

Management of Open Radioactive Sources

An Open Radioactive Source is a dispersible source, such as a radioactively labelled chemical that is consumed over time. [N.B. Closed Sources include physically entire sources that perform a specific function, usually associated with calibration or detection/measurement.]

The acquisition and use of open sources is subject to regulation through licences (Registration Certificates). Accumulation and disposal of the waste arising is also licensed (Authorisation Certificates). The Environment Agency is the statutory body with responsibility for monitoring compliance with these requirements.

All open sources must be:

- Effectively accounted for, in particular the location and quantity of stock and the generation and disposal of waste. These records must be kept up to date. The Isostock accounting system is used for this.
- Kept secure and under the supervision of a designated person,
- Used in facilities and in a manner that minimises contamination and personal exposure, and
- Disposed of in accordance with the licence conditions.

The Safety Office has responsibility for monitoring that the appropriate conditions are met.

Approval of Work with Open Radioactive Sources

All new work with open radioactive sources must be approved by the Safety Office before the work commences. New work includes:

- First use of an isotope at a location, and
- New activities involving significantly different uses of isotopes already used in an area.

Prior approval must also be obtained for any modification affecting the isotopes used in existing work, such as:

- An increase in activities of currently approved isotopes purchased or held as stock, or
- Addition of a new isotope, or
- Alterations to the routes or quantities of waste accumulated or disposed of.

Requests for new or modified work must be submitted to the Safety Office on [Form Rad 1](#). A risk assessment for the work should also be submitted ([see guidance](#)).

The Safety Office will determine whether the nature of the isotopes and the wastes arising can be accommodated within the existing Environment Agency licences. Should it be necessary to apply for a modification to the licence then the Environment Agency fees

will be charged to the School. The Safety Office will also assess the suitability of the location, the radiation protection requirements and the arrangements for security and accounting of the source. Radiation laboratories are approved and designated by the Safety Office for the isotopes and quantities in use.

A designated responsible person, the Radiation Supervisor, must be appointed for the work. This person will normally be the Principal Investigator or Academic Supervisor and shall be responsible for ensuring that:

- those working under their supervision receive the necessary training and instruction to enable them to work in a safe manner and in accordance with the Local Rules, and
- that there is close supervision of individuals until they are able to demonstrate that they are capable of working independently and responsibly with radiation.
- A record of the training provided should be kept.

The Radiation Supervisor shall be sufficiently experienced in working with radiation to enable them to discharge their duties.

Following satisfactory assessment of the proposal written authorisation will be sent to the Radiation Protection Supervisor, with a project code, for the new work at which point the work may commence. No radioisotopes may be acquired before this authorisation has been obtained.

Acquisition, Use and Disposal of Open Sources

All acquisition, use and disposal of open sources must be recorded on [Isostock](#).

The Radiation Protection Supervisor shall establish appropriate local arrangements for ensuring that the necessary Isostock records for stock control and disposal are created and updated. In particular this shall include designating those persons, either individually or as a group, who shall enter data onto Isostock.

Acquisition

Radiochemical requests must be raised on Isostock and must be authorised on the system by the Radiation Protection Supervisor or his/her nominated deputies (the necessary Isostock permissions for this are created by the Safety Office). The order may only be placed with the supplier once it has been authorised (for example by the person responsible for placing orders having received an Isostock order printout signed by the RPS or deputy).

Authorisation of isotope requests should confirm that the isotope and quantity are consistent with the Safety Office approved limits for the project, that the order will not exceed any limits (Isostock will warn if a limit is being approached) and that the person is registered for work against that project.

As soon as the isotope arrives at the laboratory it must be "received" onto the Isostock record, which must be updated to record location and "handled by" details. The unique Isostock number must be written on the outer container for the stock (the lid may also

be labelled if required but this should not be instead of the container as lids may become swapped).

Stock-Keeping

All stock must be kept in a locked container, refrigerator or freezer in a secure, designated room. Only those stock storage locations listed on Isostock may be used.

Arrangements must be established for checking the accuracy of the stock records. These shall include a monthly, recorded check of the stock in each laboratory against the Isostock record. A printout of the stock by location can be obtained from Isostock and items checked off against this. The record should be kept with the other radiation records for the area. The Safety Office should be contacted in the event of any queries that cannot be resolved locally.

The keeping of old stock is strongly discouraged. Most radiochemicals are susceptible to significant [decomposition](#) that may render them as non-viable for further work. The presence of old, unused stock of dubious quality increases the work involved in stock checking and any problem with it may be unnoticed until the next stock check.

Use and disposal

All radiation workers must ensure that their use and disposal of isotopes are correctly and promptly recorded, either by themselves if authorised to do so, or by notifying the appropriate person. All radiation workers must also be familiar with the restrictions placed on the period of accumulation of waste and on the disposal routes and quantities available. These are described in the sub-allocation sheets, which should be displayed in the radiation suite with other information such as the radiation Local Rules and Environment Agency licences.

The Radiation Protection Supervisor or his/her nominated deputies shall monitor that radioactive waste is disposed of appropriately and in a timely manner. The "Departmental Waste" screen in Isostock shows solid and organic liquid waste within the laboratories. The "Accumulated Waste" screen shows the waste that has been moved to the waste holding point and awaiting final disposal. This record requires completion to confirm that the final disposal has been made. See further guidance contained in document [Accumulation and Disposal of Radioactive Laboratory Waste](#) (Workspace).