required. They will be signing up to the following:**  *This work with ionising radiations will be conducted in accordance with this work registration, the local rules of the relevant department, any relevant risk assessments and College Policy & Guidance for work involving ionising radiations. Details can be found on the Safety Department Web Pages at:*   * Ionising Radiations Policy - <https://www.imperial.ac.uk/safety/safety-by-topic/laboratory-safety/ionising-radiation-safety/radiation-safety-policy/> * Ionising Radiations Guidance - <http://www.imperial.ac.uk/safety/safety-by-topic/laboratory-safety/ionising-radiation-safety/> |

|  |  |  |  |
| --- | --- | --- | --- |
| **Responsible Person** | **Name** | **Signature** | **Date** |
| Main contact for this work (see Form A) |  | *Type name or print off and sign* |  |
| Radiation protection supervisor (RPS) |  | *Type name or print off and sign* |  |
| Direct supervisor  of the work (Principle Investigator) |  | *Type name or print off and sign* |  |

|  |
| --- |
| **On completion of this form, please forward along with the other information requested, to your RPA, RPM or RPO, for a radiological risk assessment to be completed.** |

***DO NOT START WORK UNTIL YOU HAVE RECEIVED WRITTEN AUTHORISATION***