HSE
Health and Safety Executive

**Paper H**



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Corporate Specialist Division

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HM Principal Inspector of Health and Safety (Radiation)
Mr JA Barrett

**For the attention of Sir Alan Langlands (University Principal)**

Dear Sir

**WORK WITH IONISING RADIATIONS:**

**IONISING RADIATIONS REGULATIONS 1999**
**MANAGEMENT OF HEALTH AND SAFETY AT WORK REGULATIONS 1999**

I refer to my visits to the University on 10 and 11 October 2007 to review the University's work with ionising radiations. I apologise for the delay in my correspondence following the visits.

During my visits I met with Dr I Scragg (Director of Health and Safety), Dr D Hewick (University Radiation Protection Adviser (RPA)), Mr M Rollo (Radiation Protection Officer), Mr D Leddy (Trainee RPA) and various members of staff and researchers. I also visited the Medical School located at Ninewells Hospital where I met Dr D Sutton (Head of Radiation Protection, Tayside), Ms J Smyth (Medical Physicist) and various researchers.

At the time of my visits I was satisfied with the overall standards of radiation protection observed and there were no matters identified that required urgent action. The University appeared to demonstrate good compliance with both the practical and administrative elements of the Ionising Radiations Regulations 1999 (IRR99). I was particularly impressed by the attitude to radiation safety adopted by the staff whom I met during my inspection.

There are however some areas where improvements can be made and these are highlighted in the recommendations made below. The majority of these recommendations were conveyed to the relevant staff at the time of my inspection.

Reference is made principally to the requirements of the Ionising Radiations Regulations 1999 (IRR99), the Approved Code of Practice (ACoP), and supporting guidance information contained in the document '*Work with ionising radiation*' [ISBN 0-7176-1746-7.]

**1. Risk assessment [IRR99 Regulation 7]**

Risk assessments were available for all operations for which they were requested. However they were in a format that, in my opinion, limited their scope. For example, although the risk

assessment forms (RADNUC) document the proposed work i.e. "work with 100 MBq of phosphorous-32", they do not consider the following elements:

- Hazards and risks present over the 'life-cycle' of the work (i.e. arrival of stock, dilution of stock, dispensing of radioisotopes, experimental procedures, waste generation, liquid and solid waste disposals etc.) nor for the activities and properties of radioisotope used (i.e. whether the radioisotope is a high or low energy beta emitter etc.);

- Location of the work and the laboratory set-up;

- Effectiveness of existing procedures and controls to minimise exposure routes and prevent the spread of contamination;

- Estimate of potential radiation doses a worker and other persons could receive during the 'life cycle' of the work and for any reasonably foreseeable incidents and accident situations; and

- Further actions required.

While I appreciate that a number of experiments in the Colleges of Life Sciences are of similar nature and use standard laboratory techniques, the risk assessment does not encourage a questioning thought process when assessing the tasks, nor allow for information such as contamination monitoring, personal dose monitoring, and accident/incident information to be considered and assessed. Therefore, in my opinion, the risk assessments need to be more comprehensive to be considered 'suitable and sufficient' (Regulation 7(1)).

The risk assessments for work with ionising radiations carried out at the Medical School are different in format and style to those for the City Campus. The Medical School risk assessments are more comprehensive and go further to addresses the points contained in paragraphs 44 and 45 of the IRR99 Approved Code of Practice to Regulation 7.

I do not propose that all risk assessments for work on the City Campus need to be revised with immediate effect, but recommend that the University reviews how they should be done. If the advice I have given is incorporated, the risk assessments should then be revised at their next review date.

1.1 Electronic Engineering and Physics

The risk assessment for Dr Keeble's work using sodium-22 radioisotopes should be reviewed without delay. The existing assessment is dated 1999 and is considered too generic. The assessment should consider the practical work he undertakes; the potential exposure routes and their likelihood; an assessment of existing control measures and their adequacy and if further actions are required to ensure that exposures are kept as low as reasonably practicable (ALARP). The risk assessment should also consider the suitability of the work surfaces in the laboratory for work involving the use of unsealed radioisotopes: wooden work benches will accumulate radioactive material should a spill occur.

## 2. Management of Radiation Protection [MHSWR99 Regulation 5]

The University's Radiation Safety Policy for work with ionising radiations contained in the document entitled 'Protection Against Ionising Radiations' (dated 2003) places extensive duties on the radiation protection supervisor (RPS) 'to ensure compliance with IRR99 and the

ACOP'. It is the Employer's responsibility to ensure compliance with the IRR99 and not that of the appointed RPSs. In accordance with Regulation 17 of the IRR99, the appointed RPS has the singular responsibility of **assisting** the employer to comply with the regulations by supervising that work is being carried out in accordance with the local rules. As such, any additional responsibilities are management responsibilities which have been devolved to the RPS; for example, the collation and auditing of waste disposal records. It should be stressed that any additional duties placed on an RPS are further to the primary responsibility to supervise the work and the University should ensure that the RPSs have sufficient time to fulfil that primary function.

A review should be carried to ensure that there is a clear organisational arrangement, including cohesive policy and procedural documentation, for senior management (i.e. Heads of School) to ensure their responsibilities with regards to radiation safety are met. Management should have involvement in pertinent issues, to gain feedback on performance and to have input into radiation safety related decisions.

### 3. Dose Investigation Level [Regulation 8]

Regulation 8(6) of IRR99 requires formal dose investigation levels. Dose investigation levels are intended to enable employers to monitor whether radiation exposures are restricted to a level, which is ALARP. They should be set at levels of dose which, if exceeded by an individual, will prompt the radiation employer to carry out an investigation to determine whether doses are in fact ALARP or whether more needs to be done to further restrict exposures. Therefore, the level chosen should be appropriate for the work that is being carried out.

At present, the University does not appear to have set a formal dose investigation level. Furthermore the present arrangements at the University are for the Radiation Protection Service to investigate any recorded dose that is greater than 'background'.

You are therefore advised to determine and formalise appropriate dose investigation levels as soon as possible and record these in the local rules as required by Regulation 17 of the IRR99.

At the time of my visit it was also noted that there were some entries in the electronic dose records that had been left blank. Although I was advised that this was intended to signify that no dose above the minimum threshold has been received, it should be ensured that all entries are completed.

### 4. Work for Multiple Employers or Outside Institutions [Regulation 15]

Where employees undertake work with ionising radiations for more than one employer or carry out research work at other institutions, the University must ensure that there is adequate cooperation and exchange of information between parties to ensure that doses to the individual concerned are being monitored and managed appropriately [IRR99 Regulation 15 refers].

### 5. Radiation (Emergency Preparedness & Public Information) Regulations 2001 [REPPIR]

These Regulations require employers with radioactive materials which may present a significant off-site hazard in a catastrophic event (e.g. a fire) to assess the likelihood and consequences of such an event and, if necessary, to make plans to deal with the event.

I was advised that the University possesses several high activity caesium-137 radioactive sources installed in irradiators. I discussed issues relating to the Recommended Working Life (RWL) of the sources and the above regulations. If the RWL of these sources is exceeded, their activity may exceed the application threshold of the REPPIR Regulations and consequently the University should address REPPIR requirements.

## 6. FURTHER ACTION

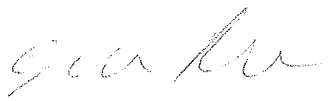
I would request that within eight weeks of receipt of this letter, you provide me with details of the actions you have taken to address the matters I have raised in this letter.

### Information to employees

In accordance with Section 28(8) of the Health and Safety at Work etc Act 1974, further copies of this letter have been forwarded to Ms C Bain, Mr I Ellis and Ms R Clark (Safety representatives) for the attention of employees.

Please do not hesitate to contact me should you require any further clarification on any points raised in this letter.

Yours faithfully



**Gillian Rodaks**
**HM Specialist Inspector of Health and Safety (Radiation)**

Copies to: Mr D Stephen (HSE Edinburgh)
Dr I Scragg (Director of Safety Services)
Dr D Hewitt, (Radiation Protection Adviser)
Mr M Rollo, (Radiation Protection Officer)
Mr D Leddy, (Trainee RPA)
Dr D Sutton (Head of Radiation Protection, NHS Tayside)
Ms J Smyth (Radiation Protection, Ninewells Hospital)
Ms C Bain
Mr I Ellis
Ms R Clark