The Status of Radiation Safety (RS) Culture within the Higher Education, Research and Teaching (HERT) Sectors in the UK: An Initial Assessment


* Presenting author

UK Working Group on Radiation Safety Culture in HERT Sectors
Objectives

To gauge the state of radiation safety (RS) culture within the Higher Education, Research and Teaching (HERT) sectors in the UK with a view to informing the development of strategies and tools to improve Radiation Safety culture in these sectors.
Methods

• Survey Design
  – Non-onerous – 15 minutes to complete

• 32 questions grouped into 6 sections
  – Participant roles
  – Training
  – Incident management
  – Personal dosimetry
  – Personal protection and PPE
  – General awareness

• Attempted to cover both IR and NIR aspects
Dissemination

• Online Survey tool
  – Easy to use and supports collaborative data analysis with a range to cross-referencing tools
  – Survey questionnaire hosted by JISC (UK Academic Network)
  – Anonymous and secure
  – Cost effective membership at an organisational level

• Link to survey ‘promoted’ via:
  – Committee for Liaison with IRPA and Partner Societies (CLIPS)
  – UK RP professional Partner Societies websites
  – Announcements at conferences
  – Word of mouth

• Inclusive of all types of radiation safety stakeholder
Total number of respondents = 385
Staff Group

- **Academic staff / researcher**: 43.9%
- **Student**: 11.4%
- **Professional services**: 19.0%
- **Technical support**: 22.9%
- **Other**: 2.9%

‘Other’ included theatre nurses, site safety managers, and general lab managers.
Radiation Sources Used

- Unsealed Radionuclides: 60.3%
- Radioactive Waste: 40.0%
- Sealed Sources: 36.9%
- X-Ray Machines: 43.1%
- LASERS: 32.7%
- Other NIR Sources: 32.2%
- Other: 2.9%

‘Other’ included neutron accelerators, exotic particle beams, cyclotrons etc.
Percentage of Time Spent Working with Radiation

- 0-24%: 52.0%
- 25-49%: 14.4%
- 50-74%: 12.3%
- 75-100%: 11.0%
- Occasional Access to Radiation Areas: 8.6%
- Never: 1.8%

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Time Spent on Initial Radiation Safety Training

Academic staff / researcher

- 65.85% of respondents completed training in 1 day.
- 18.29% completed it in 2 days.
- 7.93% completed it in 3 days.
- 6.10% completed it in 4-5 days.
- 1.83% completed it in >5 days.

Student

- 82.50% of respondents completed training in 1 day.
- 15.00% completed it in 2 days.
- 0.00% completed it in 3 days.
- 0.00% completed it in 4-5 days.
- 2.50% completed it in >5 days.

Professional services

- 32.84% of respondents completed training in 1 day.
- 19.40% completed it in 2 days.
- 16.42% completed it in 3 days.
- 10.45% completed it in 4-5 days.
- 20.90% completed it in >5 days.

Technical support

- 55.17% of respondents completed training in 1 day.
- 22.99% completed it in 2 days.
- 12.64% completed it in 3 days.
- 3.45% completed it in 4-5 days.
- 5.75% completed it in >5 days.
Initial Radiation Safety Training

- **Online Only**
  - Academic staff / researcher: 3.6%
  - Student: 15.9%
  - Professional services: 5.5%
  - Technical Support: 4.6%
Refresher Training

<table>
<thead>
<tr>
<th>Category</th>
<th>% of Respondents</th>
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<tbody>
<tr>
<td>Academic staff / researcher</td>
<td>7.7</td>
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<tr>
<td>Student</td>
<td>13.6</td>
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<tr>
<td>Professional services</td>
<td>5.5</td>
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<tr>
<td>Technical support</td>
<td>12.5</td>
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Hours per Year of Refresher Training

**Academic staff / researcher**

- 0% of respondents spend 0-1 hours per year.
- 20% of respondents spend 2-3 hours per year.
- 40% of respondents spend 4-5 hours per year.
- 60% of respondents spend 6-7 hours per year.
- 80% of respondents spend 8-9 hours per year.

**Student**

- 0% of respondents spend 0-1 hours per year.
- 20% of respondents spend 2-3 hours per year.
- 40% of respondents spend 4-5 hours per year.
- 60% of respondents spend 6-7 hours per year.
- 80% of respondents spend 8-9 hours per year.

**Professional services**

- 0% of respondents spend 0-1 hours per year.
- 20% of respondents spend 2-3 hours per year.
- 40% of respondents spend 4-5 hours per year.
- 60% of respondents spend 6-7 hours per year.
- 80% of respondents spend 8-9 hours per year.

**Technical support**

- 0% of respondents spend 0-1 hours per year.
- 20% of respondents spend 2-3 hours per year.
- 40% of respondents spend 4-5 hours per year.
- 60% of respondents spend 6-7 hours per year.
- 80% of respondents spend 8-9 hours per year.
Working Safely

Do you feel you have had adequate radiation protection training to enable you to work safely?

Percentage of Respondents who said No!

- NIR: 7
- IR: 4
- Other NIR: 8
- LASERs: 9
- X-Ray: 6
- Sealed sources: 3
- Waste: 4
- Unsealed Radionuclides: 4
Inadequate Radiation Safety Training...

...to feel that I can work safely

- Academic staff / researcher: 3.0%
- Student: 11.4%
- Professional services: 5.5%
- Technical support: 4.6%
Radiation Incident

I often feel concerned that I will be involved in a Radiation Incident

- Academic staff / researcher: 4.8%
- Student: 27.3%
- Professional services: 6.9%
- Technical support: 8.1%

I DO NOT consider my organization to have adequate contingency plans

- Academic staff / researcher: 4.2%
- Student: 6.8%
- Professional services: 19.7%
- Technical support: 8.1%
Importance of Radiation Safety

I DO NOT feel I have an adequate knowledge of the radiation dose and risks to staff / students

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<tr>
<td>Student</td>
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<tr>
<td>Professional services</td>
<td>2.9</td>
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<tr>
<td>Technical support</td>
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</table>

I DO NOT know where to find my organisation’s policies and procedures (such as Local Rules, Risk Assessments, etc.) relating to radiation work

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<td>6.0</td>
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<tr>
<td>Student</td>
<td>14.0</td>
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<tr>
<td>Professional services</td>
<td>1.4</td>
</tr>
<tr>
<td>Technical support</td>
<td>2.3</td>
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Radiation Safety Culture Questions

The next 3 slides show results from Safety Culture related questions.
Radiation Safety Culture Questions

I feel that radiation protection in my organisation is NOT considered equally important as my other work

- **Academic staff / researcher**: 19.2%
- **Student**: 20.5%
- **Professional services**: 32.9%
- **Technical support**: 21.8%
- **Overall**: 22.6%
- **NIR Combined**: 29.3%
- **IR Combined**: 20.9%

% of Respondents
Radiation Safety Culture Questions

I DO NOT feel involved in planning changes to radiation protection procedures that affect me

- Academic staff / researcher: 41.3%
- Student: 54.6%
- Professional services: 9.7%
- Technical support: 22.6%
- Overall: 32.4%
- NIR Combined: 28.3%
- IR Combined: 31.3%

% of Respondents
Radiation Safety Culture Questions

I DO NOT have enough time to get my work done safely

- **Academic staff / researcher**: 7.7%
- **Student**: 15.9%
- **Professional services**: 13.9%
- **Technical support**: 11.5%
- **Overall**: 10.8%
- **NIR Combined**: 11.5%
- **IR Combined**: 11.2%

% of Respondents
Conclusions

• Compliance with the wearing of dosimetry and PPE is good.

However, we found:

1. Ineffective initial training courses are being delivered.
2. Poor contingency plans and few rehearsal exercises being carried out.
3. Lack of consultation and communication of Local Rules etc.
4. Low importance given to Radiation Safety compared to other work.
Preliminary Recommendations

• Management awareness
  – Standard briefing packs
  – Training sessions, including the use of incident case studies

• Training
  – Focus on students to reduce concerns of a lack of knowledge, both of Radiation Safety and local knowledge
  – Introduce more practical aspects to training particularly initial training
  – E-refresher packages with tracked participation and backed up with ‘quizzes’
  – More, and improved methodology for non-ionising radiation safety training

• Improved methods of communication
  – Intranet discussion forums
  – Newsletters and RPS blogs
  – Direct feedback / suggestions / incident reporting forms
  – Consultation groups when rules / procedures are being revised

• Embrace opportunities offered by new computer-mediated technologies e.g. electronic devices, Twitter, simulations, etc.
Acknowledgements

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Association of University Radiation Protection Officers
The Society for Radiological Protection

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We would also like to thank colleagues in the radiation community who disseminated and / or completed the survey, which is the basis of this work.