

Summary of the Open Forum

“Postgraduate Initiatives in Radiobiology and Radioecology: Present and Future” (Weds 5 Sept 09:55 – 10:30)

**International Symposium on Environmental Radioactivity,
Plymouth University, 3-5 September, 2012**

Further details are given in the Powerpoint slides from each talk, attached.

1. Clare Bradshaw (CB) and Lindis Skipperud (LS): International PhD Research School and EC MSc in Radioecology

The international PhD Research School is newly launched by STAR (EC STAR Network of Excellence: www.star-radioecology.su.se) and is open to all PhD and Masters students working in the areas of radioecology or related disciplines. CB summarised the initiative and encouraged non-members to sign up, stimulate and facilitate discussions.

LS briefly described the European MSc in Radioecology and highlighted a number of course modules that are also available to Masters and PhD students not following the full programme.

2. Awadhesh Jha (AJ): Doctoral Training in Radiobiology & Radioecology: A Perspective

Drawing on several interesting papers published in reputed journals (e.g. *Nature*) during the last few years, AJ summarised the enormous changes that have happened in postgraduate education over the last few decades, and the direction in which this is heading. This included a trend towards linking PhDs more with industry, investing in Doctoral Training Centres (or similar) rather than individual grants, and broadening PhD education to develop skills such as time management, writing grant applications, and networking. He also emphasised that radiation ecology or radiation biology are interdisciplinary and require sound training and knowledge in diverse scientific fields.

3. Lorna Dallas (LD): Postgraduate student survey results.

Prior to the symposium LD had gathered opinions from several PhD students on a range of questions related to postgraduate needs. The questions and their answers were intended to provoke input to the following general discussion and are included in the attached presentation. The general discussion that followed is summarised below.

4. General Discussion, with a focus on the needs of postgraduate students

A range of useful comments and suggestions from both postgraduate students and other participants followed, and is summarised here:

- A lack of facilities and training sometimes make it difficult to progress in postgrad studies, particularly regarding broader goals and skills
- Placements and lab exchanges could be a way forward to enhance knowledge and skills
- Specific courses on (e.g.) writing grant proposals, statistical calculations and data handling and radiotracer techniques could be useful
- Specialist courses would further benefit either from giving credits within the Bologna framework and/or providing some kind of recognised certification
- A course could also be organised in conjunction with national (e.g. annual COGER meeting in the UK) or international conferences
- It was suggested that although online forums are useful, people still very much valued face-to-face meetings. One suggestion was to have a postgraduate meeting that rotated between the various national radioecology/radiobiology societies (e.g. COGER in the UK, SFREK/SFR/Swe-rays in Sweden, etc*)
- It was suggested that online forums were a good way to get advice and ask questions from others in the field. Others thought that there was a risk of people not wanting to look 'stupid' online
- More could be done to increase interest and exchange information in environmental radioactivity by blogging
- It was noted that blogs, online forums etc. are only successful when they are regularly used and/or read by a critical mass of people. It was also mentioned that an email-list can often be just as useful
- University careers advice services were often poorly equipped to advise students in specialist areas. Students could benefit if each department had a specialist contact for the careers service. This provision is available in some institutions (e.g. Imperial College London).
- Scientists should engage with funding agencies (e.g. research councils) in order to highlight the need for PhD students to maintain the skill base in this area

If you have further ideas and comments, please go to our Facebook (Radioecology/Environmental Radioactivity-exchange) or Twitter (@STARradioecology) sites and share them with us!

* <http://www.coger.org.uk/>, <http://www.sfrek.se/>, <http://www.sfr.st/>, <http://www.gmt.su.se/crpr/swe-rays>



WHAT IS STAR?!

EC Network of Excellence in Radioecology (2011-2015)

- 9 partners from: France, Belgium, Germany, Spain, UK, Sweden, Finland, Norway
- promoting integration, networking and scientific excellence
- raising awareness about the value of radioecology
- tackling complex research questions in collaboration
- securing long term funding for radioecological research, infrastructure, training and education
- inspiring students to do radioecology

www.star-radioecology.org



STAR for postgraduates

- courses
 - MSc and PhD courses, workshops, worker training
 - Most will be open to participants outside of STAR.
- STAR PhD Research School
- EU MSc in Radioecology



www.star-radioecology.org



STAR PhD Research School

What is in it for YOU?!

- Priority for places on STAR organized student and training courses
- Networking with students and employers
- Opportunities for PhD exchange visits and work placements



www.star-radioecology.org



STAR PhD Research School

Who is it for?

- Any PhD student engaged in
 - radioecology research
 - radiation protection,
 - radiation biology,
 - ecotoxicology,
 - environmental chemistry
 - nuclear engineering....etc
- You do not need to be a member of STAR, or the EU



www.star-radioecology.org



More information...

- www.star-radioecology.org > Training and Education
- Facebook: Radioecology/Environmental Radioactivity–exchange
- Twitter: @STARradioecology
- Deborah Oughton: deborah.oughton@umb.no
- Clare Bradshaw: clare@ecology.su.se
- Lindis Skipperud: lindis.skipperud@umb.no

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EC MSc Radioecology

- EU and OECD: **urgent need of university trained candidates** within nuclear sciences radiochemistry, radioecology, radiation protection in Europe and world-wide.
- Radioecology is the **key research area** linking authorized or accidental releases from nuclear sources to impact and risk assessments and to the radiation protection of man and the environment.
- **Masters in Radioecology** was established 2008 at the Norwegian University of Life Sciences (UMB) according to the Bologna models

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MSc Radioecology

EURAC: Securing European Radiological Protection and Radioecology Competence to meet the Future Needs of Stakeholders (FI6O-CT-2003-508839)

ENEN-II: Consolidation of European Nuclear Education, Training and Knowledge Management (FP6-036414)

- Universities: Education in Radioecology is fragmented and declining
- Stakeholders: still a need for radioecology education
- Need for common MSc programmes in Radioecology

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MSc Radioecology

This has resulted in the implementation of the European MSc program in Radioecology, which has led to

- a “memorandum of understanding” and a “Joint MSc Degree” process between UMB and the University Aix-Marseilles, France.
- At present, a “Joint MSc Degree” in Radioecology between UMB and Moscow State University, Russia, is also initiated.

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MSc Radioecology

Possible course modules for available for both MSc in Radioecology and PhD research school:

- Radiochemistry and radiation protection (3 weeks), 5-10 credits
- **Radioecology / Environmental Radioactivity** (2 weeks), 5-10 credits
- Assessing risk to man and environment (2 weeks), 10 credits
- Environmental radiobiology (2 weeks), 5 credits
- Ecotoxicology (3 weeks), 10-15 credits

www.star-radioecology.org

Doctoral Training in Radiobiology & Radioecology: A Perspective

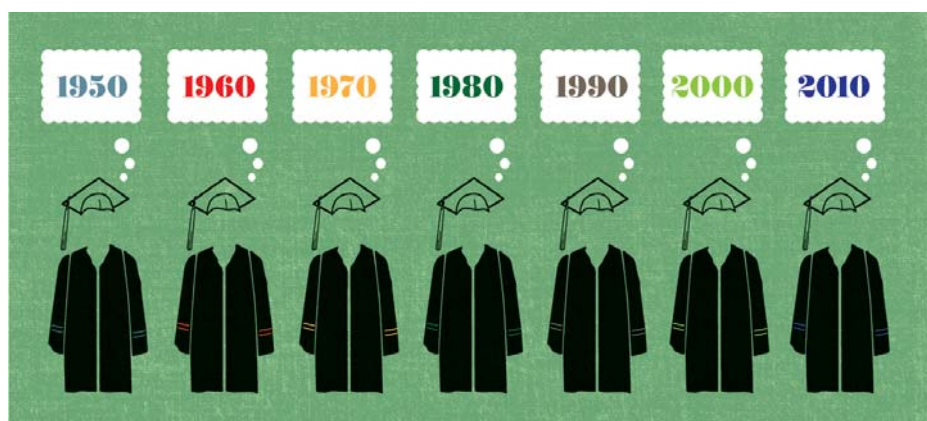
Awadhesh Jha

5 September 2012

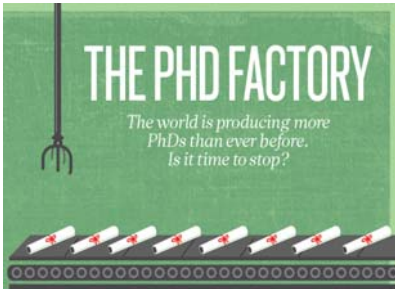
TOMORROW'S
SCIENCE & TECHNOLOGY
TODAY
WITH
PLYMOUTH
UNIVERSITY

ENVIRONMENTAL
RADIOACTIVITY
WITH
PLYMOUTH
UNIVERSITY

Seven ages of the PhD



21 APRIL 2011 | VOL 472 | NATURE | 283



THE PHD FACTORY
The world is producing more PhDs than ever before. Is it time to stop?

The rise of doctorates

Major expansion of higher education has boosted PhD output in many countries, shown here as average annual growth of doctoral degrees across all disciplines, 1998-2006.


Country	Average Annual Growth (%)
CHINA	40%
MEXICO	17.1%
GERMANY	10%
INDIA	8.5%
KOREA	7.1%
JAPAN	6.2%
AUSTRALIA	6.2%
POLAND	6.1%
UNITED KINGDOM	5.2%
UNITED STATES	2.5%
CANADA	1%
GERMANY	0%
HUNGARY	-2.2%

INDIA HOPES TO QUANTITATIVELY INCREASE PHDs BY 2025. EXPANSION OF THE HIGHER-EDUCATION SYSTEM AFTER THE FALL OF COMMUNISM HAS LED TO GROWTH.

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RETHINKING PHDS

Fix it, overhaul it or skip it completely – institutions and individuals are taking innovative approaches to postgraduate science training.



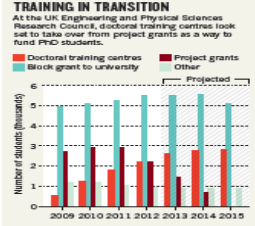
NEWS IN FOCUS

PhDs leave the ivory tower

UK doctoral training centres prepare students to run a lab – or work outside academia.

- DTC Drivers in the UK:**
 - Research Councils: **4 year integrated, interdisciplinary research programme**
 - European University Association (EUA): **Practice of Research**
 - REF: **Research Environment**
 - These initiatives are in addition to CASE Awards funded by Research Councils**
- DTC Aims:**
 - Enable the students to undertake independent research in a flexible and stimulating environment
 - Provide the support allowing the students to follow their individual pathways to success

TRAINING IN TRANSITION
At the UK Engineering and Physical Sciences Research Council, doctoral training centres look set to take over from project grants as a way to fund PhD students.



EPSRC, UK: 26 Industrial Doctoral Centres

Other Initiatives at the European Level:

- Denmark, DASTI (since 1970): approved 116 industrial PhD projects in 2011**
- France, CIFRE (since 1981): 10,000 Science & Engineering Graduates have completed PhDs**
- European Commission: Launched €20-million Industrial PhD initiative as part of Marie Curie Actions from 2014**

'If a man will begin with certainties, he shall end in doubts, but if he will be content to begin with doubts, he shall end in certainties'
Francis Bacon
(1561-1626)
The Advancement of Learning

Thank you !!



Postgraduate student survey results

Lorna Dallas

We asked...

- *What are your aspirations in the field of environmental radioactivity? Do you intend to continue in this field after your PhD?*
- *How do you see your career progressing? What could be done to assist you?*
- *Why are you interested in this field of research?*
- *What are the difficulties you have faced or that you anticipate facing in the future?*
- *What type of training is required?*
- *How we can move the science forward?*
- *Do you have any other comments about the challenges/benefits of working in this field...*

You said...

- All students that responded said they were interested in continuing in the field
- Replies were split evenly between continuing to a postdoc or to industry
- Lack of access to facilities and funding were common difficulties for progression
- Every respondent indicated that identifying the big questions was key to moving the science forward

Training areas

- Writing grant proposals
- Specialist courses/certification
- Calculations/data handling
- Use of radiotracers

Quotes for discussion

- “Lack of access to data can be a problem. Sometimes ICRP, IAEA, UNSCEAR report different data for one issue”
- “I think in an inherently interdisciplinary field, researchers come from different backgrounds. For a PhD the level of specialisation is much greater and required much more reading/knowledge gain/familiarisation. I'm not sure how much this is required in this field, but it is a potential difficulty for new researchers coming into the area”
- “There is not very much money available at the moment especially for newly qualified PhD students - who face a lot of competition in getting their 1st postdoc position”

Quotes for discussion

- “Purposeful coordination of young scientist in this field and enhancing their capabilities through funding and access to certified laboratories, monitoring of their progress. Special scholarships schemes and networking opportunities exchange information”
- “It would be good to have the opportunity do undertake a small research project (3-6 months) at another institute to meet new people and learn new skills”
- “Quality supervision is key, and is what enabled me to manage my data”