

Existing competence and infrastructure in relation to radiation protection, radiochemistry and radioecology training at postgraduate level within the EU and new entrant States

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Abstract

A recent survey has revealed that the provision of taught postgraduate training programmes at Master of Science level, specifically designed to meet stakeholders' needs in the cognate fields of Radiation Protection, Applied Radiochemistry and Radioecology is, with several notable exceptions, insufficient in most Member States of the EU. Presently, it would appear that fewer than half the Member States offer dedicated training in Radiation Protection at Master's level, while only six so offer in Radiochemistry, and at best three in Radioecology. However, more positively, the survey findings suggest considerable support for co-ordinated EU-wide Masters' training programmes in Radiation Protection and allied fields, and a willingness to participate in and/or host such programmes.

1. Introduction

This paper summarises the findings of a survey carried out in Spring 2005 as part of a project (EURAC) to assess the need for co-ordinated postgraduate education in the EU and new entrant nations in order to (i) strengthen academic competencies and analytical skills within Radiation Protection, Radiochemistry and Radioecology, (ii) secure the future recruitment of appropriately skilled postgraduates to meet the needs of European stakeholders, and (iii) recommend actions that could be taken to help meet anticipated postgraduate education requirements. Specifically, the survey sought to identify existing competencies, facilities and infrastructure within the EU in relation to postgraduate training in these important fields. It is anticipated that the information gathered will help inform future decisions regarding the merits of Commission-supported EU-wide Master's level training programmes in the fields referred to.

2. Methodology

Data and background information were collected by (i) an e-mail questionnaire sent to universities, research institutes and other third-level educational institutions throughout the EU and new entrant states, (ii) scrutinising similar surveys conducted previously by other bodies, e.g., OECD-NEA⁽¹⁾, (iii) surveying relevant educational/ research institute websites, and (iv) enquiries through personal contact. In all, 96 completed surveys were returned from 24 countries.

Information sought included the nature and level of taught postgraduate courses presently offered at Master, Diploma and Certificate level, in-house expertise, laboratory facilities, availability of on-campus accommodation and, finally, willingness to participate in and/or host a future European Master's Training Programme in one or more of the above mentioned fields.

3. Main findings (present position)

3.1. Taught MSc programmes actually in place

A total of twenty-eight MSc programmes have been identified in our survey, of which seventeen are in Radiation Protection, five in Radiochemistry, four in Radioecology and two in Radiometrics, in twenty-six separate universities and institutes spread over eleven Member States. In addition, there are three

MSc programmes in Chemistry offered by universities in Germany, in which Radiochemistry can be taken as an elective speciality.

For the record, the survey identified fourteen MSc programmes in Medical (Radiation) Physics and related topics in five Member States, and five MSc programmes in Radiation Biology distributed over seven Member States, including the well-established European Master of Science in Radiation Biology.

3.2. Postgraduate Diploma and Certificate courses in place

Twenty-two courses were identified in Radiation Protection, Radiochemistry and Radioecology in eighteen universities and institutes in nine Member States.

3.3. Dedicated lecture modules in place

Forty-two modules of relevance were identified in thirty-two universities and institutes in eleven Member States, including a series of short training courses organised by the executive committee of the Virtual European Radionuclide Metrology Institute (VERMI). VERMI aims to provide training programmes for young researchers in Radionuclide Metrology and, to date, has run three very successful workshops.

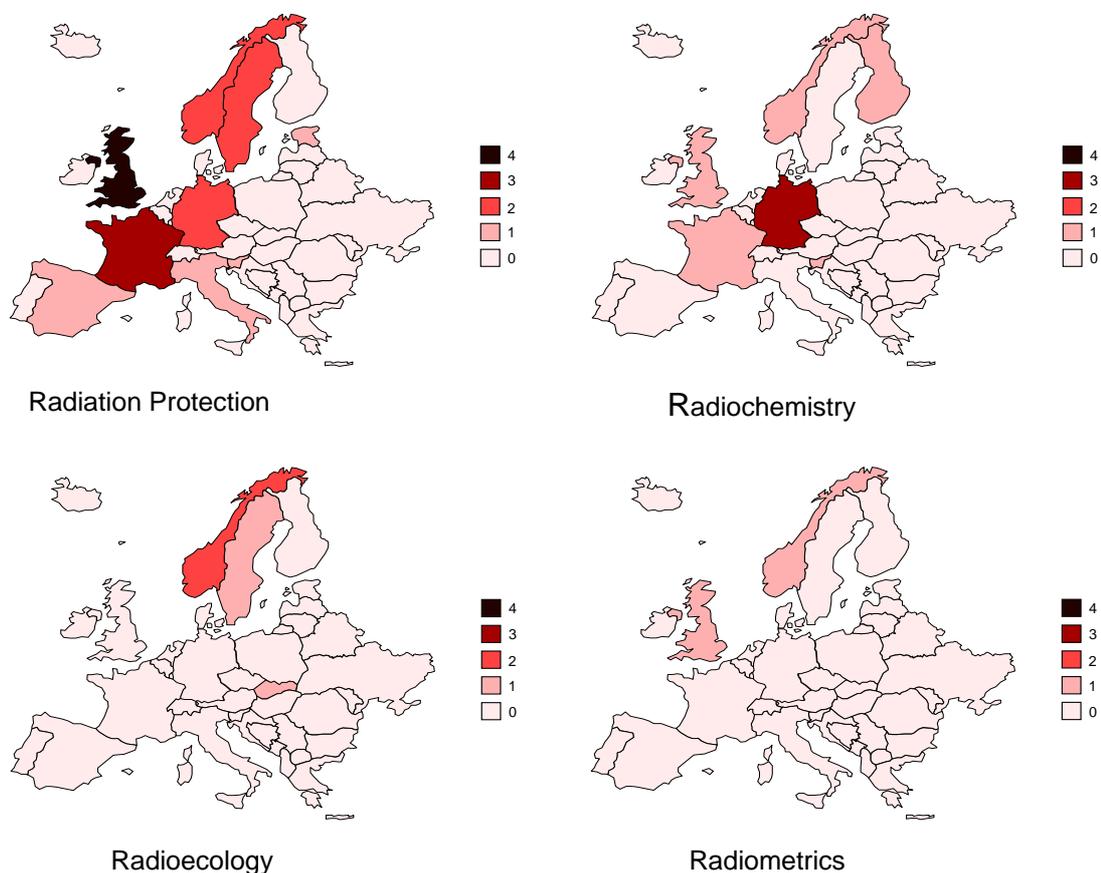


Figure 1. Current provision of MSc training programmes in Europe

4. Future prospects

4.1. Interest in participating in a European MSc

At least forty-three universities and institutes expressed willingness to contribute to a taught European Master's programme in Radiation Protection, Analytical Radiochemistry or Radioecology. However, only five of these indicated willingness to send students to such courses. It has been suggested that once the programmes are in place and energetically publicised this number should increase substantially.

4.2. Interest in and capacity to host a European MSc

Thirty-one universities and institutes in eleven Member States stated that, in principle, they would be prepared to host a European Master's programme. However, not all of these respondents possess the required technical facilities or could provide on-campus accommodation, which is considered to be essential from the logistics perspective. Nevertheless, eighteen indicated that they could provide accommodation, though in the majority of cases only outside normal term-time. Interestingly, eight considered that they possess most (though, perhaps, not all) of the required facilities and equipment. Importantly, four signalled willingness to co-ordinate a Master's level programme provided it received the approval and support of providers and stakeholders. Details regarding the above-mentioned degree programmes, diploma and certificate courses, and lecture modules are to be found in the Appendices to the final report of the EC EURAC Project ⁽²⁾.

5. Conclusions

At the present time, the provision of postgraduate training at Master's level, specifically designed to meet the requirements of each of the above-mentioned fields, is, with several notable exceptions, insufficient in most of the Member States of the EU. Further, competence in these fields at training level is being eroded through natural wastage and is not being replaced at a rate sufficient to satisfy expected future demand for these specialised skills. The rapid growth of the fields of Radiology/ Nuclear Medicine and Radiotherapy, to name but a few, and the anticipated renaissance in civil nuclear power in response to concerns regarding greenhouse gases and global warming, clearly point to the urgency of reinforcing the European education and training provision in these fields without delay. The survey evidences strong support for EU-wide Masters' training programmes in Radiation Protection and allied fields, as well as considerable willingness to participate in and/or host such programmes. In practice, a useful template for developing the latter might be the European Master of Science Programme in Radiation Biology, or the new European Master's Programme in Nuclear Engineering, the latter organised under the aegis of the European Nuclear Education Network (ENEN).

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References

- [1] University Level Education Programmes in Radiation Protection, February 2004, OECD-NEA Report, Paris.
- [2] EC EURAC Project Final Report (available December 2005).

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