

## Association of **U**niversity **R**adiation **P**rotection **O**fficers

May 2013

**AURPO NEWSLETTER**

Editor **T.J.Moseley**

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## EDITOR'S INTRODUCTION

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Welcome to the May edition of the Newsletter. Apologies for not getting the Spring one out sooner.

I have had an incident packed year to date – rupturing my Achilles tendon twice !! This rather disrupted my work program and I am now just about catching up on things.

Many thanks to those people who have contributed items to the newsletter. There are 2 items appended at the back as they were sent in as pdfs. There is Gus's report on a proposed revision to BS EN 60825 Part 1 and a flyer from BIR on an IRMER Update they are putting on this summer.

Many thanks to Claire Saunders (Essex) for circulating information on another laser pointer incident – everyone needs to be alert to the dangers that these devices can present.

I look forward to seeing many of you in Edinburgh in September – check out the Scientific Program planned that is reproduced on page 3.

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## AURPO Certificate of Professional Development in Radiation Protection

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This course has been developed by the Scottish Centre for Occupational Safety and Health (SCOSH, University of Strathclyde) and the Association of University Radiation Protection Officers (AURPO) in collaboration with the Health and Safety Executive (HSE) and RPA 2000.

The aim of the course is to assist those people wishing to attain greater knowledge and understanding of radiation protection matters and is a good grounding for a university RPO. The course is benchmarked against the HSE criteria for the 'Core of Knowledge' required for a Radiation Protection Adviser and the EA/SEPA syllabus for RWA accreditation.

- 9 month programme commencing September 2013
- Study by distance learning with online tutor support
- Available to those with relevant qualifications and work experience currently working in radiation protection or related fields.

Deadline for 2013/2014 course is 31<sup>st</sup> August 2013. Course commences 9<sup>th</sup> September 2013.

Course Fees for 2013/14 are £1600

For further information and an application form:

<http://www.strath.ac.uk/cll/cpd/healthsafety/radiationprotection>

or

Tel 0141 548 4828 email: [scosh@strath.ac.uk](mailto:scosh@strath.ac.uk)

## PRESIDENT'S REPORT

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Time has passed very quickly and the AURPO calendar points at the very important dates of 3<sup>rd</sup> to 5<sup>th</sup> September 2013 for our Annual Conference.

This year we are going up to the capital city of Scotland, Edinburgh. Colin and his team, at the University of Edinburgh, have been busy organising the event to ensure that everyone will enjoy the local hospitalities as well as the technical and scientific programme.

The Conference Dinner will be in the Playfair Library of the Old College. The neo-classical interior of the Library Hall is regarded as one of Scotland's finest public rooms. Tuesday evening will be at The Edinburgh City Council Chambres on the Royal mile. Colin has prepared a variety of entertainments for us after the buffet dinner.

The Scientific Programme this year will start with an update session, on Tuesday afternoon, on the theme "A Fresh Approach" followed by "How Clean is Clean" on the Wednesday for the scientific programme (see below). STC has once again promised some very interesting sessions. Thursday morning you could join the field trip to Torness Power Station.

You will soon be receiving your information pack and registration form. Do send in the registration forms promptly and don't forget to mark the dates in your diary. I am looking forward to seeing as many members as possible in Edinburgh.

Also do mark the 1<sup>st</sup> to 3<sup>rd</sup> September 2014 for 2014 Annual Conference. The Conference will be at East Midland Conference Centre within University of Nottingham. I would welcome the offer of a venue for the year 2015 and beyond. As we visited the north of the UK for few years now it is time AURPO Annual Conference to visit the southern part of the UK.

Once again it is time to think of how you could help the Association. AURPO is a well known professional association and has representatives on many radiation protection related committees and working groups. Please come forward to offer help in running the businesses of our association. I wish to remind you that the association could not go on as it is without the valuable help of its members. Please come forward with your offer and broaden the list of volunteers even more.

With Best Wishes

*Sonia*

**Sonia Nuttall**  
**22<sup>nd</sup> May 2013**

## Membership News

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Welcome to the following new members to the Association who have joined since January:-

Paul MacCourt	University of Sussex
Clare Lee	NPL

## Scientific Programme Edinburgh Conference 2013

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### Tuesday 3rd September 2013 Title: "A fresh approach"

- 1.30 Introduction & Welcome
- 1:40 - 2:10 Demonstration of Interactive polling session (decontamination/decommissioning) - Mark Bradley, University of Oxford
- 2:10 – 2:45 ERICA – radiation effects on Animals - Dr Copplestone, University of Stirling
- 2:45 – 3:15 Afternoon tea/coffee
- 3:15 – 3:50 Intercomparison studies of passive and active radon detectors. Erlend Bolle, Corentium
- 3:50 – 4:25 Non-radioactive alternatives to radiological techniques - Dr Andrew McEwen, Chief Scientist, Quotient Bioresearch

### Wednesday 4th September 2013 Title: "How clean is clean?"

- 9:00 – 9:10 Introduction
- 9:10 – 9:55 Keynote: Setting the scene. (TBA)
- 9:55 – 10:30 What the Environment Agencies expect. - Adam Stackhouse, SEPA
- 10:30 – 11:00 Refreshments/Exhibition
- 11:00 – 11:35 'Dalgety Bay' - Paul Dale (SEPA)
- 11:35 – 12:10 Monitoring for decommissioning - (Darren Bungay, Radiation Metrology Group, CRCE-PHE)
- 12:10 – 12:30 Discussion Session
- 12:30 - 14:00 LUNCH/Exhibition
- 14:00 – 14:35 Basis for clearance levels/Update on guidance for decommissioning and surrendering permits. Phil Fahey, EA.
- 14:35 – 15:10 'Cambridge Chemistry' Dealing with a legacy - David Plumb/Pete Burgess, NUVIA
- 15:10 – 15:40 Afternoon break/Exhibition
- 15:40 – 16:15 Dealing with waste, interaction with other legislation - Glen Hardcastle -
- 16:15 – 16:50 Accidents I have Known and Loved - John Croft

### ***When do I need to notify HSE?***

If you intend to start work with ionising radiation for the first time you need to let HSE know **at least 28 days before** you start work. This is a requirement of the [Ionising Radiations Regulations 1999 \(IRR99\)](#). The Regulations may also require additional notifications for certain occurrences and work practices, such as carrying out site radiography.

### **Starting work with ionising radiation for the first time**

If your work falls into any of the categories below, please click on the link to find out what you need to notify and to take you to the reporting form.

- If you are going to start work with ionising radiation for the first time, you are required to notify HSE at least 28 days before commencing work, unless your work falls into an exempt category. Details of the work that you do not need to tell HSE about can be found here (see [Work not required to be notified](#)).

Use form [IRR6 - Notification of ionising radiation activities](#) to notify HSE that you intend to start work with ionising radiation

### **Notifying changes to a previous notification**

- Radiation employers need to inform HSE when the details of a previous notification are no longer correct, such as when:
  - the employer's details or those of their premises change
  - the source category changes
  - the source is to be used at a different premises

For example, if an original notification covered the use of an X-ray set but you decide to start using radioactive materials, you would need to notify this change to HSE.

Changes to a previous notification - use form [IRR6 - Notification of ionising radiation activities](#)

- Planning to undertake site radiography Site radiography contractors need to give HSE at least seven days advance notification of the proposed work. For further information on site radiography, click her to visit the industrial radiography web pages.

Site radiography, use form [IRR3 - Notification of intention to carry out site radiography](#)

### **Other notifications required under IRR99**

Other reasons you may need to notify HSE under the IRR99 include:

- Nursing homes etc, when a patient has been given a radioactive medicinal product and are staying in, for example, a nursing home it is sufficient if notification is made by the nursing home as soon as practicable before the first instance of a patient arriving there.

- applications for individual prior authorisation to use electrical equipment intended to produce X-rays or use accelerators (other than electron microscopes) (see regulation 5)
- where a radiation employer suspects or has been informed that an overexposure has occurred (see regulation 25)
- notifications of certain occurrences such as losses, spillages or releases of certain quantities of radioactive substances (see regulation 30)
- where an employer suspects or has been informed that a person, while undergoing a medical exposure, was exposed to ionising radiation to a much greater extent than intended, as the result of a malfunction or defect in radiation equipment (see regulation 32(6))
- If you need to notify HSE or gain authorisation for any of these reasons please e-mail: [irrnot@hse.gsi.gov.uk](mailto:irrnot@hse.gsi.gov.uk)

### ***What information must I provide under REPPIR?***

The Radiation Emergency Preparedness and Public Information Regulations 2001 (REPPIR) requires that operators or carriers who handle or transport radioactive substances in excess of the threshold quantities specified in schedule 2 of REPPIR, carry out a risk assessment (termed a Hazard Identification and Risk Evaluation, or 'HIRE') and send a report of the assessment to HSE. Operators must do this twelve months before the work is to be undertaken, whilst carriers must notify 28 days before – unless agreed beforehand by HSE.

The HIRE's submitted should contain sufficient information and appropriate cross references for HSE to confirm the outcome of the assessments. The HIRE should be sufficient to demonstrate that:

- all hazards arising from that work with the potential to cause a radiation accident have been identified; and
- the nature and magnitude of the risks to employers and other persons arising from those hazards have been evaluated.

When a material change takes place to the work, a further assessment must be made.

The HIRE should be reviewed every three years, and updated if the work has changed in any way, or if there have not been any changes of circumstances then a declaration signed to that effect.

If any of the above applies to you then please submit a hire assessment - [REPPIR1 - Provision of an Assessment Report](#)

*(The above are extracts from the HSE's website on work with ionising radiations – check out - <http://www.hse.gov.uk/radiation/ionising/index.htm> for further information)*

## Incident involving overexposure of a worker from I-131

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Event Date: 28 February 2013

Event Type: Radioisotope Processing/Handling Facility

Event Location: Finland, Jyväskylä / MAP Medical Technologies Oy INES Rating: 2

A laboratory worker was contaminated with I-131 in a radiopharmaceutical company on February 28 2013. The worker was wearing two pairs of gloves and, when changing gloves, had noticed a break in the right inner glove, but not any obvious break in the outer latex glove. Only 3-4 hours later, routine monitoring revealed heavy contamination of the dorsal part of the right hand. Immediate actions to decontaminate the hand were undertaken on site. On the next day, besides persisting heavy contamination of the hand, activity was also found in the thyroid gland, and the Finnish Radiation and Nuclear Safety Authority (STUK) was notified. Stable iodine had not been administered.

Based on original measurements on site and later follow-up at STUK, including surface contamination measurements and whole body counting, the original activity of the hand was estimated at 11 MBq and the equivalent skin dose at 25 Sv, affecting an area of about 10 cm<sup>2</sup>. The estimated equivalent dose to the thyroid was 430 mGy and the estimated effective dose 22 mSv. On her first visit at STUK, the worker was advised to wear a glove and change it frequently in order to protect the surrounding and promote decontamination by sweating and washing. Three days later little activity was left in the hand. 11 days after the incident the skin was dry and slightly desquamating. After 15 days the skin was intact with no desquamation left. No further signs of skin damage have occurred.

*The above information was kindly provided for our newsletter by Gareth Thomas (HSE). He got the report from a notification from the IAEA incident report website -*

<http://www-news.iaea.org/ErfView.aspx?mid=53cc816d-e56b-4b36-9505-a18cf38ad699>

## EA, DEFRA & DECC MATTERS

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**Next SULG meeting** is on 13<sup>th</sup> June. Please contact one of our representatives if you have any matters which you wish to bring up ( Mike Sobanski, representing Wales – [sobanski@cf.ac.uk](mailto:sobanski@cf.ac.uk), Richard Harrison – [Richard.harrison@nbi.ac.uk](mailto:Richard.harrison@nbi.ac.uk) , and myself -TM).

### EA webpages move to Gov.uk site

We have now completed the work to prepare for the move to Gov.uk – which hosts customer-focussed, task-based content only. Working with E&B Advice and Guidance Colleagues, we have amended the existing Radioactive Substances User page so that if you are using a link to get there you should still arrive at the revised pages [here](#). Essentially we're hoping you won't see any differences at the moment!

Further updates will be provided as the move progresses.

Amber Bannon

### Smarter Guidance and Data - Give Us Your Views

Smarter Guidance and Data, launching today, is an outcome of the Coalition Government's Red Tape Challenge. It is working to remove unnecessary burdens for business by reforming environmental guidance and reviewing all the environmental and farming information that businesses submit to Defra and its regulators.

This is why we are inviting businesses, stakeholders and the public to give us their views on how these areas can be made more straightforward. We are inviting public feedback on how guidance and information obligations can be improved from now until **5 July 2013**. To find out more and to give us **your views**, visit <http://guidanceanddata.defra.gov.uk/>

Guidance and information obligations are important for supporting regulation. However, it is harder and more time consuming than it should be to access environmental guidance and understand what needs to be done to comply with the law. It can also be time consuming and costly to report environmental and farming-related information obligations to government.

Smarter Guidance and Data will make it easier and quicker to understand what environmental rules apply and simpler to report essential environmental data. This will make it cheaper and quicker for businesses and others to comply with regulations and achieve strong environmental standards.

Further opportunities to comment on specific environmental guidance topics and proposals to reform information obligations will run over the next 12 months. Follow us on twitter @defraregs to receive news of the latest updates.

## Customer research – non-nuclear radioactive substances regulation

**EA Customer Survey** – in the next few weeks you may be contacted by a representative of Blue Marble Research who are conducting a survey on behalf of EA. You may be approached to undertake either an online survey or take part in a telephone interview. This is a legitimate survey and no security sensitive questions will be asked.

EA information on survey is given below -

The Environment Agency wants to find out more about its customers' experiences of being regulated in the non-nuclear radioactive sector. This work is part of our ongoing commitment to improve our customer service. We want to make sure we are dealing with you efficiently, fairly and consistently and that you know what to expect from us. We want to hear about what you think we do well and where we need to improve.

The Environment Agency has commissioned Blue Marble Research, an independent research agency, to carry out this research. In the next few weeks we will be inviting a range of non-nuclear radioactive customers and a significant proportion of Radioactive Waste Advisors (RWAs), who interact with Environment Agency Officers, to complete a short on-line survey asking them about their experiences of the permitting and inspection processes. In addition, a small selection of businesses, selected by Blue Marble Research to represent a good cross section of business types, will be asked to take part in longer interviews, either in person or on the telephone.

Blue Marble Research is an accredited member of the Market Research Society, and works in accordance with the industry's code of conduct and the Data Protection Act. They will select participating businesses and these will remain anonymous to the Environment Agency. In this way businesses can be completely open and we can understand exactly what our customers think. All your answers will be treated in the strictest of confidence and used for research purposes only, the names of individuals and organisations that have taken part in the research will remain anonymous at all times.

If you wish to know more, or opt-out of the survey, please contact Naomi Kent at Blue Marble Research [naomi@bluemarbleresearch.co.uk](mailto:naomi@bluemarbleresearch.co.uk) or 01762 239329. Or you can contact me directly, Colin Chiverton at Environment Agency [colin.chiverton@environment-agency.gov.uk](mailto:colin.chiverton@environment-agency.gov.uk).

I won't be able to thank you personally because the research is anonymous. However, we appreciate any time you take to talk to us and we take the views of our customers very seriously.

Colin Chiverton  
Area Environment Manager  
West Thames

## **EPR2010 Radioactive Substances Regulation:- Emergency Preparedness Guidance**

Your environmental permit includes conditions requiring you to have a written management system that is sufficient to ensure compliance with the conditions of that permit. Those conditions are about preventing loss, theft or damage and avoiding or minimising the creation of radioactive waste. A release of radioactive material during an incident could be a breach of your environmental permit and we have a regulatory role to ensure the appropriate disposal of radioactive waste arising from an incident. An incident management plan will help you to identify potential scenarios where radioactive waste could be generated during an incident and how it could be dealt with. It could also help to identify measures to mitigate the environmental effects of any releases. We therefore consider it is good practice to have an incident management plan as part of your management system and implement it if an incident occurs.

### **Preparing an Incident Management Plan**

An incident management plan should:

- identify potential incidents and put in place measures to minimise them happening;
- identify events or equipment failures that could lead to sources being damaged, lost or escaping containment, for example fires, vandalism, flooding or other extreme weather events;
- identify how likely these events or failures are to happen;
- identify the consequences if they do happen;
- identify the steps needed to minimise them happening;
- identify the steps needed to minimise any impact if they do happen;
- contain a site plan;
- explain how you will record and investigate complaints, pollution incidents or breaches of your permit and the actions taken.

The Pollution Prevention Guidelines note PPG 21, Incident Response Planning, may help you identify the risks and produce an appropriate plan. Too often, plans focus on business continuity rather than preventing and mitigating the impacts of incidents.

You should make contact with your local Fire and Rescue Services, letting them know that you have a plan in place and invite them to site to discuss it with you. Visiting your site will help them prepare their own Operational Incident Plan for your site, which they are required to prepare under the Fire & Rescue Services Act 2004. You may wish to discuss with them the consequences of a controlled burn versus putting the fire out. The guidance note for operators, Pollution Incident Response Planning, Environmental Permitting Regulations (EPR), Operational Incident Plans for Major Fires or Spills provides more information on this.

### **Testing your Incident Management Plan**

Once you have an incident management plan in place, it is important that you hold appropriate exercises and practice putting your plan in to action. This is the ideal opportunity to make sure your staff are suitably trained and familiar with your plan, as well as allowing you to identify whether you have sufficient resources at all times, 24/7, even in the middle of the holiday season. This is especially important on sites with multi-occupancy, where several operators may need to liaise with each other and ensure that their plans do not contradict each other. Are roles and responsibilities, in the event of an incident, clear and well defined? Who is responsible for initiating your emergency plans? In the event of an incident, who is in charge and who will co-ordinate on-site actions? Are your key staff readily identifiable to the Fire and Rescue Services, eg.

by using coloured high-visibility jackets? For multi-occupancy sites, does one operator have overall control/command?

The Fire and Rescue Services may also wish to be involved in any exercises you arrange to test your plan. Testing your plan provides you with the ideal opportunity to identify any site improvements that will prevent, minimise or mitigate an incident, or the effects of one. Do you have emergency kits well positioned around your site, in locations that can be readily accessed during an incident? Do you carry out regular checks that the equipment in your kits is suitable and ready for use?

### Preparing a Grab Pack

During an incident you could provide your local Fire and Rescue Services with a copy of a Grab Pack, which should include all vital information relating to the hazards on your site. This could be part of a general grab pack covering all hazards on site. Ideally it should be laminated so that it can be used in all weathers. The grab pack must be kept securely at all times, in agreed rendezvous points to ensure the pack can be readily obtained during an incident. Your CTSA should be able to advise on storing your grab pack securely. We may be able to provide this advice where frequent CTSA visits are not conducted. Who will have responsibility for collecting the grab pack during an incident? This role should be clearly specified in your incident management plan and tested during routine evacuations

Your grab pack should include a first-glance summary sheet; this should be simple and easy to understand and convey your key risk messages, putting the risks in to context. The pack should include site plans, including maps, diagrams and pictures that identify the location of the hazardous materials on site, including routes to those materials.

Relevant inventories should be detailed, including radionuclides, quantities, activities, physical form, storage facilities (including whether they provide shielding and/or fire resistance), how the materials react in a fire/flood, and other pertinent physical/chemical properties. The inventory should highlight other key information that may be useful to the Fire and Rescue Services, for example that Tc-99m is only delivered on a Monday morning and explain the relevance of this.

Detailed drainage plans should be available, identifying containment measures on site, locating key shut-off valves, routes to sewer and freshwater drains. This should have been considered, as a firewater containment policy, as part of your incident management plan. The information held in the grab pack should be a quick summary of that policy to help the Fire and Rescue Services respond quickly on site. Air extraction plans should also be available, again identifying shut-off valves and intake points.

Your incident management plan will have identified the key organisations you will need to contact during an emergency; those contact details should be included in your grab pack to help you.

### Response to an Incident

If an incident causes harm to the public or the environment, or risks doing so, you must:

- report the incident to us and other interested parties;
- do whatever is necessary to minimise the environmental consequences;
- clean up after the incident or spillage;
- find out why the incident happened;
- consider if your response and actions were adequate;
- take any actions needed to stop it happening again;

Do you have arrangements in place to deal with off-site effects during the incident, for example the use of specialist monitoring equipment? Your incident management plan should identify the resources you will need to carry out any necessary clean-up after an incident, including sampling and remediation measures.

There are several guidance documents that will help you to consider the impact of fire water run-off on site and how you might deal with it. Pollution Prevention Guidelines note PPG 18, Managing Fire Water and Major Spillages and this should be one of the considerations included in your incident management plan.

If a serious pollution occurs that you cannot immediately control, you may have to reduce or stop your activities until satisfactory controls are in place or the pollution stopped.

#### Note

Your work with radioactive substances may also mean that you have a duty under the Ionising Radiation Regulations 1999 (IRR) to prepare a contingency plan designed to secure the restriction of exposure to ionising radiation and the health and safety of persons who may be affected by a foreseeable accident. This guidance does not replace your duties under IRR and you should refer to those Regulations for the need to prepare a contingency plan.

#### References

1. PPG21 – Incident Response Planning
2. PPG18 – Managing Fire Water and Major Spillages
3. 79\_09\_SD02 – Pollution Incident Response Planning, Environmental Permitting Regulations (EPR), Operational Incident Plans for Major Fires or Spills
4. Fire & Rescue Manual Volume 2, Fire Service Operations, Environmental Protection
5. RSR1 – Radioactive Substances Regulation Environmental Principles
6. Protocol for the Disposal of Contaminated Water and Associated Wastes at Incidents
7. Work with Ionising Radiation, Ionising Radiation Regulations 1999, Approved Code of Practice and Guidance L121.

Amber J Bannon  
February 2013

## **UNSCEAR NEWS**

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UNSCEAR have recently issued a white paper on 'Biological Mechanisms of Radiation Actions at Low Doses'. It includes discussions on genomic instability, bystander effects and adaptive response mechanisms. A downloadable copy is available for viewing. See –

[http://www.unscear.org/docs/reports/Biological\\_mechanisms\\_WP\\_12-57831.pdf](http://www.unscear.org/docs/reports/Biological_mechanisms_WP_12-57831.pdf)

## NEWS FROM HPA- Radiation Protection Division

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HPA is now part of Public Health England but for the time being still seems to have its own website see - <http://www.hpa.org.uk/radiation/>

Although called Public Health England, this new body will continue to provide radiation protection services for Scotland and Wales.

Recent documents published by HPA since last newsletter are detailed below.

- [\*\*HPA-CRCE-048 - Assessing the Reliability of Dose Coefficients for Ingestion and Inhalation of Radionuclides by Members of the Public\*\*](#)  
Consideration of uncertainties on doses can provide numerical estimates of the reliability of the protection quantities (dose coefficients) used in radiation protection to assess exposures to radionuclides that enter the body by ingestion or inhalation ("Internal Emitters"). The ICRP system of radiological protection is reviewed and the meaning of reliability is clarified.  
Added/updated: 24 April 2013
- [\*\*HPA-CRCE-047 - Determination of Root Uptake to Vegetables Grown in Soil Contaminated for Twenty-five Years\*\*](#)  
This report presents a re-evaluation of soil to plant transfer factors for different radionuclides and specific crops (cabbage, carrots and potato) based on a lysimeter study carried out at the Health Protection Agency in 2008. The lysimeters used in the study contain radionuclides which have been present for 25 years. The results from the study are therefore representative of soil to plant transfer factors for a long term contamination situation, where the soil has been repeatedly cultivated and where the soil and the radionuclide content have been subject to significant weathering.  
Added/updated: 28 March 2013
- [\*\*HPA-CRCE-046 - Radon in Northern Ireland Homes: Report of a Targeted Survey\*\*](#)  
A programme, supported by funding from the Northern Ireland Environment Agency (NIEA), identified homes with radon concentrations above the Action Level of 200 Bq m<sup>-3</sup> in the Armagh, Cookstown and Dungannon areas of Northern Ireland. Householders in the areas where the radon potential is at least 5% were contacted by letter and offered a free radon test. Where high levels were found, householders were encouraged to reduce radon concentrations. The programme commenced in January 2011 and was based on the current radon atlas of Northern Ireland.  
Added/updated: 1 March 2013
- [\*\*HPA-CRCE-045 - Report of a Record-based Case-control Study of Natural Background Radiation and Incidence of Childhood Cancer in Great Britain\*\*](#)  
This is a record based case-control study to investigate associations between childhood cancer and natural background radiation. Cases and matched controls came from the National Registry of Childhood Tumours. Cases were cancers registered for children born and diagnosed in Great Britain during 1980-2006.  
Added/updated: 6 March 2013
- [\*\*HPA-CRCE-044 - Practical Guidance on Thyroid Monitoring for Radioiodine Using Hand-held Instruments\*\*](#)  
Following an incident involving release of radioactive iodine, it may well be necessary to

monitor large numbers of people for internal contamination. In the case of iodine-125 (125I), iodine-131 (131I) and radioiodine releases from nuclear reactors (mixtures of 131I and shorter lived iodine radionuclides) screening measurements can be done with simple scintillation probe based instruments held over the thyroid.

Added/updated: 20 February 2013

- [HPA-CRCE-043 - Trends in Dental Radiography Equipment and Patient Dose in the UK and Republic of Ireland](#)

A review of data collected by the HPA Dental X-Ray Protection Services between 2008 and 2011 for intra-oral and panoramic X-ray equipment.

Added/updated: 14 February 2013

### [Human Radiosensitivity - RCE 21](#)

Report of the independent Advisory Group on Ionising Radiation

Added/updated: 13 March 2013

This report reviews evidence for variation in human radiosensitivity from epidemiological, clinical and experimental studies, considers mechanisms of radiosensitivity and ethical implications of current and potential future knowledge on the range of radiosensitivity in the human population. It concludes that there is growing evidence from a range of sources for variation in radiosensitivity that can affect the risk of radiation-induced cancer or, at higher doses, tissue damage. A proportion of this range is likely to have a genetic origin but there is also substantial evidence for lifestyle factors, and particularly tobacco smoking, affecting individual risk. Currently there is no adequate test predictive of individual radiation health risk, but knowledge is accumulating and therefore consideration of how this new knowledge might be used in radiological protection is important.

## **UNSAFE LASER POINTER IN ESSEX UNIV**

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A dangerous laser point was found at the Colchester Campus after a student was found playing with it inappropriately. Tests revealed it to be a Class 3B device with sufficient power to cause eye injury both from direct viewing and from specular reflections. It had sufficient power to cause flash blindness up to 250m away. The laser pointer was purchased from a market stall in Colchester. It had no CE mark, maker's ID, laser classification label or information on its power output. It obviously was in breach of UK and EU product safety standards and was reported to Trading Standards to investigate.

There must be many more such devices out there. Many thanks for Claire Saunders for bringing this to our attention. See Hazard Bulletin that Claire issued –

[http://www.essex.ac.uk/ohsas/hsbulletins/2013/hsbulletin\\_laser%20pointer\\_050212.pdf](http://www.essex.ac.uk/ohsas/hsbulletins/2013/hsbulletin_laser%20pointer_050212.pdf)

Also note free resource on laser pointer safety at –

<http://www.laserpointersafety.com/index.html>

# NEWS from IRPA

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**Fourth European IRPA Congress**  
Radiation Protection Culture - A Global Challenge  
*23 - 27 June 2014, Geneva, Switzerland*

[www.irpa2014europe.com](http://www.irpa2014europe.com)

The Fourth European IRPA Congress will be held in Geneva, Switzerland, during June 23-27, 2014. Information is available as well as online registration and abstract submission via the link above.

Radiation protection culture - a global challenge was chosen as the general theme of the Congress in order to support the IRPA initiative fostering improvements of RP Culture globally. In addition to offering a forum for the scientific exchange it is our intention to enable a dialogue on important culture elements such as values, beliefs, competences, and recommended practices.

### **Congress objectives**

- to understand and to promote radiation protection culture in all applications and its relation to general safety culture,
- to discuss open questions and common challenges and to outline perspectives,
- to strengthen the cooperation between professional societies, international organizations, regulators, NGOs, and key players in society,
- to develop tools for improving communication between experts, regulators, professionals, patients, and members of the public.

### **Congress topics**

- Biological and health effects of ionizing and non-ionizing radiation
- Radiation measurement and dosimetry
- Fundamentals of radiation protection of ionizing and non-ionizing radiation
- Regulation of the different exposure situations
- Environmental radioactivity and radioecology
- Radiation protection of patients, medical staff, and comforters
- Radiation protection of workers in nuclear, NORM, and other industries, and research
- Radiation protection of the public
- Protection of the environment
- Nuclear safety and security
- Emergencies: Lessons learnt, preparedness and response
- Education in and fostering of radiation protection and interaction with society

The Congress is organized by the German-Swiss Radiation Protection Association (FS) in close cooperation with the Association Romande de Radioprotection (ARRAD). They are pleased to invite you to contribute to the success of this Congress by your publication and participation, to benefit from valuable personal contacts and to visit CERN.

**Klaus Henrichs, Congress President**

Email: [info@irpa2014europe.com](mailto:info@irpa2014europe.com)

### **Important dates and deadlines**

Start of online registration and abstract submission May 1, 2013

Abstract deadline September 15, 2013

Notification of acceptance December 16, 2013

Deadline for reduced prices March 18, 2014

## Historic Dumping in English Channel

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*Interesting article picked up by Fred Dawson from Der Spiegel Online*

German journalists have discovered barrels of radioactive waste on the floor of the English Channel, just a handful of thousands dumped there decades ago. It was previously thought the material had dissipated. Now politicians are calling for the removal of the potentially harmful containers.

Some 28,500 containers of radioactive waste were dropped into the English Channel between 1950 and 1963. Experts have assumed that the containers had long since rusted open, spreading the radioactivity throughout the ocean and thus rendering it innocuous. But a new investigative report from the joint French-German public broadcaster ARTE has concluded that the waste is still intact at the bottom of the sea.

As part of an investigative report set to air on April 23, affiliated German public broadcaster SWR sent an unmanned, remote-controlled submarine into the canal's depths, where they discovered two nuclear waste barrels at a depth of 124 meters (406 feet) just kilometers from the French coast.

Jettisoned by both the British and the Belgians, the containers hold some of the estimated 17,224 metric tons of low-level radioactive waste dumped in the English Channel's underwater valley known as Hurd's Deep, just north of the isle of Alderney, according to the International Atomic Energy Agency (IAEA). The British barrels are estimated to have contained 58 trillion becquerels (units of radioactivity), while the Belgian barrels held some 2.4 trillion becquerels. By way of comparison, the European Union's limit for drinking water is 10 becquerels per liter.

"We think that there are still many more undamaged barrels below," SWR journalist Thomas Reutter told SPIEGEL ONLINE, adding that it was very unlikely that the broadcaster's expedition uncovered the only intact containers in existence.

'High Potential for Danger'

In response to the discovery, members of Germany's environmentalist Green Party have called for the barrels to be removed from the channel, SWR reports. "I believe that at such shallow depths these barrels pose a high potential for danger," Green Party parliamentarian and nuclear policy spokesperson Sylvia Kotting-Uhl told the broadcaster. "And it's not for nothing that dumping in the ocean has been forbidden for 20 years."

Hartmut Nies, a German oceanic expert for the IAEA, is also in favor of removing the waste. "If it's not too complex, then of course they should be removed," he told SWR.

In response to a parliamentary inquiry from the Green Party in August 2012, entitled "Final Disposal Site Ocean Floor," the German federal government stated: "The Federal Maritime and Hydrographic Agency (BSH), as part of its radioactivity monitoring in the North Sea, regularly carries out monitoring runs, which went into the British Channel Most recently in August 2009. The monitoring data contained no indication of emissions from dumping areas."

See original article at –

<http://www.spiegel.de/international/europe/legacy-danger-old-nuclear-waste-found-in-english-channel-a-893991.html>

## BOOKS AND PUBLICATIONS

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Exemption guidance: Guidance on interpretation of "Relevant Liquid"

<https://publications.environment-agency.gov.uk/ms/BBY7uS>

Exemption guidance: Guidance for NORM industrial activities on how to comply with the radioactive substances exemption regime

<https://publications.environment-agency.gov.uk/ms/BYguv1>

[The Efficacy of Patient-dependent Practices on Exposure Rate in Patients Undergoing Iodine-131 Ablation](#) Gültekin, Salih Sinan; Sahmaran, Turan. Health Physics. 104(5):454-458, May 2013.

[Imaging Doses and Secondary Cancer Risk From Kilovoltage Cone-beam CT in Radiation Therapy](#)

Kim, Dong Wook; Chung, Weon Kuu; Yoon, Myonggeun

Health Physics. 104(5):499-503, May 2013.

[Robust Technique Using an Imaging Plate to Detect Environmental Radioactivity](#)

Isobe, Tomonori; Mori, Yutaro; Takada, Kenta; Sato, Eisuke; Sakurai, Hideyuki; Sakae, Takeji

Health Physics. 104(4):362-365, April 2013.

[UV Emissions from Artificial Tanning Devices and Their Compliance with the European Technical Standard](#)

Facta, Stefania; Fusette, Stefania Saudino; Bonino, Alessandro; Anglesio, Laura; d'Amore, Giovanni

Health Physics. 104(4):385-393, April 2013.

[Patient Release Criteria for Low Dose Rate Brachytherapy Implants](#)

Boyce, Dale E.; Sheetz, Michael A. Health Physics. 104(4):413-418, April 2013.

[Risk-based Containment and Air Monitoring Criteria for Work with Dispersible Radioactive Materials](#)

Veluri, Venkateswara Rao; Justus, Alan L. Health Physics. 104(4):419-427, April 2013

[Uptake of <sup>131</sup>I in Households of Thyroid Cancer Patients](#)

North, David L. Health Physics. 104(4):434-436, April 2013

[Analysis of Naturally-occurring Radionuclides in Coal Combustion Fly Ash, Gypsum, and Scrubber Residue Samples](#)

Roper, Angela R.; Stabin, Michael G.; Delapp, Rossane C.; Kosson, David S.

Health Physics. 104(3):264-269, March 2013.

## **Isotope Methods for Dating Old Groundwater**

This guidebook provides theoretical and practical information for using a variety of isotope tracers for dating “old” groundwater, i.e. water stored in geological formations for periods ranging from about 1000 to one million years. Theoretical underpinnings of the methods and guidelines for their use in different hydrogeological environments are described. The guidebook also presents a number of case studies providing insight into how various isotopes have been used in aquifers around the world. The methods, findings and conclusions presented in this publication will enable students and practicing groundwater scientists to evaluate the use of isotope dating tools for specific issues related to the assessment and management of groundwater resources. In addition, the guidebook will be of use to the scientific community interested in issues related to radioactive waste disposal in geological repositories.

STI/PUB/1587; 357 pp., 178 figs; 2013; ISBN 978-92-0-137210-9, English, 70.00 Euro

Electronic version can be found:

<http://www-pub.iaea.org/books/IAEABooks/8880/Isotope-Methods-for-Dating-Old-Groundwater>

## **Non-HEU Production Technologies for Molybdenum-99 and Technetium-99m**

### **IAEA Nuclear Energy Series No. NF-T-5.4**

Technetium-99m (<sup>99m</sup>Tc) is used in approximately 85% of diagnostic imaging procedures in nuclear medicine worldwide. Interruptions in the supply of Molybdenum (<sup>99</sup>Mo), which is used to produce <sup>99m</sup>Tc, prompted governments and international agencies to step up efforts to identify both short- and long-term solutions to supply shortages. These calls for actions resulted in economic and technology studies on the <sup>99</sup>Mo supply chain. The present publication supports global efforts to eliminate the civilian use of highly enriched uranium in <sup>99</sup>Mo/<sup>99</sup>Tc production and proposes several alternative/supplementary technologies.

STI/PUB/1589; 59 pp., 20 figs; 2013; ISBN 978-92-0-137710-4, English, 24.00 Euro

Electronic version can be found:

<http://www-pub.iaea.org/books/IAEABooks/10386/Non-HEU-Production-Technologies-for-Molybdenum-99-and-Technetium-99m>

## **Guidelines for Remediation Strategies to Reduce the Radiological Consequences of Environmental Contamination**

### **Technical Reports Series No. 475**

This publication addresses the remediation of non-urban terrestrial and freshwater ecosystems including agricultural, forest and aquatic environments contaminated with radionuclides by radiation accidents, radiological incidents and other past activities. Associated social, ethical and economic considerations are also presented. It describes modern decision aiding technologies and environmental decision support systems for remediation planning and optimizing. Several case studies, demonstrating remediation success (radiation and radiological accidents, nuclear test sites etc.) are presented and evaluated. The publication considers only remediation strategies and management options which are relevant for existing exposure situations. Management options (countermeasures) for pre-deposition and early phases after emergencies are subject of other IAEA publications.

STI/DOC/010/475; 167 pp., 12 figs; 2013; ISBN 978-92-0-134110-5, English, 46.00 Euro

Electronic version can be found:

<http://www-pub.iaea.org/books/IAEABooks/8874/Guidelines-for-Remediation-Strategies-to-Reduce-the-Radiological-Consequences-of-Environmental-Contamination>



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## **Looking forward to changes in BS EN 60825 Part 1: Safety of laser products. Equipment classification and requirements**

After a considerable amount of work IEC 60825-1 Edition 3 is on the final straight and nearing completion. The CDV (Committee Draft for Vote) was circulated to IEC members for comment and vote by 12<sup>th</sup> April 2013; following that, comments will be reviewed and an updated document published. The number of stages following that depends on the extent of comments and any negative votes. The forecast publication date for Edition 3 is currently February 2014. Once published by the IEC, this will then be published and available as a BS EN.

Comparing the old with the new, readers will notice that the standard has been restructured with some re-ordering of sections. This third edition of the standard provides a more logical approach and considers simpler cases before addressing more complex issues.

Some changes that you may notice in the future are:

- The introduction of a new laser product class;
- Change in measurement conditions; and
- New signs/labels

### **New Class 1C laser product**

In addition to the current classification scheme, a new Class 1C laser product is being proposed; this is to be introduced to cater for generally available home use skin cosmetic products. This will effectively allow for a lower classification of what would be regarded an "embedded" laser of a higher class to be used in such a device.

The proposal for the definition of Class 1C is:

any laser product which is designed explicitly for contact application to the skin or tissue and that:

- During operation ocular hazard is prevented by engineering means, i.e. the accessible emission is stopped or reduced to below the Assessable Emission Limit (AEL) of Class 1 when the laser/applicator is removed from contact with the skin or tissue,
- During operation and when in contact with skin or non-ocular tissue, irradiance or radiant exposure levels may exceed the skin MPE as necessary for the intended treatment procedure, and
- The laser product complies with applicable vertical standards.

Notes will append the term thus supplementing the classification pointing to other requirements and limitations.

### **Change to measurement geometry**

BS EN 60825-1:2007 detailed three measurement conditions for the determination of the accessible emission, i.e. Condition 1 (intended to apply to collimated beams where optical aids may increase the hazards), Condition 2 (intended to apply to sources with a highly diverging output; used as the "magnifying glass" condition) and Condition 3 (applicable to the unaided eye and for scanning beams). In this edition, the measurement conditions have been reworked and there are now only two measurement conditions applicable to Part 1, i.e. Condition 1 and Condition 3.

The proposed changes to the revised table for measurement aperture diameters and distances for the default (simplified) evaluation are:

- Condition 1 is as before but with one change to the aperture stop size which reduces from 25 mm to 7mm for wavelengths between  $\geq 302.5$  to 400 nm;
- Condition 2 is excluded from the scope of Part 1 and Part 2 is referenced; and
- Condition 3 is as before but now includes the evaluation for low power magnifiers.

The most restrictive of the applicable measurement conditions need to be applied together with the AELs and tables in the third edition.

### **Labelling and use of labels**

The general requirements for the laser hazard symbol and explanatory label remain unchanged. However, a number of labels are being proposed as an alternative to the standard wording in an explanatory label; these are illustrated below. In some cases, wording has been slightly altered

#### **Class 1 and Class 1M**

The words for Class 1, as in the previous edition, remain unchanged. As an alternative, the following labels may be affixed to the product:

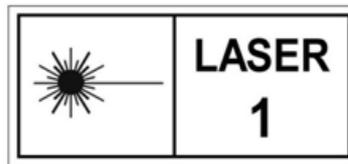


Figure 1 – Alternative label for Class 1

For Class 1M, there is a phrase change, i.e. from “optical instruments” to “telescopic optics”. So each Class 1M laser product shall have affixed an explanatory label bearing the words:

**LASER RADIATION  
DO NOT EXPOSE USERS OF TELESCOPIC OPTICS  
CLASS 1M LASER PRODUCT**

Alternatively, the following label may be affixed to the product:



Figure 2 – Alternative label for Class 1M

#### **Class 1C**

Each Class 1C laser product shall have affixed a warning label and an explanatory label bearing the words:

**LASER RADIATION  
FOLLOW INSTRUCTIONS  
CLASS 1C LASER PRODUCT**

Alternatively, the following label may be affixed to the product:



Figure 3 – Alternative label for Class 1C

### Class 2 and Class 2M

For Class 2 the words remain the same. Alternatively, the following label may be affixed to the product:

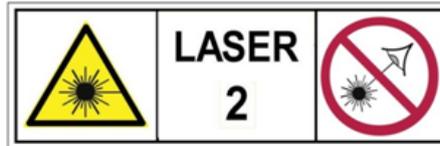


Figure 4 – Alternative label for Class 2

For Class 2M, there is a phrase change, the words are:

**LASER RADIATION  
DO NOT STARE INTO BEAM OR EXPOSE USERS OF TELESCOPIC OPTICS  
CLASS 2M LASER PRODUCT**

Alternatively, the following label may be affixed to the product:



Figure 5 – Alternative label for Class 2M

### Class 3R

For Class 3R the words remain the same. Alternatively, the following label may be affixed to the product:



Figure 6 – Alternative label for Class 3R

### Class 3B

For Class 3B, the word "Warning" is introduced.

**WARNING - LASER RADIATION  
AVOID EXPOSURE TO BEAM  
CLASS 3B LASER PRODUCT**

Alternatively, the following label may be affixed to the product:

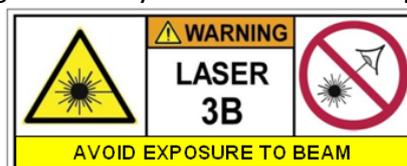


Figure 7 – Alternative label for Class 3B

## Class 4

For Class 4, the word “Danger” is introduced.

**DANGER - LASER RADIATION  
AVOID EYE OR SKIN EXPOSURE TO  
DIRECT OR SCATTERED RADIATION  
CLASS 4 LASER PRODUCT**

Alternatively, the following label may be affixed to the product:



Figure 8 – Alternative label for Class 4

## Aperture label

Words are the same. Alternatively, the following label may be affixed close to the aperture.



Figure 9 – Alternative label for Laser Aperture

Dr G A Zabierek

Health and Safety Unit, Workplace Wellbeing

University of Birmingham



The implementation of IRMER never stands still and this meeting will provide an invaluable opportunity for all professions to share best practice throughout all disciplines; diagnostic radiology, nuclear medicine, and radiotherapy. Examples of good practice and 'learning after the event' will provide delegates with invaluable practical information and advice on current compliance with IRMER. The presentations on patient dose management systems are aimed at promoting discussion on the usefulness of these systems with regard to dose optimisation. 'Not to be missed hot topics' will be addressed in the regulatory session. All professions associated with medical radiation exposures will benefit greatly by attending this update.

- 09:00 Registration
- 09:45 Welcome and introduction  
Mary Cocker, Oxford University Hospitals
- 09:50 Department of Health overview including 'much greater than intended'  
Ian Chell, Department of Health
- 10:10 Patient safety – What might change under the revised legislation following adoption of the EC BSS  
Steve Ebdon Jackson, Health Protection Agency
- 10:30 CQC Update: Overview of regulatory activities for 2012 including incidents and enforcements  
Cliff Double, Care Quality Commission
- 10:50 Discussion
- 11:00 Refreshments
- 11:20 Learning from incidents and system changes in Radiotherapy  
Seeni Naidu, Queen's Hospital, Romford
- 11:40 Quality systems and incidents in radiology – A manager's challenges  
Stephen Griffiths, Queen's Hospital, Romford
- 12:00 Update on e-IRMER and medical physics experts  
Steve Evans, Northampton General Hospital
- 12:20 Guidance document on implementing IRMER in diagnostic radiology  
Maria Murray, Society and College of Radiographers
- 12:40 Discussion
- 12:50 Lunch
- 13:50 Unknown unknowns - Patient dose management systems  
Mary Cocker, Oxford University Hospitals
- 14:10 A patient dose management system: A radiologist's perspective  
Dr Johnny Vlahos, St George's Hospital, London
- 14:30 National patient dose audits and DRLs  
Sue Edyvean, Health Protection Agency
- 14:50 Discussion
- 15:00 Refreshments
- 15:20 COMARE report on CT  
Giles Maskell, COMARE sub-committee
- 15:40 Documentation - How to get through an IRMER inspection?  
Natalie Thring, Radiographic Quality Management Services
- 16:00 Discussion
- 16:30 Close



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[www.bir.org.uk](http://www.bir.org.uk)

\*The IPEM RPA update follows this event on 9 July at the Holiday Inn Birmingham City, Smallbrook Queensway, Birmingham, B5 4EW. The hotel is located in the centre of Birmingham just a couple of minutes walk from Birmingham's main New Street train station. Please visit our website for directions and transport information.